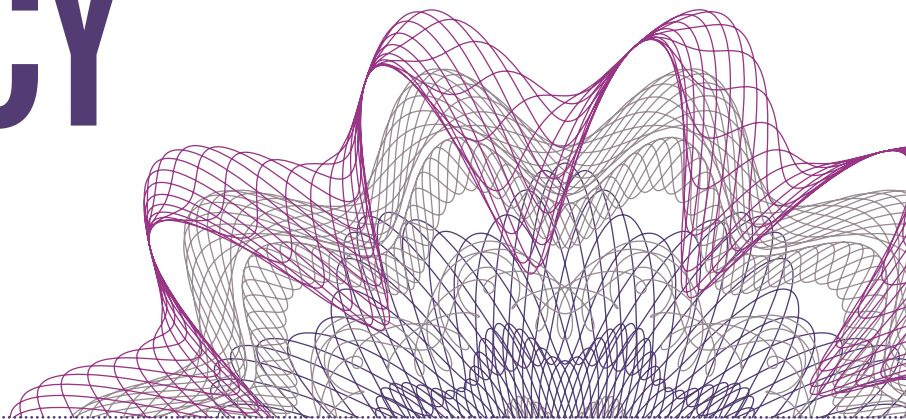
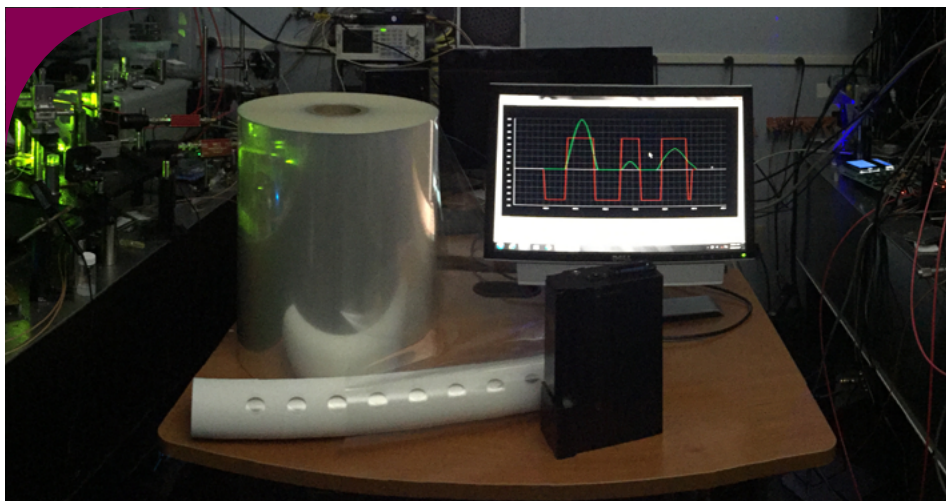


CURRENCY NEWS™

VOLUME 17 – NO 8 / AUGUST 2019



Spectra Launches Machine Readable Polymer Substrate



Spectra Systems Corporation (Spectra) – a supplier of covert features and sensors for the currency industry – has announced that it has executed a 10 year supply agreement, renewable by mutual consent, with a multi-billion dollar, multi-national, global supplier of biaxially oriented polypropylene (BOPP) with significant operations in the USA for use as a banknote substrate.

According to the company, this polymer has the unique property of being machine readable, containing a covert (level 3) substance which performs the same verification task as G&D's *M feature* (and other such features supplied by De La Rue and Authentix) in cotton based substrates.

These unique level 3 banknote security features (generally known as taggants), and the sensors that detect them, are strictly controlled, being provided only for central banks for the verification of their banknotes. Each central bank is allocated a unique formulation of taggant with

matching sensors that detect only that taggant, so there can be no confusion with another country's banknotes. As counterfeit banknotes lack the taggant, they can immediately be detected in the central bank's banknote processing systems.

In cotton based substrates, the amount of taggant used is generally strictly controlled in the paper production process to match the number of banknotes produced and, as the sensors are serviced by the company supplying the unique taggants, the total integrity of the system is ensured. It follows that the substrate containing the unique taggant is also strictly controlled once produced.

The new polymer, which will be marketed by Spectra, is UV dull, as is the taggant, and maintains the extremely low haze levels required for the signature window security of polymer notes. It will have the unique taggant added during the process when the BOPP film is produced.

Continued on page 12 >

Green Light for G4S Demerger

G4s has used its interim results to state that the review of its options for the separation of its Cash Solutions and Security Solutions business, first announced last December, is now complete, and the board has approved the separation. Plans have now been set in motion for the demerger of Cash Solutions in the first half of 2020.

According to the company, 'we believe that will create two strong, focused businesses, each with the clear potential to capitalise on market leading positions and to unlock substantial value for customers, employees and shareholders'.

Since last December, G4S has received a number of unsolicited expressions of interest from third parties to acquire parts or all of the Cash Solutions business, including one from rival Garda. It states that it has actively engaged with these parties and will continue to evaluate proposals alongside the implementation of the demerger plan, albeit with no assurances that any third party proposals will lead to a transaction.

In addition, G4S stated that it will be managing for value or exiting a number of non-core business (a programme it first initiated over four years ago) and implementing further identified operations efficiencies.

For the half year, the company reported an increase of sales by 4.7% to £3.7 billion, and a PBITA of 1.7% to £243 million. The Cash Solutions business accounts for around 15% of sales and 25% of profits.

Cash Management and Procurement - Public or Private?

What should be the role of the state in payments, whether a central bank, ministry of finance or treasury department? Today there is wide agreement that central banks are responsible for payment systems and the issue of banknotes. Some play a more active role in the currency function than others – ranging from full control, including production, through to complete outsourcing of production, distribution and even destruction, and all points between.

How might that change as the world changes around us?

Historically governments have always been heavily involved in payments and banking. But is all that about to change?

Forces for change

The forces for change are varied and apply unevenly across the world. They include a decline in the use of cash as a means of payment, the development of totally new payment tools that can work across borders, and a lack of economic growth and political change leading to traditional monetary policy being reviewed. Ideas such as negative interest rates have been used and are being considered, made more difficult to achieve by the existence of physical cash.

So at one end of the payment spectrum, central banks are having to consider the fundamentals of how value is held and accounted for, and some – having gradually extricated themselves from cash functions – are having to become more active to ensure that cash is not driven out.

At the other end of the spectrum, what is happening to banknote procurement?

It has long been assumed that the historic model of government institutions running their own state printing works (SPWs) would change with greater use of outsourcing and/or privatisation as they progressively retreat from currency management and focus on their core tasks.

It has also been long predicted that the locus of the production community would shift away from Europe to the rapidly-developing economies of Asia and other parts of the world, and that over-capacity would lead also to closures and consolidation.

Whilst some of this has come to pass, some of it has gone in the opposite direction.

In Europe, over-capacity was partly caused by so many SPWs gearing up at the end of the 1990s for the initial production run of the euro. Following the launch, demand dropped right back. The Belgian and Irish printworks have closed, while outside the Eurosystem, so have the SPWs of Denmark and Norway. The Swedish printworks was privatised, and the Bank of England now outsources production. In the commercial sector, the Dutch printer has exited banknote production. In Asia, the Bangko Sentral ng Pilipinas is reported to be looking for a buyer for its printworks.

But going against those predictions, the German printer Bundesdruckerei has been renationalised, there is a brand new central bank-owned printworks in Spain, the French state paper mill has doubled its capacity and taken in other central banks as shareholders, and Italy now has a new state-owned mill.

Further afield, countries such as Chile, Egypt, India, Indonesia, Mexico, the Philippines and South Africa are in the process of, or have been, investing in new capacity, there is a new quasi state-owned printworks in the UAE and plans for banknote production in Ethiopia.

The printworks in Bulgaria, Kenya and Sri Lanka have all entered into joint ventures with commercial printers to secure their local indent and to earn export income. Kazakhstan, Morocco, South Africa, the Ukraine and Uzbekistan are reported to have carried out work for commercial printers, sometimes under formal long term arrangements, to use their spare capacity.

Further east, India's 'Made in India' policy has seen approximately 20,000 tonnes of paper removed from the addressable market, while China Banknote Printing & Minting, with its vast capacity and a declining domestic market, is the latest SPW seeking to win a share of export markets, following in the footsteps of long-time SPW exporters such as Goznak, PWPW and Note Printing Australia.

Companies such as SICPA and Crane have either manufactured in territory or formed local partnerships to produce in territory, while – along with their printworks – the state paper mills of Russia, China, Korea, and Spain (along with France and Italy) are seeking to export paper.

In other words, consolidation has happened, and there have been closures. But the hand of the state in production appears stronger than ever.

Whether or not private suppliers are at a structural disadvantage in this new scenario is not the point of this article. What is significant, however, is that state suppliers have the support of their governments. The commercial sector does not have that luxury and, although overall banknote volumes continue to rise, it can only be a matter of time before the impact of the forces for change affect these volumes. With nearly 30% of SPWs seeking to export banknotes, the supply side of the industry already exceeds the demand for banknotes, reducing prices and margins.

More broadly, whether a central bank or a commercial supplier, what might have appeared a few years ago as a healthy, stable payment arena is now facing rapid and significant change. What is the best way to buy banknotes? What is the role of the SPW? Time to plan to get the strategy right for the inevitable change!

