Week in review 2016

Sibos Issues

The official daily newspaper of Sibos 2016 Geneva I 26-29 September

sibos

WRAP-UP EDITION

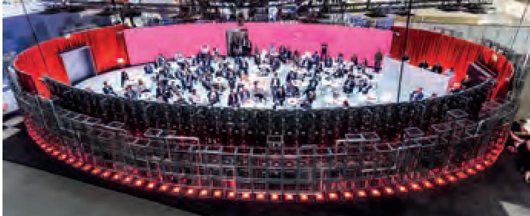
"The concept of money is changing" page 7

Lessons learned on the long road to recovery page 10

United in the fight against cyber-attacks page 13

Seizing the cognitive opportunity page 18

Get ready for the fourth industrial revolution page 21



TORONTO
16 - 19 Oct 2017

Sibos is the premier annual event for the financial services community. The conference and exhibition are organised by SWIFT, and facilitate debate, networking and collaboration around the future of payments, securities, cash management, trade and financial crime compliance.

For one week every year, Sibos connects some 8,000 business leaders, decision makers and thought leaders from financial institutions, market infrastructures, multinational corporations and technology partners.

Sibos takes place in Toronto in 2017 as Canada celebrates its 150th anniversary.

For more information please visit www.sibos.com

@Sibos, #Sibos linkedin.com/company/Sibos

A landscape transformed

Dear Sibos 2016 delegates

Welcome to the wrap-up edition of Sibos Issues, which aims to provide Sibos 2016 delegates with a comprehensive and contextualised review of a fascinating and informative week at Geneva's Palexpo.

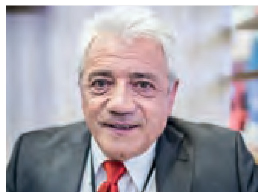
Our theme for this year's Sibos – 'transforming the landscape' – was reflected across the conference sessions and in the exhibition hall as the industry came together to discuss and learn more about the many changes that are transforming banking and financial services.

Technology is the driver of many of these changes – as reflected in the high profile of cyber-security, cognitive systems and artificial intelligence, and disruptive technologies such as distributed ledgers, throughout Sibos 2016. But innovations in technology have been accompanied by changes in the wider society we serve, as highlighted in sessions on the user experience, diversity and inclusion, and working with FinTechs and Millennials in the Culture stream, an innovation of our own for 2016. Shifts in technology and customer demand were not confined to dedicated sessions of course – the Banking, Securities and Compliance streams all explored the scope for technology to bring new efficiencies to service providers and / or customer value to end-users.

But the transformation process is far from complete – neither for the industry, nor for Sibos itself. Geneva may have been the second largest Sibos, but we continue to work hard to improve and renew the conference in order to meet and exceed your evolving expectations. Both through this review of the key points of discussion at Sibos 2016 and through our plans for Sibos 2017 in Toronto, we hope to help you succeed in this transformed landscape.

Best wishes
Sven Bossu,
head of Sibos

Publisher: Sven Bossu, SWIFT ■ **Managing editor**: Alan Rowan, SWIFT
■ Sibos Issues is written and produced by Strategic Insight on behalf of SWIFT ■
Advertising contact: Stephanie Gerniers, SWIFT; stephanie.gerniers@swift.com; +32 2 655 4734
■ Printed by Innovative Print Solutions Pte Ltd
Legal notice: SWIFT © 2016 ■ Reproduction is authorised with acknowledgement of source. All other rights reserved
■ SWIFT, the SWIFT logo, Sibos, Accord, SWIFTReady, and SWIFTNet are registered trademarks of SWIFT.
Photographs feature SWIFT employees, customers and partners.



CONTENTS

PUBLISHER'S LETTER
A landscape transformed
page 1

OPENING PLENARY
Moving with the times
page 4

FUTURE OF MONEY
"The concept of money is changing"
page 7

FINANCIAL STABILITY
Lessons learned on the long road to recovery
page 10

CYBER-SECURITY
United in the fight against cyber-attacks
page 13

COGNITIVE BANKING
Seizing the cognitive opportunity
page 18

DISRUPTIVE TECHNOLOGY
Get ready for the fourth industrial revolution
page 21

STANDARDS FORUM
Singing from the same songbook
page 25

INNOTRIBE
Renaissance, not revolution
page 28

BANKING
Age of renewal
page 32

SECURITIES
Building momentum for change
page 36

COMPLIANCE
Stronger together
page 39

CULTURE
Keeping up with the customer
page 43

DISTRIBUTED LEDGERS
From theory to practice
page 46

CLOSING PLENARY
Pushing the limits of the possible
page 50

GAME CHANGERS
Mastering the mega-shifts
page 53

Value.

From our headline. To your bottom-line.

Saving you money. Or making you money. Either way, you win.

This is the way we look at how we bring you value.

Through creating Advanced Services that let you reduce your cost base. Significantly. And sustainably.

Through compliance services that reduce your exposure. But not your visibility.

And through services that improve efficiencies and margins for you. All of which go straight to your bottom-line.

Solutions for the future. Now.

Securities Services

To find out more about our Advanced Services, call +41 58 399 4140.

Moving with the times

Switzerland's most senior central banker opened Sibos 2016 by urging delegates to understand both the risks and opportunities of innovation.

The financial services sector is experiencing a surge of innovation, with artificial intelligence, machine learning and distributed ledger technologies set to transform the way banks do business with their clients.

Throughout Sibos 2016, the banking community debated the merits of these new technologies and the efficiencies and cost savings they could bring in the settlement and safekeeping of securities and the delivery of payments services. For some, there is a tendency to view these new technologies as wholesale replacements for existing payment and securities market infrastructures. However, in his opening plenary speech, Thomas Jordan, chairman of the governing board of the Swiss National Bank (SNB), outlined a hybrid scenario in which securities-specific information flows and exchanges could be handled by newer technologies, such as distributed ledger, whilst the payment leg settled using traditional, centralised payment systems.

As one would expect from someone with global as well as local responsibilities for market stability, Jordan also considered innovation from the perspective of systemic risk and supervisory oversight. Newer, disruptive technologies may promise to deliver greater cost savings and efficiencies across all areas of transaction banking, but how should regulators and central banks view these technologies? Is the threat of disruption created by FinTech confined to commercial banks or are central banks and the market infrastructures they govern also likely to be impacted?

I do not believe decentralisation will become the new normal in all financial market infrastructures.

Thomas Jordan, chairman of the governing board, Swiss National Bank

No paradigm shift

Safety and efficiency go hand in hand with centralisation, observed Jordan, or at least that has been the experience of the financial markets to date. Centralisation has been a consistent theme throughout the development of existing financial

market infrastructures, from the spread of clearing houses through to centralised data processing and payment systems like Swiss Interbank Clearing, and more recent market infrastructure developments, such as the post-crisis move to settlement of OTC derivatives trades via central counterparties.

But will new technologies like distributed ledger, which is decentralised by nature, turn the centralisation paradigm in financial services on its head? Jordan, who is also a member of the steering committee of the Financial Stability Board, which monitors vulnerabilities in the global financial system, reminded delegates that a lot of what new technologies promised, had not yet been delivered in terms of real-world applications.

"I do not believe decentralisation will become the new normal in all financial market infrastructures," said Jordan, "as many existing financial infrastructures are already very competitive." The centralised model had already met high safety standards, continued Jordan, whilst newer technologies had yet to outperform the existing set-up in terms of safety and efficiency.

> **The challenge for regulators and central banks is to make sure they fully understand the effects of new mechanisms at an early stage.**
>
> **Thomas Jordan,** chairman of the governing board, Swiss National Bank

Stability, resilience, availability

Allowing for the potential of technology innovation to improve established processes, central banks and other market supervisory bodies must ensure the stability, resilience and availability of existing financial mechanisms, he said, whilst also ensuring new architectures comply with existing regulations. For the SNB, this requires a balance between maintaining stability and promoting innovation.

"The challenge for regulators and central banks is to make sure they fully understand the effects – and side effects – of these new mechanisms at an early stage," stated

TOGETHER WE FIND
THE RIGHT SOLUTIONS
TO SUPPORT YOUR BUSINESS

GLOBAL TRANSACTION BANKING & SECURITIES SERVICES

MEET US NEXT YEAR
AT SIBOS IN TORONTO

SIBOS.SOCIETEGENERALE.COM

BUILDING TEAM SPIRIT
TOGETHER

Societe Generale is a French credit institution authorised and supervised by ECB and ACPR and regulated by the AMF. This material has been prepared solely for information purposes and does not constitute an offer. Not all products and services offered by Societe Generale are available in all jurisdictions.© 2016 Société Générale. ©Patrick Derewiany – FF GROUP

Jordan. "The same goes for innovations affecting financial market infrastructures – especially those that are systemically important."

Post-crisis reforms have given financial market infrastructures new responsibilities that have required operational and governance changes to ensure robustness and resilience, as outlined in the Principles for Financial Market Infrastructures, the global framework issued in 2012 by Committee on Payments and Market Infrastructures and International Organization of Securities Commissions. Nevertheless, regulatory adjustments may be needed to catalyse the positive effects of certain innovations, stated Jordan.

As well as monitoring their impact on financial market systemic stability, central banks also have an interest in leveraging the efficiencies promised by newer technologies. Jordan referenced the current debate on the issuance of central bank money via a distributed ledger. "The SNB is following and analysing benefits in this arena closely," he said, "and is actively involved in discussions with market participants, regulators and other central banks."

Exploring the opportunities provided by new technologies and new players should not overshadow the important, if less spectacular, work carried out by incumbent providers to incrementally improve services to customers. Jordan was keen to highlight that traditional financial services could also be classed as innovative. The digitisation of payment transactions, for instance, had helped make cashless payments cheaper and simpler for customers – even if greater efficiency gains could still be made in areas such as cross-border payments. The advent of dematerialised securities, which increased the efficiency of securities settlement and safekeeping, was another example of innovation within the financial industry, he said.

Digital transformation

Alluding to the current wave of digital transformation taking place in the financial services sector, Jordan said it was already adding value, enabling bank customers to execute transactions with greater ease, flexibility and independence. "Such useful innovations," said Jordan, "have the potential to improve aggregate economic welfare." The growth of mobile banking on smartphones and other devices is not only reducing the friction of financial transactions, enabling greater transparency and control for existing clients, but has the potential to widen financial inclusion to new communities of customers, as evidenced in a number of sessions in the Culture stream of Sibos 2016 in Geneva.

Speaking in one of its two international finance hubs, Jordan also outlined the role Switzerland continues to play in financial innovation. Sibos 2016's host country is among the top performers in the global innovation rankings, he told delegates, pointing to the number of ATMs where money can be withdrawn using a smartphone instead of a card. 'Crypto Valley' itself may not be marked on any map of Switzerland, but in the central canton of Zug, the FinTech cluster goes by that name. Jordan said Zug was piloting a project enabling public services to be paid for using a cryptocurrency. The Swiss Financial Market Supervisory Authority is also looking at lowering the barriers to market entry for FinTech companies, whilst access to the Swiss Interbank Clearing system could be opened up in future to new market participants.

Innovations have the potential to improve aggregate economic welfare.