Inside this Issue

- 1 Spectra Launches Machine Readable Polymer Substrate
- 1 Green Light for G4S Demerger
- 2 Public or Private?
- 3 Declining Demand Hits Royal Mint's Sales
- 3 People in the News
- 4 News in Brief
- 5 Cash as a Public Good – the Expert View
- 7 MDC 2020 – Call for Papers
- 8 20 Years of Making the Euro
- 10 40 Years and Still Going Strong
- 12 Americas Cash Cycle – A Revolution in Boston
- 13 Sound of Intaglio™ – 21st Century Intaglio Authentication
- 13 Blooming Marvellous
- 14 IACA Finalists for 2019 IACA Coin Awards
- 15 Note and Coin News
- 16 IN Groupe in Negotiations to Buy SURYS

Declining Demand Hits Royal Mint's Sales

The Royal Mint (TRM), in its 2018/19 Annual Report, described the year as a transitional one, in a challenging environment in which demand for coins globally fell. Sales were up by nearly 1.5% to £422 million, but the pre-tax profit of £2.1 million for 2017/18 turned into a loss after exceptional items of £3.5 million.



One of the largest drops was in the Currency division (formerly Circulating Coins), where sales fell by 8.5% to £105.3 million and profits from £5.7 million to a loss of £700,000. This was down to UK circulating coins, where sales dropped from £61.2 million to £28.6 million. Over the reporting period, TRM issued 632 million new coins to cash centres, compared with 1.19 billion the previous year.

For the first time in decades, no new 1 and 2 pence coins were produced during the year. The previous Chancellor of the Exchequer, having announced that the issue of the two lowest denominations was under review last year, confirmed earlier this year that their future was safe. The absence of production nevertheless led some commentators to conclude that the coins are on their way out.

In reality, however, following the previous year's introduction of the new £1 coin and the withdrawal of the old 'round pound', millions of hoarded coins of all denominations were returned to cash centres. This huge (and unforeseen) surplus meant no new UK coins of any denomination were needed in the second half of the previous year and, for the last year, no new 1p and 2p coins. The surpluses at cash centres for the other denominations have abated, and did result in demand picking up for the £1, 50p and 20p coins.

The steep decline in UK coins was partially offset by overseas sales of coins and blanks, which increased from £53.9 million to £76.7 million. 3.3 billion pieces were supplied to 31 countries, compare with 2.2 billion the previous year.

According to TRM, the Currency business continues to face challenges as economies increasingly embrace cashless alternatives. The competition for overseas contracts has continued to be intense as more mints experience low domestic demand, resulting in considerable price pressure as competitors strive to fill their order books.

As a result, TRM has plans to position itself to compete more effectively for overseas contracts, while protecting its ability to meet UK coin demand.

In the other parts of the company, the Consumer division (which is responsible for collectors coins and medals, historic coins, authentication and valuation services, storage and the visitor centre) performed well, and the Precious Metals division (renamed from Bullion) even better. TRM has also set up a new business line - Gifting - which draws on its heritage and also performed well in its first year.

TRM has said that it has launched a three-year plan with a clear vision to reinvent itself for the 21st century. The plan challenges everyone in the company to be agile and think innovatively, looking at what makes TRM unique and creating a portfolio of complementary businesses that draw on its core strengths, heritage, design and manufacturing expertise. What this plan actually entails will be revealed during the coming year.

People in the News

Maurice A Amon - 1951–2019

The industry was saddened to learn of the sudden death of **Maurice A Amon**, of SICPA, on 26 July, at the age of 68.

SICPA was founded by the pioneering industrialist Maurice Amon in 1927 in Lausanne, Switzerland, and expanded globally under the leadership of Albert Amon. Reaching the third generation – Maurice A Amon, Monique Cohen-Amon and Philippe Amon – the family business was fully established as one of the flagships of Swiss industry, and a global leader in the domain of secured authentication, identification and traceability solutions and services.

Maurice A Amon joined SICPA in the mid-1970s. His exploratory spirit and risk capacity had contributed significantly to business developments overseas, notably in the US in 1980s and Asia. He was recognised for his vibrant personality and creative drive within the currency world.

Having been involved in a range of roles, projects and geographies, he culminated his career in SICPA as Co-Chairman. He stepped down from a full-time role in 2011 and remained a member of the Board until early 2019, when he was replaced by his son Albert.

Eddie Yue has been appointed the Chief Executive of the Hong Kong Monetary Authority (HKMA) with effect from 1 October. Currently Deputy Chief Executive, he replaces **Norman Chan**, who is retiring.

The Central Bank of Iceland has chosen the economist **Dr Ásgeir Jónsson** as its new Governor, to succeed **Már Guðmundsson**.

The Turkish government has dismissed the Governor of the Central Bank of Turkey, **Murat Cetinkaya**. He has been replaced by former Vice Governor **Murat Uysal**.

The Governor of the Maldives Monetary Authority, **Ahmed Naseer**, has resigned after the former head of the bank's anti-money laundering unit accused him of attempting to obstruct an investigation. His successor has not yet been named.

Tumi Tsehlo, Managing Director of the South African Mint, is stepping down. The search is underway for his successor.

Burroughs, the US-based supplier of cash handling equipment and services, has named **Anson Martin** as its new CEO. He replaces **Ed Boyd**, acting CEO, who stepped into the position on an interim basis last year following the retirement of the former CEO, **Andrew Lawson**, and who now becomes Chief Operations Officer.

News in Brief

New Printing Line for India

The Indian government is investing Rs 250 crore (\$35 million) in a new printing line at the Currency Note Press (CNP) in Nashik, which will increase capacity by a further 1 billion to 7 billion notes. The new line will include equipment for paper cutting, intaglio, numbering and other printing processes.

CNP is one of two printworks owned by Security Printing & Minting Corporation of India (SPMCIL), and produces banknotes and other security documents, as well as coins. During the period following the demonetisation of 2016, CNP Nashik was at the forefront of printing the new banknotes, including the Rs 500. Last month, it started printing the new Rs 20. Three companies have already secured contracts for the new equipment, with the new line expected to be operational within a year.

Note Issuing Bank to Rebrand

Clydesdale Bank, one of the three note issuing banks in Scotland, will be rebranded as Virgin Money by the end of 2021.

CYBG, the owner of both Clydesdale and Yorkshire Banks, agreed to buy Virgin Money for £1.7 billion last year. Rebranding the group as Virgin Money, rather than keeping the existing brands, was decided on as a way of capitalising on the national image of the latter, as it was thought that the localised names of Clydesdale and Yorkshire were a barrier to growing as a national brand hoping to challenge traditional banks.

One of the advantages to Scotland's three note issuing banks of issuing their own banknotes is brand recognition (effectively advertising) and Clydesdale Bank, which dates back to 1838, has a very strong local presence in Scotland. Presumably recognising this, CYBG B has confirmed that Clydesdale banknotes will be spared the rebranding.

Loomis Partners for Cashless

Cash handling specialist Loomis has signed a four year agreement with fintech company Westpay to bring 'world class digital payment services and solutions to retail customers initially in Finland and Sweden with an intention to incorporate in rest of Europe'.

Under the agreement, Westpay will supply Loomis with payment solutions for cashless, so called card present, on-site transactions based on its Carbon range of payment terminals.

'The partnership allows us to reach new markets, and will enable Loomis' customers to benefit from unified and improved management of payments, regardless if its cash or cashless,' said Sten Karlsson, CEO of Westpay.

Luminescence Sun Chemical Meets Anti Corruption Standard

Luminescence Sun Chemical Security has received the ISO37001:2016 certification from the British Standards Institution (BSI). This is a relatively new international standard which specifies a series of measures that can be implemented to help prevent, detect and address bribery, enabling an organisation to successfully implement an anti-bribery management system. Luminescence Sun Chemical Security is understood to be the second company in the industry to have received the certification.

'Even though we already worked to the highest standards, it is still important to be able to show that our processes and procedures are verified by an organisation as BSI', said Gerben van Wijk, Sales and Marketing Director. 'The ISO certification process by BSI is very strict and enabled us to have a thorough internal check to re-confirm we are on the right track. We highly recommend other organisations in the security printing industry to do the same'.

Brinks' New ATM Solution for France

Brink's France is launching a new ATM solution whereby it installs and operates ATMs and charges a fee to the municipality. The cost is estimated at €1,500 per month but can be lower depending on the number of withdrawals. To reduce costs, Brink's is offering basic ATMs with a simple cash-out function. The first unit was installed in Brittany, in western France, in July.

France has seen the number of ATMs drop by 5.3% between 2015 and 2018, according to the Banque de France, which is undertaking an Access to Cash review. And while it says that there is no overall issue with ATM distribution, as 99% of the population can still reach an ATM in less than 15 minutes by car, there is a risk that remote and rural communities may face a 'bank desertification'.

Croatia Gears up for Euro

Croatia has launched a bid to join Europe's Exchange Rate Mechanism II, the two-year waiting room for eurozone candidates which pegs their currencies to the euro.

Zagreb hopes to join the ERM II mechanism in mid-2020 and could adopt the euro three years later at the earliest, replacing the kuna which has been the country's currency since 1994. .

A letter of intent to join the mechanism sent to the eurozone countries and EU institutions, signed by the Finance Minister and Governor of the Croatian National Bank, was accompanied by a plan for reforms Croatia will undertake before entering it, a statement said.

Croatia is the newest member of the European Union, joining in 2013. Bulgaria, which joined the EU in 2007, started the same process last year and could join the eurozone in 2022.

New Service Centre for NCR

NCR Corporation has opened a new Center of Excellence (CoE) for services in Kuala Lumpur. The facility, which consolidates three separate locations, will be NCR's services hub for the Asia Pacific region, serving the banking, hospitality and retail industries.

According to NCR, the new centre will enable it to quickly introduce next-generation services that keep commerce running for both large, global brands and local neighbourhood businesses. The CoE houses 400 multi-lingual service professionals to provide round-the-clock customer support in 12 Asian languages, and includes a disaster recovery centre located in Petaling Jaya, ensuring business continuity.

'This centre delivers service excellence for complex, digital transaction networks, supported by Malaysia's reliable infrastructure, strategic location and its diverse, multilingual talent pool using our Digital Connected Services platform,' said Bill Bancroft, Senior Vice President, Global Services Delivery.

Cash as a Public Good – the Expert View

A couple of weeks ago, *Cash Matters*, the pro-cash movement of the International Currency Association (ICA), published the white paper 'Virtually Irreplaceable – Cash as a Public Infrastructure' by Dr Ursula Dalinghaus, making a case for how and why cash must be understood as a 'public good'.



Ursula Dalinghaus.

Dr Dalinghaus, Visiting Professor of Anthropology at Ripon College, is also an affiliated scholar at the Institute for Money, Technology & Financial Inclusion (IMTFI), University of California at Irvine, which has made itself a name as one of the leading institutes when it comes to the role of money in people's daily lives and practices, and to the best way to go about financial inclusion.

The Director of the IMTFI is Professor Bill Maurer, Fellow of the American Association for the Advancement of Science, Fellow of the Filene Research Institute, Dean of the School of Social Sciences and Professor of Anthropology at the University of California, Irvine. He will also be one of the keynote speakers at the ICA's Global Currency Forum 2020 in Barcelona.



Bill Maurer.

Currency News™ spoke to both to find out more about the work of the IMTFI and the new white paper.

Q: *Professor Maurer, what prompted you to found IMTFI in 2008?*

BM: Big changes were afoot in the world of money and payments in 2008. The global financial crisis, the rise of smart phones, and, in Kenya, the mobile payment service M-Pesa, all focused people's attention, across a range of fields and professional locations, on the intersection of money and new technologies.

We founded IMTFI to bring the perspective of on-the-ground research about the everyday money lives of people around the world, to help researchers, nonprofits and policy makers understand the profound impact that technology was having on people's saving, spending and payment behavior.

We also wanted to ensure that folks in the policy and economic development communities heard the voices of people from the places most impacted by these technological changes. Too often it seemed like international workshops and conferences were attended by the same set of speakers and the same organizations. We wanted to get research funding into the hands of people actually from the countries where things like mobile money deployments were taking place. The idea was to create a global brain trust of new experts on money, technology and financial inclusion.

Q: *What makes IMTFI different from other institutions or university faculties?*

BM: The big difference, which always surprises people in this space, is that we are mainly anthropologists. Even though we have supported many experts from other academic fields over the years – design researchers, computer scientists, or economists – we always try to instill an anthropological sense.

We also provide training in anthropological methods, like ethnographic research, to help them get at what is really going on in people's lives around money and technology. For instance, survey researchers had reported that some people in Kenya were using M-Pesa to pay school fees. Our research found that, sure, they were paying school fees, but often the funds were first routed through coming-of-age rituals and the purchase of livestock as gifts marking stages in the life course. There is so much more going on than what people will tell a (usually foreign) survey researcher.

For another thing, we try our best to maintain an objective perspective on the phenomena we study – we don't come at things with a pre-determined agenda. This sometimes makes people uncomfortable.

Finally, we have made all our findings public – this is a core value that comes from being part of a public research university, but also makes a difference insofar as other organizations and companies often conduct work under nondisclosure or confidentiality agreements.

Q: *What is the main focus of the institute?*

BM: We want to understand how people's diverse interactions with money are being reshaped by new technologies, from new payment platforms to things like artificial intelligence in providing financial advice or in creating alternatives to traditional credit scores.

But, again this is crucial, we focus on the user side of the equation, on people's actual interactions with money and these technologies, down to the level of questions like, where do they keep their money, and why? What does their daily transactional life look like? What are the diverse systems and beliefs that inform their money practices?

We developed the concepts of monetary ecology and monetary repertoires to capture this people-centered approach to money and technology.

Q: *IMTFI was initially funded by the Gates Foundation, major supporters of the Better than Cash Alliance. The IMTFI is neutral when it comes to payments; however, there is an increasing focus on cash. What caused this development?*

BM: We realized pretty quickly that there were a couple of very general things going on, almost everywhere around the world.

First, most of the new mobile money systems in which the Gates Foundation was initially interested as potentially banking the unbanked were in fact serving as payment rails – not as means of saving but as a means of moving money. This made us focus more and more on payment systems as a distinctive area of research.

Second, pretty much universally, we found that new systems were not replacing old ones; they were instead being added into the mix. People would use one payment method for one kind of transaction, and other payment methods for others. But nothing was replacing anything else. I think a lot of people initially thought that things like mobile money would displace cash. Instead, mobile money became a way for people more efficiently to move money and access it in the form of cash.

Q: *Dr Dalinghaus, you just published the study 'Virtually Irreplaceable – Cash as a Public Infrastructure' for Cash Matters. You are a Visiting Professor of Anthropology at Ripon College but kept up your work as an affiliated scholar with IMTFI. What makes working with IMTFI so special?*

Continued on page 6 >

Cash as a Public Good

'Virtually Irreplaceable: Cash as Public Infrastructure' is the second study from Cash Matters, the first - 'Keeping Cash – Assessing the Arguments about Cash and Crime' - having been published in September 2017 to general acclaim.

This latest report takes a close look at the role of cash in society, drawing on the IMTFI's expertise in cash and digital monetary technologies and the latest research across policy, industry, and academic sources to highlight the particular qualities of cash that have so far been overlooked in discussions about a future payments landscape.

The paper comes to the following conclusions:

- Cash guarantees ease of use, accessibility, privacy, and many other unique qualities in local, national, and global monetary systems. Cash fulfils both criteria for a public good: it is non-excludable because its function as a means of payment, of transfer of value, works without compensation. And it is non-rivalrous because its use by one person does not preclude its use by another.
- Cash is public – the only form of money not controlled by a private, profit-driven entity. Once in circulation, it is the only form of payment independent of its issuer. It is deployed not to make a profit on its transfer but to support and sustain value transfers free of charge.
- Cash enables personal freedom and self-determination – state-issued physical cash is a distributed public infrastructure that allows citizens and users to create a space outside the state. At the same time, cash acts as a claim upon central banks and, ultimately, states to ensure good governance of monetary and payment systems.
- The materiality of cash is vital to many social practices. The role cash plays in social relationships often hinges on the physical design of cash, such as denomination, which makes cash particularly useful for budgeting, accounting, gifting, or saving.

The report can be downloaded at www.cashmatters.org.

Cash as a Public Good *(Continued)*

US: One of many aspects that make working with IMTFI so special is being part of a community of research practice that has always prioritized grounded research in the local communities of our researchers.

Over the past decade IMTFI has built up a tremendously rich and incredibly diverse archive of evidence on the multifaceted ways that communities in the global South have integrated new digital and mobile money technologies with traditional monetary practices.

This careful research collected over time has been tremendously important for developing a more systematic understanding of the use cases people see for cash. It is publically accessible in a variety of formats, from blog posts to working papers, and now a new edited volume, 'Money at the Margins: Global Perspectives on Technology, Financial Inclusion'.

IMTFI is also unique in starting with empirical and theoretical insights from the global South to generate new questions for our research on money in more developed markets in the global North (rather than only the other way around, as is so often the case).

For example, insights from the global South have sharpened our understanding of the role that cash denominations play across the globe as a budgeting tool, a means of differentiating the meaning and intent of a money gift, or the importance of national currency denominations as a communicative medium for efforts to promote universal access, equity and inclusion (such as recent redesign proposals of particular banknotes in Canada, Australia, the UK, and the US).

To underscore IMTFI's signature approach, the concepts of monetary ecology and monetary repertoires are extraordinarily productive tools for research and teaching on the user experiences of payments broadly. By drawing attention to the complementarity of payment tools from a user perspective, we can see how cash is a crucial part of practical as well as social transactional worlds and of strategies for risk diversification.

Q: *What is the key takeaway of your white paper on cash as a public good?*

UD: That physical cash will continue to have a vital and complementary role to play alongside digital well into the future, not only as a method of payment but also as a democratizing force – an important form of power-sharing between issuer and user that is distinct from digital-based money.

Cash increasingly gets discussed as a passing form that will eventually be replaced by digital, if not soon, then sometime in the distant future. In contrast, this paper shows that physical cash is irreplaceable.

One reason is that people value the ability to choose from multiple payment forms. Another, even more substantial argument for cash, is that the cash infrastructure serves a vital public role since cash can circulate independently of its issuer and it can work offline.

Evaluating the historical and cross-cultural evidence on how people use physical currency, it is clear that there is something crucial about the materiality of cash as a distributed form, which allows it to be part of such diverse practices, financial, political, and social. Precisely this flexibility is what makes cash indispensable as a public medium that everyone in society can use and access.

However, as this paper also shows, cash as a public good depends upon legal mandate, good governance, guaranteed access, and technological support in maintaining the cash infrastructure as a vital part of wider payment systems.