Thomas Jordan, chairman of the governing board, Swiss National Bank

The focus of central banks on systemic stability means they are more readily associated with conservatism than innovation. But Jordan pointed out that sometimes the goal of economic and financial stability requires new, untried ideas. After all, he pointed out, the SNB – alongside other central banks – had developed new monetary policy instruments in response to recent macro-economic conditions and was also shaping the strategic direction of certain functions within financial market infrastructures, for example the retail and interbank payments clearing system run by SIX Group, the Swiss market infrastructure provider. Jordan pointed out that both monetary policy implementation and the development of cashless payment systems contributed to the overall stability of the financial system.

Core responsibilities

New technologies are paving the way for new financial services and there is no question that there are some thought-provoking innovations on the horizon. However, the presence of senior central bankers like Jordan at Sibos served as a reminder that – however enthusiastically new technologies are greeted – industry exuberance will be tempered by regulators charged with responsibility for safety and stability. Despite the technological transformation currently taking place, Jordan anticipates that many of the financial industry's core roles will remain. "The economic function of the financial industry has not changed," he said.

Customers will still require banks to provide essential services such as safekeeping of securities, funding for new investments, payment execution services and asset protection strategies. They have long required these basic services, and they will continue to need them in the future, said Jordan. In this important time of technological transformation, the need for central banks to maintain stability and continuity remains constant. ■

"The concept of money is changing"

Technology can only deliver better financial services if concepts of access, ownership, trust and identity are revisited and updated.

There's a future for money that puts the financial services industry right at the heart of everything. And another in which we're all completely irrelevant. If we want to get to the bank-friendly future, we have to start challenging our assumptions – now.

"Money today works for everybody, rich or poor. When we talk about the future, we make an assumption of access. But for everybody who's on the internet, there's somebody not on the internet," Carlos Menendez, president, enterprise partnerships at Mastercard, told the 1,000-plus delegates attending this year's 'Future of Money' session in the plenary room at Palexpo. Money today works, and because it works, it can be resistant to change, panellists observed. The further issue is that money today is not a fit platform for all the tech-enabled services, cost savings and efficiencies that the financial services industry could deliver to a networked world.

We could do so much, but today's money-users are either happy with the status quo, or they can't connect to the future, or both. The first challenge, then, is not just to evolve our service provision, nor merely keep pace with emerging technologies, but to ensure that what we offer tomorrow is as readily accessible – and easily acceptable – to the customer as today's cash. Money has to fit into the human world, and it has to remain simple.

Not so simple?

Keeping it simple is a challenge when we are anticipating disruption to the financial services industry (and many others) from the internet of things (IoT), which will effectively link everything to everything else via the internet. This will impact our homes as well as our work. "I shouldn't have to be a system administrator to live

> **We are going to have to rethink the notion of ownership.**
>
> **Udayan Goyal,** founding partner, Anthemis Group

Technology brings trust.

Jon Stein, CEO and founder, Betterment

in my own home," said Amber Case, cyborg anthropologist at CaseOrganic.com, and a fellow at Harvard University's Berkman Klein Center for Internet and Society. "We are no longer dealing with finite systems," Case added.

Increasing interconnectedness is already providing challenges and opportunities. Both human:machine and machine:machine interactions generate highly personalised and actionable data that can be used to fine-tune financial service provision. The 'Future of Money' session began with a brief animation, in which the all-wise 'Mr Sage' floated with 'Mr Money' on an 'ocean of information' generated by our interactions with technology (and those between our various gadgets); in the animation, the two protagonists delivered an optimised, data-driven 'Future of Customers'. Already, telematics enable car insurance quotes to be tailored to our driving skills. And just as soon as somebody perfects the necessary cranial sensor, we will only need to have the thought 'pizza' to prompt a drone to drop our order through the sunroof of our self-driving car. "Everything talks to

The trust of consumers will drive acceptance.

Carlos Menendez, president, enterprise partnerships, Mastercard

everything, and end-points make their own decisions," observed moderator Udayan Goyal, managing partner of Apis Partners and founding partner of Anthemis Group.

This might be fine if you still want the pepperoni that was your first thought, but a range of more serious issues arise. "In the centre of interconnectedness is data," said Doug Shulman, senior executive vice president and head of customer service delivery at BNY Mellon. But whose data is this? What if something in our personal data reveals us to be uninsurable? What if the machines get it wrong – or worse, get hacked? Where does the liability fall? "We are going to have to rethink the notion of ownership," said Goyal. Later, Case argued for personal ownership of data, with limited authorisations for use by other parties. Rather than financial institutions having permanent access to the client records, "I should have my data stored with me at all times, and I should allow them to have access to it for a period of 24 hours to add data to my file," she said.

Trust and identity

Goyal raised an issue dear to the hearts of many in the audience: regulation. "How do we regulate a world in which all the rules have changed?" he asked. In this current period of transition, the panel's interim answer was that we must build trust into everything we do. "The whole reason money has worked is that there is trust," said Mendendez. "But the concept of money is changing," he added, referencing the ability of money to 'carry' valuable data rather than just enable a transaction. Already, we carry cards that validate our identity, providing additional data – for example, our home address – without question. This is a very basic first step towards a future in which our whole digital identity – our personal data set – is present with us in any experience. "It's important that the digital identity is kept secure," said Menendez. "If the data, the money, is not kept secure, it doesn't scale, because there's no trust. It's the trust of consumers that will drive acceptance."