Q: *What developments in the payments landscape do you see when you draw on IMTFI's field expertise and research on a global level?*

BM: Payments have been going through what we've been calling a 'Cambrian Explosion' for almost a decade now. The Cambrian period in geologic time was characterized by an amazing proliferation of different forms of life on planet earth, occupying different niches and with an incredible variety of body forms. We've been in the middle of something similar with payments.

Think about all the new ways to pay that startups and established payment companies have created just in the past few years, from tap and pay cards to biometric-ID secured mobile payments, to Venmo or WeChat Pay. They all use different technologies; they use different interfaces; they often sit on top of different, existing payment rails; or they are trying to build entirely new ones, like some of the developments in the cryptocurrency space.

The big question for us is: what sticks, and what doesn't? Who uses which of these technologies, and for what purposes? How do all of these new things fit into people's existing behaviors around money and payment?

Q: What is your recommendation to banks, politicians and governments when it comes to payments in general and cash in particular?

BM: Above all, they need to realize that there is no one size fits all payment solution. People will always use different technologies for different purposes – Venmo with friends and for the rent, debit cards for groceries, credit cards for more expensive purchases like appliances, PayPal online, etc. etc.

First, there is a virtue in recognizing how people use payment diversity to achieve their different goals.

Second, they have to remember that, unless you use cash, you have to pay to pay, and that sometimes this fact erects high barriers for the poor and underbanked. In many circumstances cash remains the best option. It's the cheapest for the user, it's portable, it's private... Not everyone on the planet is a well-off professional working in a clean office with job security.

We need to design payment for all people, in all kinds of circumstances – some of which will unfortunately become more and more common in the years to come, such as refugees fleeing political violence or environmental devastation caused by climate change.

Policy makers and governments should always ask themselves: what if things go wrong? From a data breach, to massive disruptions in politics and society, to infrastructural or electrical grid failures: how will people pay? How does ensuring a diversity of payment – kind of like biodiversity in ecological systems – ensure human resilience?

UD: In addition to the policy considerations outlined in the paper, I would argue for a more nuanced discussion of payment choice.

When it comes to measuring and collecting data on cash usage and cash in circulation, researchers and policy makers should dig deeper into the data and ask different kinds of questions to better understand and capture payment diversity. Comparing the number and percentage of transactions of different payment methods is important but does not necessarily add up to a definitive statement on a hierarchy of consumer payment preferences, certainly not one that supports an argument for a cashless future.

As Bill has already pointed out, people use different technologies for different purposes, and those purposes may only become apparent through tracking a wider circuit of transactions and practices over time. This dimension of payment method usage is rarely captured in current cash payment studies and is difficult to learn through survey methods alone. Incorporating qualitative data collection tools can help here.

Understanding payment diversity at the micro-level is also relevant for policy making at the level of monetary and fiscal policy. For example, there is growing evidence from a variety of corners that people turn to cash as a means of curtailing growing indebtedness, some of which is the result of fees and costs associated with digital payments.

This is not only important for the poor and underbanked but also, for example, for college and university students burdened with mounting student-loan debt repayments. Ensuring diversity of payment, and the resilience of the cash infrastructure in particular, will be crucial in addressing growing policy concerns about unsustainable debt relations and inequality, which also prevent people from participating in the wider economy.

A related point is that when people hold or use physical cash, there remains a concrete bridge and access point to monetary authorities and state institutions that is important for public accountability. In my research I have observed how physical cash and tangible money objects facilitate communication between central banks and the public on complex policy issues and financial education.

Sharing cash hand-to-hand is a form of knowledge sharing accessible to all, just like a physical book can be shared, borrowed, and passed hand-to-hand to others whereas digital books are often encoded to prevent sharing across users and devices. So while both physical and digital forms promote knowledge sharing, they do so in different ways and with different implications for ownership and access.

Cash is particularly important for people's agency and self-determination because it can be used, shared, and exchanged independently of citizenship status and across jurisdictional boundaries.

Institutional actors should therefore be mindful of how cash is already an effective part of their public mandates while working to ensure greater inclusion, transparency and resilience of financial systems that work better for everyone in society.

MDC 2020 – Call for Papers

A 'Call for Papers' has gone out for the next *Mint Directors Conference* (MDC), which takes place 26-29 April 2020 in Cape Town, hosted by South African Mint.

The programme will have a specific theme on each of the three days – starting with Global Challenges, moving to New Horizons, and then debating Future Opportunities.

The structure of the programme will be modular, with plenary sessions on each day covering the big issues, streamed sessions focusing on the collector, circulation and bullion markets, and then interactive break-out workshops diving even deeper into specific topics.

Proposals are being invited for presentations in the following areas:

- Collector coins – innovation, legal tender status, designs and trends, creating a successful secondary market
- Bullion – creating an ethical business model, the investment case
- Circulating coins – the note/coin boundary, seigniorage, optimising the denomination mix
- Technology and innovation – materials, design and production, quality control and inspection, processing, authentication, marketing
- Tools and techniques for creating the next generation of coin enthusiast
- Case studies of successful coin campaigns
- Corporate social responsibility – making the industry and its products clean, green and ethically responsible

According to Ross MacDiarmid, CEO of the Royal Australian Mint and General Secretary of the MDC, 'as in industry we are in a period of change – even, some would say, uncertainty. Hence the slogan for MDC 2020 – *Global Challenges, New Horizons, Future Opportunities*. We will be examining these challenges and their impact on our industry, but also coming together to forge a path for coins in the future – whether as a means of transaction, a store of value, a token of national pride or an investment for future generations.'

The closing date for proposals is 31 October. More information can be found at www.mdc2020southafrica.com

20 Years of Making the Euro

20 years ago the designs for the new euro were first unveiled, ahead of the launch of the new banknotes and coins at the start of 2002. Since then there has been a design change with upgraded security, the Europa series, which began in 2013 and completed this year. The euro is now an established world currency. Although the 2019 euro production figure is 3.7 billion banknotes, down from its peak of just under 11 billion in 2009, its annual production volume remains substantial. The production, issue and management of the euro employs a significant number of people around Europe and it is an important industry in its own right.

To mark the 20-year milestone, this article charts the history of the management and procurement over the past two decades up until the present day Eurosystem of 19 countries (ie. the EU members which have adopted the euro), and the impact this has had on the supplier landscape.

Who makes the euro?

The European Central Bank (ECB) has the sole right to issue banknotes within the Eurosystem and it establishes the annual production requirement. The responsibility for supplying the ECB with those banknotes lies with the National Central Banks (NCBs) of the Eurosystem. The ECB is able to function because NCBs have lodged

capital with it in proportion to their GDP and population (the so-called capital key). The banknote requirement is assigned in line with this capital key. Although the NCBs have to pay the cost of the supply, the seignorage associated with that supply is returned to them.

The ECB sets the specification and supplies origination tools for production. It accredits suppliers of all the elements of the banknotes against laid out security, quality, environmental and health and safety standards. The standards and quality of notes produced are maintained by the ECB and the NCBs working in close collaboration.

Changing manufacturing landscape

In 2001, 11 countries were members of the Eurosystem, with eight of these having their own state printing works, owned either by the NCB (CBPW) or the government (SPW) – namely France, Italy, Greece, Austria, Ireland, Spain, Portugal, Belgium. (The distinction between whether the printworks were/are owned by the NCB or another government agency or ministry is an important one, as we will see later).

In addition, there were three private sector printers within the Eurosystem countries accredited to supply the euro (Giesecke+Devrient, Enschede and Bundesdruckerei), and one outside (De La Rue).

Today the Belgian and Irish CBPWs have ceased, or are ceasing production, as has the Dutch private printer Enschedé, while the privately-owned French printer Oberthur Fiduciaire is now an accredited supplier. Bundesdruckerei has been taken back into state ownership and in Spain, in addition to FNMT, there is a new printworks directly owned by the central bank. De La Rue has not maintained its euro accreditation and so no longer participates in tenders. On the other hand, PWPW – a state printer in another non-Eurosystem country (Poland) now has euro accreditation and does.

The situation with paper mills has also changed. For Euro Series 1, there was just one central bank-owned mill (CBPM) in France and one state-owned mill (SPM) in Spain. Both of these paper mills continue to produce, albeit with investment and changes to their legal structures, joined by PWPW and Valordicarta (a new venture between the Bank of Italy and the state-owned non-banknote printer IPZS), which have also been accredited to manufacture euro paper.

In the private sector, the qualified paper suppliers were Louisenthal, Arjowiggins Security, VHP, Fabriano, Landqart, De La Rue and Crane Currency. There have been far-reaching changes since then among these suppliers – Arjowiggins Security has gone into liquidation, while the others – with the exception of Louisenthal – are all under new ownership.

The changes in commercial paper and print manufacturing have happened for a variety of reasons, but the underlying industry challenge has been increased competition at a time of reducing volumes across the world. The causes of those are for another article. The declining euro production volumes are, of course, a part of that story.

Euro procurement: the legal structure

The ECB must comply with European Union (EU) procurement law. In the run up to the launch of the euro, the NCBs were responsible for producing the whole of their national requirement. This, whilst not compliant with that law, was allowed through a formal derogation decision in order to ensure that the launch proceeded smoothly.

For subsequent production, this changed to a decentralised pooling system, where the entire annual production requirement was pooled and each NCB allocated responsibility for producing specific denominations.

In 2004 the ECB issued a guideline that said that by 1 January 2012 a 'common Eurosystem competitive approach to tendering should apply to the procurement of euro banknotes.'

Eurosystem Countries (and Date of Joining)	CBPW/SPW	CBPM/SPM	Private Printer	Private Paper
Austria (1999)	OeBS			
Belgium (1999)				
Cyprus (2008)				
Estonia (2011)				
Finland (1999)				
France (1999)	Banque de France	Europafi	Oberthur	
Germany (1999)	Bundesdruckerei		G+D	Louisenthal
Greece (2001)	Bank of Greece			
Ireland (1999)				
Italy (1999)	Bank of Italy	Valordicarta		Fabriano
Latvia (2014)				
Lithuania (2015)				
Luxembourg (1999)				
Malta (2008)			Crane (yet to qualify)	
Netherlands (1999)				VHP
Portugal (1999)	Valora			
Slovakia (2009)				
Slovenia (2007)				
Spain (1999)	FNMT / IMBISA	FNMT		
Non Eurosystem Countries				
Poland	PWPW	PWPW		
Sweden				Crane

Following this guideline, the ECB established what was known as the Single Eurosystem Tender Procedure (SETP) with the intention that all would transition to it by 2012. Under the new system, the production allocated to those NCBs without in-house printing works, or which did not use SPWs, had to be tendered.

NCBs with in-house printing works (ie. CBPWs), or which used SPWs, could choose not to participate in the SETP, in which case their printing works continued to produce the share allocated to these NCBs, but could not produce for other Eurosystem NCBs. Alternatively, NCBs could choose to participate in the SETP, in which case their allocated share of production (as with those of NCBs without in-house printing works or which did not use SPWs) were to be tendered through the SETP. In such cases, CBPWs or SPWs were then free to tender for and produce euro banknotes for other countries. If and when such NCBs chose to participate in the SETP, however, their decision was irreversible. In the event, no central bank with a CBPW or SPW other than the Bundesbank went to tender.

Since 2004 there have been a series of new guidelines which initially delayed the deadline, then removed any timescale and, finally, introduced a new procurement process that does not require competitive tendering as envisaged in 2004. The ECB's core principles were that whatever procurement system was adopted, it must maintain:

- Continuity of supply;
- Internal know-how within the ECB;
- Foster competition;
- Reduce costs;
- Take advantage of private and public innovation.

The ECB stated in 2013 that the market had become more competitive since 2004 and there was no perceived advantage in using SETP. As a result, it was announced that a Eurosystem Production and Procurement System (EPPS) was being considered.

The new EPPS is based on two key concepts, the twin pillars of In-house NCBs and Tendering Group NCBs, and this has now been adopted.

As noted earlier, within the Eurosystem members, the ownership of print works and paper mills is not uniform, some being owned by the NCBs and some by other government institutions. This added to the complexity of creating the legal framework for the procurement of the euro in the early days, which is not covered here. The complexity carried through to SETP and to the EPPS, which addresses this with its requirements for a separate legal entity and the requirement for co-operation, which is discussed below.

What have NCBs chosen to do under the EPPS?

Prior to the establishment of the EPPS, there were already two tendering groups of NCBs who did not have their own CBPWs. In 2008 the Dutch National Bank took the lead on behalf of a number of other NCBs to set up the cooperative purchasing group JET (Joint European Tender), and the Bundesbank started tendering for its banknotes. This continues and new members of the Eurosystem have had the choice of whether to run their own tenders or to join one of these groups.

Tendering group : JET	Cyprus, Estonia, Finland, Lithuania, Luxembourg, Malta, Netherlands, Slovakia, Slovenia
Tendering group: Bundesbank	Germany, Latvia
In-house NCBs	France, Greece, Italy, Spain
In-house Group	Austria, Belgium, Portugal
TBC	Ireland

The NCBs with CBPWs, meanwhile, have split into two groups.

First are in-house NCBs. In Greece, the NCB continues to place its indent directly with its CBPW.

France, Spain and Italy have all gone a different route. The EPPS' General Principles stipulates that, if an in-house NCB with its own CBPW chooses to co-operate with other NCBs, it is required to establish a 'separate legal person' to establish control and less than 20% of its activities should be on the open market. This has led to a number of changes in the legal structures of state-owned printworks and paper mills (both central bank and government owned) in the Eurosystem.

So, for example, as reported in the January 2019 edition of Currency News, the Banque de France has set up a wholly owned subsidiary, Europafi, for the production of euro paper. In 2017 the NCBs of Austria, Ireland, Italy and Portugal took minority shares in it.

In Spain, the SPW (FNMT) is not owned by the NCB. Hence the Banco de España has created a new printworks, known as IMBISA, in which it has an 80% share.

And last month, Currency News reported on the creation of Valordicarta SPA by the Banca d'Italia to produce euro paper and holograms.

Second are in-house groups. In 2017 an ECB guideline amended (EU) 2015/280 so that 'an NCB that closes its in-house printing works may decide to remain part of the in-house group...'

Continued on page 11 >

Euro Procurement: the Legal Structure

In 2004 the ECB issued guidelines to establish a process and timeline to regularise Euro procurement. ECB/2004/18 said that from 1 Jan 2012 a 'common Eurosystem competitive approach to tendering should apply to the procurement of euro banknotes.' This was followed by ECB/2011/3 in 2011 where the Governing Council of the ECB postponed the start of the single Eurosystem tender procedure until 1 Jan 2014.

In 2013 in ECB/2013/49, the Governing Council decided the single Eurosystem would start on a date to be set by it owing to a change in the assumptions on which the expected single Eurosystem tender procedure start date had been based. Namely the market had become more competitive since 2004 and there was no perceived advantage in using the single Eurosystem tender procedure.

In 2014 the ECB issued its ECB/2014/18, guideline for the establishment of the EPPS. The Key concepts of the EPPS are the twin pillars of In-house NCBs and Tendering Group NCBs. In the General Principles laid out in Article 3, it stated, 'NCBs that do not have in-house printing works shall be part of the tendering group.' If an In-house NCB chose to co-operates with other NCBs, it was required to establish a 'separate legal person' to establish control of the In-house NCBs and that less than 20% of its activities should be on the open market. There was a further document, (EU) 2015/280 document, relating to the establishment of the EPPS.

Most recently, there was the ECB/2017/31 guideline amending (EU) 2015/280. The main change is Article 6, paragraph 3, '...an NCB that closes its in-house printing works may decide to remain part of the in-house group on condition that it participates in non-institutional cooperation on the basis of a cooperation agreement with the meaning of Article 8'.

Intergraf and Security Printing – 40 Years and Still Going Strong

The printing federation Intergraf has run security printing conferences since the 1970s – arguably making it the first in the field. The next event will take place in Copenhagen this October. *Currency News™* spoke to Beatrice Klose, Intergraf's Secretary General, about the event, how it compares with all the other events in the industry, and how Intergraf is ensuring that it remains relevant in an age of increasing digitisation of payments and secure documents.



Beatrice Klose.

Q: Can you tell us briefly about your career to date, both before and since joining Intergraf.

A: Originally from Germany, I studied Business Administration, European Studies and International Management in both German and French universities, and lived in the US and France before moving to Belgium. In 2001 I joined Intergraf in Brussels and took over as Secretary General two years later. Prior to that, I worked for Honeywell in the US and Mannesmann, a German company, in its Brussels liaison office.

Q: Please give us an overview of Intergraf – its activities and membership.

A: Intergraf is the European association representing the interests of the printing industry. Our members are European national printing federations. We work together, with the European Commission, to support the competitiveness of the sector. We do this by advocating, informing and networking. Environmental as well as standardisation and social issues lie at the heart of our day-to-day activities.

Parallel to this, Intergraf runs a security printing section that provides targeted services to the global security printing community. It is this team which organises SecurityPrinters.Banknotes+Identity, to offer security printers, suppliers and end customers a platform where they can proactively engage with the most pressing issues in the banknote and identity world today.

And, of course, Intergraf also plays a pivotal role in defining and developing standards for the industry. We set up our first CWA Certification in 2001. CWA for Suppliers followed in 2005 and eventually the ISO 14298 Standard in 2013.

Q: Intergraf at one time held the only major conference for the security printing industry. Now there are multiple conferences both regionally and globally. How have you managed to keep the Intergraf conference viable during this challenging period? What changes have you experienced?

A: Intergraf's SecurityPrinters.Banknotes+Identity has a long-standing history. We were the first to put together an event for the industry. Back in 1976 my predecessor already felt the need for more detailed discussions between security printers. The questions on the table then were mainly technical, ranging from the use of machinery to paper specifications to the application of security features, but they were clearly of relevance: over 80 delegates made the trip to Milan to attend that first conference. And this is how it all started. Then an exhibition was added to the event in 1992 and each edition now draws together 800-900 industry professionals.

The conference market has certainly grown considerably. There are other events that target the same audience, but Intergraf's SecurityPrinters stands out by remaining focused on the quality of its content. We make every effort to produce attractive agendas that are completely free of marketing talks or sales pitches.

Beyond content, Intergraf's neutrality as an organisation is reflected in the overall structure of the event. It enables us to maintain lower registration fees and, just as important, to grant central banks, ministries and law enforcement reduced fees that better match their limited budgets. For printers, as for suppliers, our exhibition is also the perfect interactive platform to launch or promote products and solutions. This, I believe, is where our strengths lie as a not-for-profit association.