How do we build that trust? For many, technology is the answer, in part because of the transparency it can bring to service provision, but also because of the convenience and added value of more personalised services. Jon Stein, CEO and founder, Betterment, cited his own company's recent survey of consumer sentiment around the most and least trustworthy industries. "Number one was technology, and the last one was financial services. People inherently distrust financial services, and technology is an answer to that. Technology brings trust," said Stein. Certainly technology-led firms such as Betterment – which Stein refers to as an online investment advisor rather than a 'robo-advisor' – have forced traditional financial institutions to re-examine their service delivery models by providing retail customers, especially young ones, with a new kind of solution to a problem (future financial security) that was otherwise looking increasingly intractable.

The more we automate systems, the more important our human experience becomes.

Amber Case, fellow, Berkman Klein Center for Internet and Society, Harvard University

Building symbiosis

But we're not ready to hand over the future of money to machines; not yet, and perhaps never entirely. "What happens when automated systems go wrong?" asked Goyal, who answered his own question by showing us a clip of the S&P500's fluctuations during the 'flash crash' of May 2010, complete with screaming (human) traders on the audio track. As more recent incidents have shown – such as the British pound sterling's 6% drop in value in Asian trading in early October – automated systems can be vulnerable to positive feedback loops that create instabilities and inaccuracies. This can affect our personal credit files, for example, as well as major financial markets. How do we address that risk? Answer: by letting machines be machines and people be people. "We forget that technology is really good at noticing patterns over time and humans are really good at understanding the context. The more we automate systems, the more important our human experience becomes," said Case. We should aim to build a symbiosis between ourselves and our machines; if we get that right, we'll become smarter because our machines will be supporting our decision-making. And when we get to that point, our customers will trust us even more than they do now.

This discussion on the role of machines and humans in financial services found echoes throughout Sibos 2016 – and not just at Innotribe. However, there was a particularly neat twist in the session, 'Emerging Technologies for Financial Services', moderated by Michell Zappa, founder, Envisioning Tech, immediately after 'Future of Money'. Zappa outlined a number of principles underlying the emergence of new technologies; among them "centaur thinking", whereby a human:machine combination outperforms either a human or a machine acting alone, derived from a form of chess, in which a human/AI combination (a 'centaur' player) will beat a chess machine or a grandmaster. "You need to combine the consistency, the speed and the precision of a computer with the creativity, the adaptability and especially the intuition of a human," said Zappa. Do that successfully, and the future of money may be yours. ■

Lessons learned on the long road to recovery

The financial system is more heavily capitalised and supervised than eight years ago, but new challenges continue to arise.

How far has the financial system advanced since the crisis of 2008, and what potential sources of instability lay ahead?

This many-faceted question deserves a multi-layered and wide-ranging response. At the Tuesday morning big issue debate on financial stability at Geneva's Palexpo, the conversation touched on Brexit, blockchain, machine learning and financial inclusion and reflected on the consequences – intended or not – of post-crisis reform for banks, market infrastructures and their users. It soon became clear that the financial system might look very different in the future.

Moderator Merryn Somerset Webb, editor-in-chief of MoneyWeek and Financial Times columnist, set the tone for the debate by reminding delegates of the core service provided by the finance sector to the wider economy, i.e. to transfer money from those that have it and would like a return to those that want it and would like to deliver a return. "Everything in between is just back-office work," she said. The sector had lost sight of this core purpose prior to the financial crisis, asserted Somerset Webb, but had attempted to re-establish its focus since 2008, prompted in part by regulatory reform. "This has led to burdens that the sector could have carried quite well, without all the other challenges that have arrived over the last few years," she said, referring to the increased pace of technology innovation and competition from FinTech firms.

Panellists acknowledged that impact of regulatory reform would continue to be felt by banks for some time. "There will be

significant restructuring in the financial system," said David Wright, partner at business advisory firm Flint Global and president of financial services think-tank Eurofi. "The banks are under a lot of pressure – return-on-equity is poor, capital requirements are going up, negative or low

Regulatory reform has led to burdens that the sector could have carried quite well, without all the other challenges that have arrived over the last few years.

Merryn Somerset Webb, editor-in-chief, MoneyWeek

interest rates are shaving margins, and there is tremendous pressure coming from the so-called disruptors."

Wright, who worked for 34 years at the European Commission, largely on finance sector policy, and subsequently served as secretary general of the International Organization of Securities Commissions, predicted that the number of banks in Europe will almost certainly shrink over the next 20 years; only the efficient, reputable, well-managed ones will survive and prosper.

Restoring trust

Tightened capital and liquidity requirements, as well as new governance and behavioural standards, should help to protect the banking sector from future shocks, but there remains a fundamental lack of trust in the banks that

The main problem today is the lack of confidence in the banking business.

Sergey Shvetsov, first deputy governor, Bank of Russia

drive global finance. Somerset Webb asked whether and when could banks regain that trust. Panellists said proof of systemic stability, governance and ethics would all contribute, but suggested the road would be long.

"The main problem today is the lack of confidence in the banking business and the weakness of commercial banks to attract capital for internal development," said Sergey Shvetsov, first deputy governor at the Bank of Russia.

The lack of confidence is a reflection not only of the economic impact of the financial crisis, but also of the lack of ethics and governance within the banking sector that have been laid bare by successive market scandals, including Libor and FX.

Predicting the source and form of any future financial crisis is difficult, but while debate participants agreed that there has been significant de-risking since 2008, bubbles remain that will need to be closely monitored. As most crises in history have been associated with property markets and more recent crises derived from excessive leverage, Wright recommended watching both areas.

Nevertheless, Trevor Spanner, chief operating officer and group risk officer at Hong Kong Exchanges and Clearing, believed greater credit should be given to the progress that has been made in understanding and managing risk and financial infrastructure among both regulators and industry participants. While risk models previously discounted remote but highly damaging 'black swan' events, this was no longer the case.