As for the changes we have experienced in all these years, companies have no doubt become increasingly specialised, focusing on certain products. On the other hand, the market is now more concentrated, with ever larger international organisations emerging as a result of mergers and acquisitions.

This evolution actually reinforces our belief that producing an event that spans both banknotes and identity – two interlinked sectors – is indeed the right approach.

Q: The security printing industry is decreasing in size as digital replaces physical – eg. cheques, tickets, vouchers, and even cash are threatened. How do you equate this decline with so many conferences, and what is your own attendance experience over the years?

A: The importance that Intergraf places on hand-picking its audience cannot be overstated. We screen every single company or organisation wishing to attend SecurityPrinters in order to ascertain it truly belongs to the banknotes and identity world. There are no exceptions: everyone must provide solid references and/or product samples before they can be invited to join the conference or exhibit. This guarantees that our delegates do feel in the right company.

Attendance has been stable over the past decade and we feel that 800-900 participants is the optimal size given our objectives and the networking opportunities we aim to offer. Rather than increasing numbers, we prefer to maintain high standards.

The disruptive influence of digital technologies is felt across the two fields we cater for: banknotes and identity. And the opportunities that arise from the digital age, as well as the challenges and risks, are similar for professionals across the sector. We are therefore convinced that they can learn from each other.

Q: Content is key, so how do you go about creating the programme for the event?

A: We work with a Committee of Experts composed of senior banknote and identity professionals from the industry, central banks and law enforcement. Their combined knowledge and vast experience not only help us steer the event in the right direction but to maintain an objective and neutral approach to programme building, without missing out on any important or interesting development. Months before programme discussions start, we also issue a call for papers so that our scope remains as broad as possible.

Q: Can you elaborate on any particular themes or highlights of the conference – both in terms of the content, and also the broader event?

A: We have parallel sessions that delegates can choose from, from morning to afternoon, to gain a better overview of advances in their respective fields of interest: banknotes or/and identity.

End customers such as ministries and central banks always feature prominently in the programme. But we also take extra care to allot law enforcement enough time to report on the most recent breaches.

This time, the event will take place at the Bella Center in Copenhagen, Denmark on 23-25 October 2019, and the topics will be technical as well as market related. For example, the Banknote High Security Meeting that takes place immediately before each edition of SecurityPrinters – by invitation only – will address, among others, the trade of counterfeit money on the darknet, the challenges facing central banks with the cash cycle, substrate considerations, and recent criminal investigations.

And, judging from what we hear from our delegates, our social programme is always one of the highlights of the event. Intergraf's team goes the extra length to create the right environment to foster synergies, where delegates can keep on networking well beyond conference and exhibition hours.

Q: What do you see as the key differentiators between Intergraf (both the broader organisation and the conference itself) and other organisations and events?

A: As a neutral not-for-profit association, Intergraf is perfectly positioned to provide an unbiased, comprehensive overview of recent banknote and identity developments. We do not work with sponsors. We give all our exhibitors the same opportunities to showcase their products. And when it comes to content, the joint input of our Committee of Experts gives our audience the means to learn more about today's fast-changing global security printing market. As a result, they can, for instance, see how security features are migrating from one field to another.

In addition, our day-to-day work with the European Commission in Brussels, where we represent the interests of the commercial printing industry, keeps us at the forefront of legislative development in the field of security printing products.

Q: Do you envisage the day when there will be virtually no security printing?

A: From my experience within commercial printing, it seems rather difficult to imagine. The notion of a paperless office was first introduced in the late 1970s – 40 years down the line, we are using more paper than we did back then.

Of course, we all want to make the best use of new technologies. And they do, more often than not, simplify accessing or help managing data. However, two major risks immediately spring to mind: data can be hacked and natural or man-made disasters can result in power cuts. As long as such risks cannot be completely eliminated, physical products will still be needed to safeguard a country's economy, its borders and domestic security.

Q: How is Intergraf gearing up for an increasingly digital future – both in value and ID documents? Do you see opportunities here and, if so, what?

A: SecurityPrinters has come a long way since its inception over 40 years ago. It has evolved in line with the needs of its audience and it will continue to do so.

Digital solutions for print products are widely used in the commercial printing world. They are on offer from most printers globally. It is very clear to us all at Intergraf that security printing is equally preparing for a digital future and digital topics are very much on our agenda. Covering both banknotes and identity gives us the edge because both segments of the sector are up against similar risks and challenges.

Futurist Rohit Talwar, our keynote speaker, in fact sees both identity and money as cornerstones of our life in the 21st century. He will explore this in his Copenhagen address and will explain how the digital domain is transforming our notions of both.

Q: Where do you see the security printing industry in 10 and 20 years' time?

A: Cash is virtually irreplaceable. It is a public good, issued for the benefits of a country's citizens. Unlike privately-owned digital payment networks, cash makes payments possible independently of any third party.

Digital options will no doubt be more commonly used in the near future, for both payment and identification. However, they will not exist alone. Just like gold is always a safe haven in times of economic crisis or uncertainty, banknotes and physical identity documents will remain essential pillars of a country's economic wealth and security.

Making the Euro

(Continued)

When Belgium closed its CBPW it chose this option, and so Austria and Portugal have joined with Belgium to amalgamate their euro indent and to allocate production between the two CBPWs without having to tender. It is thought, although yet to be confirmed, that Ireland may join this group.

The implications of the EPPS for banknote paper and print production

When in 2014 the ECB, while meeting the requirements of EU procurement law, suggested the EPPS, it was based on five core principles. Reducing costs and encouraging competition were only two of those five. Since then euro volumes have fallen steadily to less than half the annual long term average and other market forces and changes have reduced the number of both state and commercial suppliers. At the same time there has been significant capital investment in some CBPWs and CBPMs, and new partnerships amongst NCBs.

It will be interesting to see whether the goals of the EPPS are achieved satisfactorily for all stakeholders as cash usage and market dynamics change in the years ahead.

Euro Production Volumes Post-Launch	
YEAR	VOLUME (MILLIONS)
2019	3,378.00
2018	3,989.90
2017	5,723.00
2016	6,217.00
2015	6,000.00
2014	8,345.00
2013	8,000.00
2012	8,456.87
2011	6,017.90
2010	7,148.00
2009	10,941.41
2008	6,445.20
2007	6,300.00
2006	7,000.00
2005	3,630.00
2004	1,570.00
2003	3,092.00
2002	4,780.00
2001 Launch	

Americas Cash Cycle – A Revolution in Boston

From legislating financial inclusion to engineering efficiency in the cash cycle, and from cash handling at retail level to sustainability in the banknote industry, the 2019 Americas Cash Cycle Seminar (ICCOS) will tackle a diverse group of topics in Boston from November 12–15, 2019.

The speaker lineup on the main stage includes experts from the Federal Reserve, G+D Currency Technology, PlanFocus, Suretraxx Cash Management Systems, MIT's Digital Currency Center, Armorsafe, Glory, Cassida, CIMA, Lowers Risk Group, and more.

After a successful track and trace pilot this past year, the Federal Reserve Cash Product Office, Davis Bancorp, and Suretraxx Cash Management Systems will demonstrate the program and share efficiencies gained in a pre-seminar workshop titled 'Implementing Cash Visibility: How Track & Trace Can Add Efficiencies to the Cash Cycle'.

The 'Digital Payments for Cash Professionals' workshop offered by Currency Research (CR) will also take place in advance of the main seminar. It will cover developments in the digital payments sector – and why these developments matter for cash operations, whether in retail, banking, or CIT operations.

An addition to the program will be the inaugural 'Latin America Day' devoted to regional presentations, discussions, networking, and solutions exploration for the Latin American region. The program will be conducted in Spanish and led by Santander and Currency Research.

Growing group for Sri Lanka

Meanwhile, CR has stated the list of those signed up for the Asia Cash Cycle Seminar, which takes place 23-26 September in Sri Lanka, is growing.

CR's Vice President Operations, Dan Harrison, who recently returned from a second visit to Sri Lanka, states: 'Colombo is vibrant, busy, safe and back to normal. The Central Bank of Sri Lanka and the local cash community are eager to welcome their international colleagues. Sri Lanka has put in place security measures to safeguard its visitors, and the beautiful country will be sure to give you the warmest of welcomes.'

Visit asia.iccos.com and americas.iccos.com for more information.

Readable Polymer Substrate *(Continued)*

Spectra is already a known and proven supplier to the banknote industry, supplying its central bank level 3 taggants for cotton substrate banknotes through a major banknote printing company which has 19 central banks as customers with Spectra supplying one directly. Spectra also supplies phosphors to several companies for use in security threads and banknote inks.

It has also tackled the problem of soiled banknotes by developing the world's first banknote cleaning technology called *Aeris™*. This technology can remove oils and other contaminants from banknotes in circulation, protecting processing staff from hazardous contaminants and extending the life of banknotes, which, it claims, can save central banks up to \$10 billion dollars annually.

Spectra's CEO, Dr Nabil Lawandy, says that the driver behind this new secure polymer development is the increasing use of polymer globally.

Until the current decade, polymer substrates were primarily adopted for their increased wear resistance and consequent longer life, and hence their use was mostly restricted to lower and mid denominations. However, once CCL Secure invited the banknote industry's security feature suppliers to cooperate with it to develop security features specifically for its polymer substrate (*Guardian®*), the emphasis changed to security as well as durability.

Canada was the first country to take this dual approach with its new Frontiers series, issued from 2011. The success of the series led to the adoption of polymer by the Bank of England and the entrance of a second polymer supplier – De La Rue.

All of these developments have led to other new series of notes produced on its increased adoption as a substrate. The one type of security feature that polymer lacked however, was a central bank, machine readable, level 3 feature – which Spectra recognised as both a weakness and an opportunity.

It has now developed a secure polymer substrate aimed at solving this problem through cooperation with the aforementioned supplier of BOPP. Specifically Spectra wanted its partner to be USA based (it itself is based in Providence, Rhode Island) and technology driven to ensure a close like-minded working relationship. This was necessary because, according to Dr Lawandy, 'polymer cannot simply be impregnated' and much development work was involved in creating a polymer where the security taggant is located in the actual primary layer of polymer.

The partnership and supply agreement will give Spectra the capacity to supply more than 2 billion notes per year immediately, with volumes as high as 10 billion banknotes per year subsequently. This is the first time Spectra will market its products – the polymer and the sensors – directly in the banknote market. It will also provide a service for the sensors.

The level 3 polymer technology has been fully production qualified and sensors have been developed which operate at speeds of 15m/second, 50% faster than the fastest transports currently available and well in excess of 120,000 notes per hour, which is standard for the large banknote sorting machines used by central banks.

The sensors are designed to last 20 years, and under testing have been shown to have a false reject rate as low as 1 in 100,000. The company has the capability to create a number of specific covert signatures for different central bank customers – initially around six are available, with another four ready by the end of 2020.

Dr Lawandy commented that 'we are extremely pleased to have formed a long term partnership with a major multinational supplier of high performance BOPP to bring disruptive new capabilities to the industry and extend our revenue generation potential by combining our core competence in covert security with polymer substrates. We have created a secure supply chain which can provide substrate with or without opacity and anti-static layers, and will be featuring this technology at the upcoming Banknote 2020 conference in Washington DC.'

Sound of Intaglio™ – 21st Century Intaglio Authentication

Intaglio print has been one of the foundations of banknote security for over 160 years. While the unique feel of intaglio print and the intaglio-printed banknote facilitates public recognition, it could until now only be used for machine detection by the addition of special additives, or taggants.

In the mid-2000's KBA-NotaSys (KBA) and the Institute for Industrial Information Technology (inlT) of the Ostwestfalen-Lippe (OWL) University of Applied Sciences began a research programme to determine how to use the inherent characteristics of intaglio print for machine authentication.

The 3D characteristics of intaglio have proven difficult if not impossible to measure for authentication purposes. Instead the research focussed on the spatial frequency characteristics of the intaglio print structures, reminiscent of those on a vinyl record. On a record, the edges of the grooves encode the musical signal. The research demonstrated early on that the structures created by intaglio could be identified, classified, and used for authentication.

This is why KBA called the resulting patented method the *Sound of Intaglio™*. There are no additives or taggants, no special sensors, the method simply analyses the 2D images of the intaglio print.

The Sound of Intaglio method uses state of the art wavelet transform. These highly efficient digital filters allow fast analysis of the images and reduction to the essence of the sharpness, opacity and high contrast of intaglio structures. High-frequency details in the image are distributed over the entire intaglio-printed area of the banknote. Wavelet coefficients resulting from the transform then allow the reliable and robust classification of intaglio where it is present, as no other commercially available print method results in such high-frequency details as those of intaglio print.

Importantly, Sound of Intaglio does not need any data for comparison but works autonomously. As a result, there is no need for external connections, to a database, local or remote. Sound of Intaglio works on all existing intaglio structures without the need to re-design the banknote or modify Sound of Intaglio.

At the Banknote 2018 conference in Dallas, coverno showed a concept for a forensic analysis device (coverno was established as a joint venture at the beginning of 2017 to industrialise and commercialise the results of the Sound of Intaglio research program). This has been developed into the first commercially available device utilising Sound of Intaglio. The *Document Analysis and Classification System* (DACS) is a stand-alone laboratory standard device for analysis, description and classification of banknote counterfeits. An advanced touch screen operated user interface controls the process, and report data can be output for recording and evidentiary use. The system enables the classification of counterfeits through a comparative process. This is manual at present, but there is on-going development to automate this, and add other enhanced capabilities.

KBA's research and development program has focussed on the fact that Sound of Intaglio is scalable. While at the DACS level it uses high-resolution image acquisition, the research has demonstrated an algorithm providing meaningful classification at considerably lower resolution. Integration to a standard POS device is on-going with a leading banknote equipment manufacturer.

KBA is working on further applications for Sound of Intaglio. And it has stated that it welcomes any opportunity to work with partners in the banknote industry to bring this innovative new approach to banknote authentication that uses intaglio as a central security feature now and into the future.

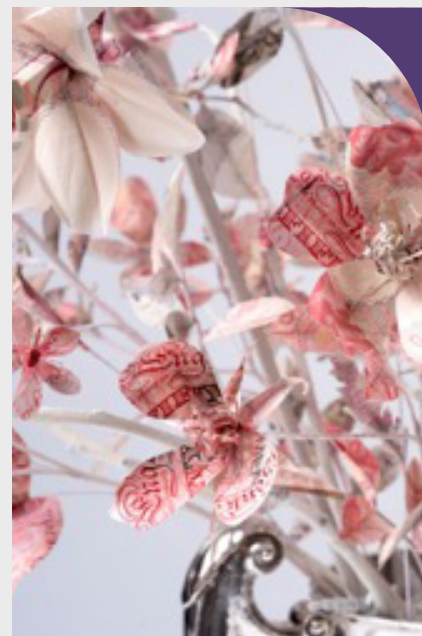


coverno's first commercially available device utilising Sound of Intaglio™: the Document Analysis and Classification System (DACS).

Blooming Marvellous

They say that 'money doesn't grow on trees', and that there is no such thing as the 'magic money' tree.

But this artwork proves otherwise!



'Specimen Florae Britanniae' was commissioned from the artist Justine Smith by the Bank of England as part of the exhibition it is holding at its museum to celebrate its 325th anniversary. Entitled '325 Objects, 325 Years', the exhibit displays 325 objects from the bank's archives, ranging from Roman relics to a nuclear fall-out calculator from the Cold War, all exploring how money and the way we pay for things has transformed since the Bank of England was established in 1694.

The delicate botanical sculpture is made from steel, real twigs and genuine Bank of England £50 series E notes that were marked for destruction because they were an old design or uncirculated test notes. The notes were issued in 1994 and withdrawn from circulation in 2014.

The artist used the notes to create a range of wild British plants. The bouquet is held in a silver water jug made by silversmith Anthony Nelme in 1694, which forms part of the Bank's permanent collection.

The exhibition runs until 29 May, 2020.

IACA Finalists for 2019 IACA Coin Awards

The finalists for the IACA Excellence in Currency Coin Awards have been announced. IACA members will now vote for the winners, who will be announced in Rome on 15 October at the Coin Conference.

The finalists are as follow:

Best New Circulating Coin or Coin Series

- **Bangko Sentral ng Pilipinas:** for the New Generation Currency coin series – comprising 10 piso, 5 piso, 1 piso, 25 sentimo, 5 sentimo and 1 sentimo coins.



- **Central Bank of Mauritania/La Monnaie de Paris:** for the large denomination 20 ouguiya coin, which is the world's only circulating tricolour coin.
- **United States Mint:** for the 'W' Quarter-Dollar Circulating Coin. As part of National Coin Week, the United States Mint launched a limited amount quarter-dollars with a 'W' mint mark (for the West Point Mint) into circulation.



Best New Circulating Coin Related Public Education Program, Website or App

- **Reserve Bank of New Zealand:** for the Armistice Day Coin Public Awareness Campaign – the Armistice Day Coin launched with an innovative campaign which invited people to 'SPEND IT. KEEP IT. REMEMBER.' The campaign also had a strong educational component.



- **Bangko Sentral ng Pilipinas:** for the Coin-Ed Program for the new Philippine coins – which utilised multiple communication channels to disseminate information aimed at increasing awareness and promoting engagement in the recirculation and proper use of the coins.
- **United States Mint HIP Pocket Change Website:** the website for kids offers a variety of educational games that may be played by children or incorporated in lesson plans by educators.

Best New Coin Product, Feature or Distribution Innovation

- **Royal Canadian Mint:** Tri-Metal Security Test Token, which is made from three metallic pieces comprising one metal ring and two inserts, each of which is approximately half the thickness of the outer ring. This novel geometry results in a coin with two different metals on each side and allows for an increased level of security at a cost-effective price.



- **The Singapore Mint Coin Visual Inspection Machine:** this is able to differentiate coins of the same specifications, but of different designs/visual features/condition/surface finishing. The machine seeks to serve two key purposes: 1) to sieve through coins which are acceptable for re-circulation and 2) to differentiate coins of the same specifications, but of different designs.
- **The Singapore Mint:** for Coin Recirculation via Integrated Coin Processing and Management, specifically the promotion of coin recirculation in Singapore via the introduction of coin deposit machines to the public and banks, on a 24/7 self-service basis. Recycling of coins is the process where by coins are returned to the banks, sorted and repacked before being issued to the banks again for re-circulation.