"The concept of financial market infrastructure and systemic risk is now a board-room issue and there is a lot of credibility established from that. People have a much better understanding of what extreme but plausible events may occur and how they would respond to them," said Spanner.

People have a much better understanding of what extreme but plausible events may occur and how they would respond to them.

Trevor Spanner, chief operating officer and group risk officer, Hong Kong Exchanges and Clearing

New solutions

A key conclusion of regulators has been that the implications of complex relationships were not fully understood pre-crisis, nor the risks they posed to financial stability. In response, they raised the cost of riskier activities and reduced the likelihood of tax-payer bail-outs. But the banking industry is barely less interconnected, and new ways of monitoring systemic risk have been compromised by implementation. New solutions may yield better outcomes, suggested Wright, positing that distributed ledger technology could have a key role to play in tackling the challenges associated with global reporting and regulatory oversight of complex financial systems.

"From a regulatory point of view, what an opportunity we now have to build a real-time information system to really understand global finance for the first time. I can tell you, nobody really understands the interconnectivities and contagion. But with these new technologies there are huge potential improvements," said Wright.

It is also the responsibility of national and regional supervisory authorities, Wright added, to make sure global regulations are consistently implemented and properly enforced. He applauded the work of the European supervisory authorities and the European Central Bank to improve convergence in the regulation of Europe's financial markets, but remained concerned by the uncertainty caused by the UK referendum decision in June 2016 in favour of leaving the European Union.

Asked by Somerset Webb whether London could remain a leading global financial centre, Wright said there were currently too many uncertainties to be sure. "We don't yet know what the market access arrangements will be after Brexit and the situation is going to be uncertain for some time. There are nine steps in Dante's hell and I'm afraid we're still at step one, which is limbo," he said.

If Brexit does eventually lead global financial institutions to move some or all of their operations out of London, there could be benefits to other aspiring financial centres in continental Europe. But both Wright and Shvetsov agreed that business would be likely to spread around multiple cities rather than London's dominance being assumed by Frankfurt, Paris or another European centre.

Fragmentation risk

In terms of the future shape of the global financial system, a further potential game-changer is the Capital Markets Union (CMU), a European Commission strategy to fuel growth and employment by pursuing more integrated and efficient capital markets. The Commission has acknowledged that investment in Europe is heavily reliant on banks, and access to financing varies from one member state to the next, with many small- and medium-sized enterprises still struggling to tap the capital markets.

But there is uncertainty over exactly how CMU will unlock capital and lower the cost of funding, particularly with Brexit threatening to fragment European capital markets. CMU was the focus of a Monday afternoon panel discussion – moderated by Wright – in which Kay Swinburne, Conservative MEP for Wales, asserted that the City of London would still play a key role in CMU irrespective of the terms of Brexit.

"London is the biggest single capital market we have in Europe and it's not going away. It's a global financial centre and will maintain that capital markets expertise, investor base and capital base that the rest of Europe will need to tap into," said Swinburne, also a member of the European Parliament's Economic and Monetary Affairs Committee.

We have an opportunity to build a real-time information system to really understand global finance for the first time.

David Wright, partner, Flint Global

Although CMU's broad remit gives it scope to review existing rules that impair access to finance, Swinburne suggested the initiative would achieve its objectives as much through a cultural shift as by specific legislative means.

"I want to get to the stage where a small but highly innovative company in a small member state doesn't have to relocate its headquarters to a larger member state or another part of the world to access capital and investor flow. Such companies need access to a much broader range of good-quality products and investors than they have today," she said. ■

Deutsche Bank
Global Transaction Banking

Sibos
See you next year in Toronto

Shaping your tomorrow, together

For more information, visit cib.db.com
or follow us on @TalkGTB

This advertisement is for information purposes only and is designed to serve as a general overview regarding the services of Deutsche Bank AG and any of its branches and affiliates. The general description in this advertisement relates to services offered by Deutsche Bank AG Global Transaction Banking and any of its branches and affiliates to customers as of September 2016, which may be subject to change in the future. This advertisement and the general description of the services are in their nature only illustrative, do neither explicitly nor implicitly make an offer and therefore do not contain or cannot result in any contractual or non-contractual obligation or liability of Deutsche Bank AG or any of its branches or affiliates. Deutsche Bank AG is authorised under German Banking Law (competent authorities: European Central Bank and German Federal Financial Supervisory Authority (BaFin)) and, in the United Kingdom, by the Prudential Regulation Authority. It is subject to supervision by the European Central Bank and the BaFin, and to limited supervision in the United Kingdom by the Prudential Regulation Authority and the Financial Conduct Authority. Details about the extent of our authorisation and supervision by these authorities are available on request. Copyright© September 2016 Deutsche Bank AG. All rights reserved.

United in the fight against cyber-attacks

Cyber- and information security experts converged on Sibos, where SWIFT's Customer Security Programme and cyber-security were a key focus of discussions.

> **Share the details if you are compromised and prepare by learning.**
>
> **Yawar Shah,** Chairman, SWIFT

From the plenary room and main conference sessions to Innotribe, the SWIFT Institute, the SWIFT Auditorium and the exhibition hall, cyber-security issues had a higher profile at Sibos 2016 than ever before. Even before the conference officially opened, the SWIFT board and opening plenary of the chairpersons' meeting had discussed both cyber-security more widely, and SWIFT's Customer Security Programme (CSP) in particular.

The high priority accorded cyber-security at Sibos was also reflected in the record number of chief information security officers (CISOs) from leading banks attending the conference, as well as in the many forensic and other security experts from around the industry. Throughout the week, the many and varied panel discussions, workshops, debates and presentations on cyber-security topics were extremely well-attended, while many delegates took the opportunity to find out more about the CSP at dedicated sessions held at the SWIFT Auditorium.

SWIFT Chairman Yawar Shah has often opened Sibos by providing the community with an overall update on SWIFT's activities. Not so this year where he set the tone for the week. "Today will be a little different," he warned at Monday's opening plenary. "I want to get straight to the point, to the main issue occupying all of us at SWIFT: cyber-security. Our community is under attack. We need to address this together."

Shah was referring to the series of recent incidents in which attackers have identified and exploited vulnerabilities in customers' local security. This enabled them to compromise customers' local environments and input fraudulent messages that have eventually been carried over the SWIFT network. Shah reconfirmed that neither SWIFT's core network nor its messaging services have been compromised, but warned: "This is an inflection point for SWIFT and our community. Cyber-criminals are well-organised, well-funded, extremely sophisticated, and getting smarter. And as expected, they have evolved. They used to go after retail by attacking consumers' e-banking applications – but now, they are attacking banks and going after their SWIFT credentials."

"Securing your local environment is the most important thing you can do", SWIFT CEO Gottfried Leibbrandt told the plenary, continuing the discussion. "Securing the

physical set-up of your local SWIFT-related infrastructure and putting in place the right people, policies and practices are critical to avoiding cyber-related fraud."

Many of the necessary tasks are the equivalent of basic hygiene: securing credentials, multi-factor authentication, firewalls and anti-virus technologies, applying security patches and latest updates to software. "Like medical hygiene this is both easy and hard," said Leibbrandt. "My medical friends tell me that it is possible to drastically reduce deadly hospital infections if doctors wash their hands for two minutes before operating. And yet only half of them do. These are doctors, they know the facts, real people are dying, and still they don't comply."

Common standards

In Tuesday's big issue debate, 'Cyber-security – Catching the bad guys', Cheri McGuire, group chief information security officer at Standard Chartered Bank, took up Leibbrandt's theme, urging the further development of – and adherence to – best practices and common standards.

"Studies have shown that about 85% of cyber-breaches can be prevented through basic hygiene practices like data encryption, utilising modern security software, staff training and multi-factor authentication access to sensitive data and servers," she said. "If an organisation is breached, having robust response and recovery plans in place and exercised can help minimise the impacts. Cyber-security is a board level and senior management issue, and organisations need to have a culture of best practices when it comes to addressing cyber-issues."

Adherence to a common set of core security standards for all users is at the heart of SWIFT's CSP, explained Shah. "Through the CSP, SWIFT is helping you to take action," he said, explaining how just a few days earlier the SWIFT board had unanimously endorsed the next stage of the CSP – the introduction of mandatory customer security requirements and an associated assurance framework; three objectives, eight principles and 27 controls.

Speaking later that day in a dedicated SWIFT Auditorium session, Stephen Gilderdale, SWIFT's head of the CSP, provided more details on how the controls in the new assurance framework would work. "The core security requirements are based on three overarching objectives which address major areas of attention for customers' SWIFT-related environments. Under the framework, customers will be required to provide self-attestation against 16 mandatory controls on an annual basis. Self-attestation will start in the second quarter of 2017 when the requirements will be made applicable to all customers connected to SWIFT, including those connected through service bureaus. In effect, we will set a level of security requirements that must be met by every SWIFT customer," he said.

Under the new framework, SWIFT will also ask randomly selected customers to back up their self-attestations through internal or external audits. In addition, SWIFT will make the compliance status of each customer available to its counterparties. "Your correspondents will be able to check whether you washed your hands before dinner, so to speak," said Leibbrandt.

Systemic risk

So varied and prevalent are the sources of security threats that many banks and market infrastructures have already experienced some form of cyber-attack, even though smaller breaches are rarely admitted. But acknowledging that client data has been compromised is a particularly difficult task for financial institutions, because of the importance of trust to client relations and the highly sensitive nature of the information involved. Nevertheless, experts insist that information-sharing on the types of attacks is critical to reducing cyber-risks.

Speaking in Tuesday's big issue debate, Marco Gercke, director at the Cybercrime Research Institute, warned that cyber-security threats are becoming more severe. "The entire financial industry is dependent on computer technology and attacks are becoming ever more sophisticated. Increasingly, cyber-criminals are not simply shutting down servers, but threatening to manipulate data unless ransoms are paid. Others are extracting data from organisations

Organisations need to have a culture of best practices when it comes to addressing cyber-issues.

Cheri McGuire, group chief information security officer, Standard Chartered Bank

This is a huge challenge because the entire industry is based on trust and confidentiality of client data.

Marco Gercke, director, Cybercrime Research Institute

and making copies. This is a huge challenge because the entire industry is based on trust and confidentiality of client data," said Gercke.

The systemic risk from cyber-threats is regularly identified by financial institutions as a primary concern, often cited ahead of the macro-economic challenges, as evidenced in an April 2016 market survey by the Depository Trust & Clearing Corporation (DTCC). Even three years ago, almost half of exchange operators had experienced some form of cyber-attack, according to the World Federation of Exchanges (WFE).

Moreover, as SWIFT's Leibbrandt observed, all financial institutions are part of a broader ecosystem. Even with strong security measures in place, attackers are very sophisticated and firms need to assume that the worst may happen. That's why it is also vital to manage security risk in interactions and relationships with counterparties.

"As with epidemics, hygiene is required for cyber-prevention – but is by no means sufficient," continued Leibbrandt. "Your environment may still get breached, so you need to put strong detection measures in place. This is why we recently announced the Daily Validation Reports for our customers, as a secondary back-up check on transactions to detect and prevent fraud."