Best New Commemorative or Test Circulating Coin Issued at Face Value

- **Reserve Bank of New Zealand:** **Armistice Day coin:** the Armistice Day Coin is the second in a two-coin series produced by the Reserve Bank to mark the centenary of World War 1 (see image left). The coin's standout feature is the use of colour. After striking, a computer controlled high-speed colour pad printer added the ink which was cured by passing the coins through a furnace.
- **South African Reserve Bank:** for the Nelson Mandela R5 commemorative coin, which was used as an opportunity to invest in new development and manufacturing technology. This enabled SARB to explore new features such as a latent image which is visible on the reverse of the coin, whereby '1918' changes to '2018' when the coin is tilted.



- **People's Bank of China/China Banknote Printing and Minting Corporation:** for China's High-speed Railway commemorative circulating coin. New features include multi-layer sand blasting and mirror field treatment; information security technology by recognizing the micro-text, latent image and laser dot matrix together; an opening window to show the edge of the coin and a burnishing process optimized to solve the most typical surface defects, such as fog-like defect on the core-ring jointing area.

This is the fourth series of the awards, the previous three having been presented at the Coin Conferences in 2013, 2015 and 2017 respectively. Sponsored by *Currency News™* and run by IACA, they are designed to promote and recognise excellence in the industry.

The finalists for the 2019 awards were selected by a panel of seven industry experts including Alan Boaden (formerly of Reserve Bank New Zealand), Jon Cameron (formerly of the US Mint), David Tidmarsh (Currency News), along with Richard Wall (formerly of Bank of Canada), Brian Lang, Tom Ferguson and Eugenie Foster from IACA.

2nd New Series for the Gambia

Gambia's new banknotes, the second new series in four years, has now gone into circulation – having first been presented by the Central Bank of the Gambia to the President, Adama Barrow.

The main feature of the new notes is the absence of the portrait of former President Yahya Jammeh, which appeared on the new series issued in 2015. A year later he was ousted, and went into exile in 2017. That series was withdrawn in early 2018 and replaced with a reprint of the prior series pending the design and production of this new family of notes.

In place of the portrait, the main features on the new notes are native birds. Other design features are based on the country's flora and fauna, along with historical sites. They are denominated in 5, 10, 20, 50, 100 and 200 dalasi.

The old 25 dalasi which was part of the last-but-one series, has not been replaced, while the 200 dalasi, which made its debut in 2015, has been retained (although has not yet been issued).



In other news...

● Ulster Bank, one of Northern Ireland's four (soon to be three) note issuing banks, has unveiled the design of its new £20, which will go into circulation next year.

The note, which will be produced on polymer, includes images of street entertainment and skeletons inspired by Halloween celebrations in Derry (the second largest city in the province), bricks and tiles used in many of Northern Ireland's public building, an outline of Lough (Lake) Neath and a picture of its famous eels.



The star of the hit television series *Derry Girls*, Jamie-Lee O'Donnell, helping to launch the design of the new note in Derry with (left) Terry Robb, Ulster Bank's Head of Personal Banking and (right) Chris McGuinness, local Director.

● The East Caribbean Central Bank has now issued the \$100 and \$20 polymer banknotes in its new series. The \$50 was issued in June. The \$10 is expected to be released in September/October and the final note in the series, the \$5, next August or September.



● The Iranian government has approved plans to revalue the rial by removing four zeros and to revert to the currency's old name, the toman.

The bill was presented by the Central Bank of Iran to the government in January. Now that it has been approved, it will go before the country's parliament for voting and final approval by the Guardian Council before it goes into law.

Although Iran has been weighing up plans to revalue the currency for several years, these have recently gained traction after the rial lost more than 60% of its value in 2018. According to local reports, the decision was made to 'maintain the efficiency of the national currency and facilitate and restore the role of cash instruments in domestic monetary transactions'.

The return to the name toman – in use until the 1930s – does away with a dual system which many visitors to Iran find confusing. While the rial is the official name, many Iranians still make their calculations in toman. The new toman will be divided into 100 rials – a tenfold redenomination of the current toman which is divided into 10 rials.

Iran's banknotes are currently denominated from 1,000 to 100,000 rials. Iran 'cheques' are also issued in denominations of 500,000 and 1,000,000 rials, which circulate freely and are treated as cash. There are currently around 7 billion notes in circulation, with an annual replacement of 700 million per year.

● The Reserve Bank of Australia has announced the new A\$20 banknote will be released into general circulation on 9 October. More than 170 million A\$20 notes are currently in circulation, around 10% of the total. The new note will be the fourth in the Next Generation series, with the final note, the new A\$100, due to be issued next year.

● The National Bank of Romania will issue a new 20 lei banknote in 2020, featuring Ecaterina Teodoroiu, a fallen heroine of the 1st World War. According to the Bank, the choice of portrait has double meaning. First, it backs efforts for gender equality. And second, it marks the 100th anniversary of the Great Union (of Romania, Transylvania, Bessarabia, and Bukovina) which followed the war.

The new banknote will bring the number of denominations of Romanian banknotes to ten, ranging from 1 to 500 lei.

● Bank Al-Maghrib will issue a new 20 dirham polymer banknote in September to commemorate the 20th anniversary of King Mohammed VI's accession to the throne. Designed and produced by Dar As-Sikkah, it will be the first Moroccan polymer banknote, and will be issued in limited quantities.



The front has the portrait of the King, while on the reverse are representations of some of the most significant projects completed during his reign, including the Mohammed VI Bridge, the Mohammed VI satellite, and the Al Boraq high speed rail line.

IN Groupe in Negotiations to Buy SURYS

IN Groupe (formerly known as Imprimerie Nationale), a French state-owned specialist in secure documents and identity, has announced that it has entered into exclusive negotiations with the shareholders of the hologram and anti-counterfeiting solutions specialist SURYS for its acquisition.

SURYS, formerly known as Hologram Industries (HI), was founded by entrepreneur Hugues Souparis (its President) in 1985 as a private company. It had sales in 2018 of €92.8 million and over 400 employees and facilities in France, Germany, the Netherlands and the US, with sales offices in Poland and Dubai.

It specialises in security solutions based on optical and digital sciences, and is the developer of such features as the *Alphagram*™ (a demetallised diffractive device used on the first euro series), *DID*™ (a unique colour permutation technology used on banknotes for the Philippines and Poland), and the *Plasmogram*™, an optically variable feature based on surface plasmons for use in windows.

IN GROUPE is owned by the French government through the State Investment Agency (APE) and had sales in 2018 of €314.2 million. The company has 1,000 employees, four sites in France and eight business premises throughout the world, with sales in 77 countries. Its principal focus is on identity solutions.

Earlier this year, it signed an agreement with the Nepalese government to build a new security printing facility outside Kathmandu, although this has now been put on hold following the submission of a competing bid from Germany.

Subject to usual regulatory conditions, including consultation with the works councils of both groups, the transaction is expected to close by the end of 2019.

According to IN Groupe, it wants to acquire SURYS' technology for the secure components for its activities in securities, identity and banking, for its biometric solutions, and to complete its digital identity and traceability offers, with the objective of 'consolidating the maintenance of a French sector for the benefit of French identity documents.'

CURRENCY NEWS™

Publisher: Currency Publications Ltd
(a Reconnaissance / Currency Research company)

Editor: Astrid Mitchell (right)

Editorial Advisors: Richard Haycock, Martyn White

Advisors: Maarten Brouwer, Mark Crickett, Tom Ferguson, Eugenie Foster, Lahcen Hadouni, James Hussey, Brian Lang, Raul Sierra

Contributors: David Tidmarsh, John Winchcombe



Annual subscription rate: £1,045 *plus postage*
(also includes *Mint News Quarterly*, the *Currencies of the World* database and *Currency News & Payment Weekly*)

Ask about multiple/corporate subscriptions.

The editorial team welcomes your news, contributions and comments.

Please send these to info@currency-news.com

10 Windmill Business Village, Brooklands Close, Sunbury, TW16 7DY, UK

Tel: +44 (0)1932 267 232; Fax: +44 (0)1932 780 790 www.currency-news.com

Charter Subscribers



No part of this publication may be reproduced, stored in a retrieval system or translated in any form or by any means – electronic, mechanical, photocopying, recording or otherwise – without the prior permission of the publishers.

While every effort has been made to check the information given in this publication, the publishers cannot accept any responsibility for any loss or damage arising out of, or caused by the use of, such information. Opinions expressed in Currency News are those of the individual authors and not necessarily those of the publisher.

COPYRIGHT 2019. ALL RIGHTS RESERVED

ISSN 2516-6336

Events

23–26 SEPTEMBER 2019

ASIA CASH CYCLE SEMINAR

Colombo, Sri Lanka

www.asia.iccos.com

14-16 OCTOBER 2019

THE COIN CONFERENCE

Rome, Italy

www.thecoinconference.com

23-25 OCTOBER 2019

INTEGRAF SECURITY PRINTERS CONFERENCE

Copenhagen, Denmark

www.securityprinters.org

12–15 NOVEMBER 2019

AMERICAS CASH CYCLE SEMINAR (ICCOS)

Boston, Massachusetts

www.americas.iccos.com

25–27 NOVEMBER 2019

HIGH SECURITY PRINTING ASIA

Yokohama, Japan

www.hsp-asia.com

Our printer Colyer Group is ISO:14001 certified for environmental standards, and also FSC® Forestry certified – ensuring all our media comes from responsible sources.



FSC

www.fsc.org

MIX

Paper from responsible sources

FSC® C022282