Firms with high cyber-security standards may still be at risk if a counterparty's defences have been breached, resulting in suspicious traffic being sent over SWIFT. This risk can be countered via SWIFT's Relationship Management Application (RMA), as well as additional controls on incoming instructions, and clear mechanisms to stop suspicious payments. "Using the RMA, we can all choose who we do business with over the SWIFT network. Equally, once you cease doing business with an RMA counterpart, you can terminate that RMA relationship. And you should," said Shah.

Market practice also has an important role to play in handling counterparty relationships, he added, which is why SWIFT is now also facilitating discussions to develop a common understanding between sending and receiving parties of the warning signs that should lead to payments being investigated, and of how suspicious payments should be stopped.

Changing attitudes

Cultural attitudes need to change from top to bottom if financial institutions are to be successful in staving off cyber-breaches, panellists suggested on Thursday in 'The spectre of cyber threats – How can the industry fight back?' "An organisation can do everything right on cyber-security and still be an unfortunate victim. A typical response from a company following a breach is to fire the chief security officer. Mistakes will happen, but organisations need to take a longer-term approach around retaining senior security personnel," said James Lyne, global head of security research at Sophos.

This willingness to blame personnel following cyber-attacks is accompanied by a broadly unsympathetic attitude toward cyber-victims. Both should change, according to Steve Briscoe, global head of technology and operations at clearing house operator LCH. Clearnet. "Cyber-theft should be regarded in the same way as physical theft. The methods may be different but the impact is the same. It is important to recognise that there is criminal intent in both cases, and we should adjust our attitudes accordingly," he said.

The fact that the intent to attack has so many sources is challenging for those charged with building cyber-defence strategies, as is the ability of many skilled perpetrators to maintain anonymity. Hackers may include criminals or disenchanted employees, the latter becoming an increasingly common phenomenon, in the opinion of Bruce Schneier, CTO at Resilient, an IBM company specialising in cyber-security solutions. "Criminals are agile and will frequently make use of technology more quickly than governments. However, the latter are more powerful, so the battle becomes one between the quick and the strong," said Schneier, speaking at Wednesday's Innotribe session. 'Innovation in cyber-security: Innovative defences to innovative attacks'.

Timely detection

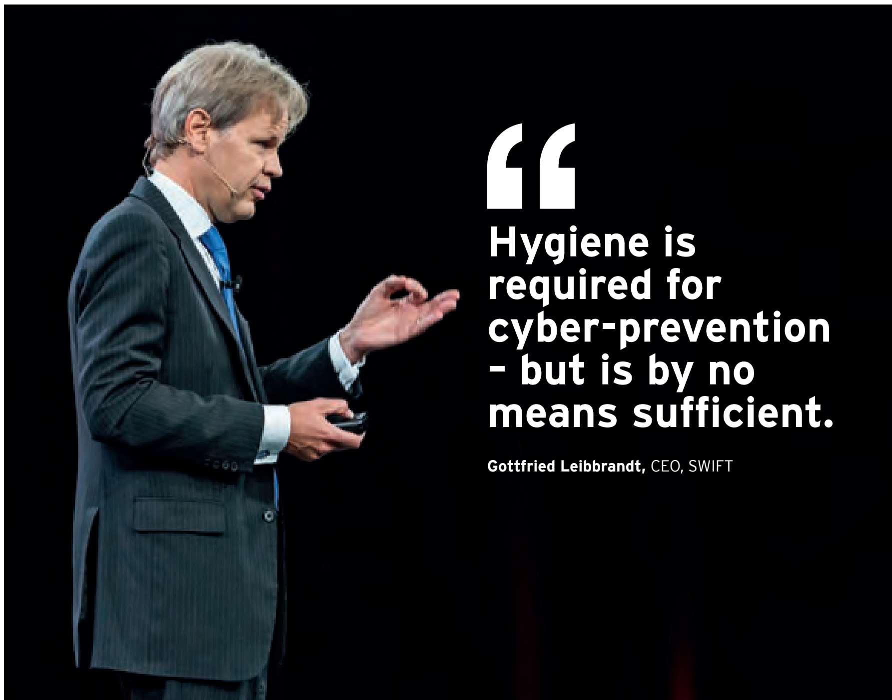
Attacks perpetrated by highly-resourced and skilled state-backed organisations are often too powerful even for the most sophisticated market infrastructures or financial institutions, regardless of the size of their budgets. But such attacks are extremely rare. And when they do occur, large or small, timely detection can help minimise impact. As the recently revealed breach at Yahoo illustrates,

many cyber-attacks are not discovered until it is too late. While prevention is crucial, it is important that companies have systems to detect live breaches, stated Charles Blauner, global head of information security at Citi. "There is a lot of technology focused on detection. It is becoming even more important that organisations have processes in place to ensure breaches do not go unnoticed," he told delegates.

Regulators too are paying closer attention to cyber-security, panellists observed, having recognised its potential impact on the ability of market participants to function. The US Treasury Department's Office of the Comptroller of the Currency (OCC) is drafting recommendations on interbank messaging and wholesale payment systems. The US Securities and Exchange Commission is subjecting broker-dealers and asset managers to heightened oversight and examinations to confirm the strength of their cyber-security defences.

While central banks and regulatory authorities across the world are demanding higher standards on cyber-security from financial institutions, Gerke insisted that engagement with law enforcement authorities is just as important. "Cooperation with law enforcement is important and this is something we advise banks on. If there is a cyber-incident, it is important organisations have clearly defined rules and procedures for engaging with law enforcement," he said.

As well as requirements from regulators, best practice guidelines are being formulated at the industry level. The Committee on Payments and Market Infrastructures (CPMI) and International Organisation of Securities Commissions (IOSCO) have published cyber-resilience guidelines, for example, to help financial market infrastructures detect and recover from cyber-threats. Recommendations included sound cyber-governance and board-level understanding; procedures to resume operations quickly after an attack; and strong cultural awareness about cyber-risks based on collective engagement.



Share and prepare

With the involvement of so many parties in the fight against cyber-security threats, the circulation of information is fundamental to the success of the industry's collective defence strategy. "What happens to one company in one location can easily happen to another elsewhere," said SWIFT's Shah. "That's why we need our customers to 'share and prepare'. Share the details if you are compromised and prepare by learning, for example through the threat intelligence and Indicators of Compromise (IoCs) that SWIFT publishes."

If the worst happens, he added, it is vital to 'share' by letting SWIFT know there is a problem and to share relevant information. This will help SWIFT's dedicated Customer Security Intelligence team to limit the community impact by sharing anonymous IoCs and by detailing the modus operandi used in known attacks.

SWIFT is providing regular updates of this nature through its Security Notification Service to which all customers can subscribe. SWIFT can also provide compromised customers with diagnostic support, and advice on how to restore systems to get up and running again. In cases of suspected customer fraud, it is important to act fast and take decisions in real time.

The second community principle – 'prepare' – is just as important, as Gilderdale explained in the SWIFT Auditorium. "SWIFT will do everything possible to inform you of relevant cyber-intelligence, and we will continue to expand our information-sharing platforms to do so. We are also engaging with vendors and third parties to secure the wider ecosystem – but we also expect customers to prepare by acting on the information and security updates we provide, and ensuring that they meet mandatory security requirements for their SWIFT-related infrastructure, which we will enforce closely."

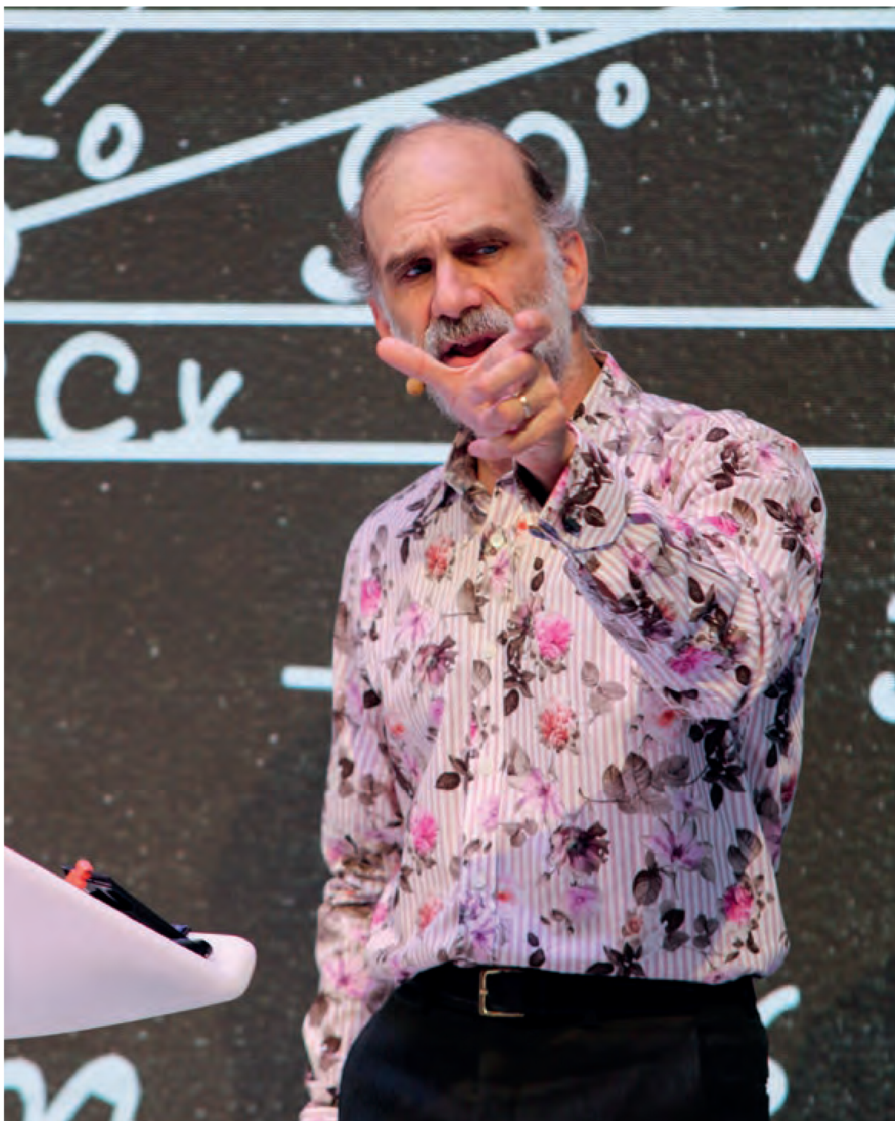
During the session, Gilderdale was joined on stage by Adrian Nish, head of cyber-threat intelligence at BAE Systems, and Todd Inskeep, principal at Booz Allen Hamilton. Nish outlined the threat landscape, while Inskeep gave insights into the development of the core security standards, which take into account the latest intelligence on known cyber-threats and incidents, and which have been reviewed by external industry experts and assessed against industry standard frameworks and best practices.

Constant communication

Across all Sibos 2016 sessions in which cyber-security was discussed, there were two very consistent messages: the threat is real and growing, and industry collaboration is essential. Addressing the challenges of cyber-security by communicating about the issues with peers is an effective mechanism to mitigate the risks, many speakers agreed. "There has been a significant shift in mind-set over the last few years with recognition that cyber-defence and cyber-security is something the industry needs to work on together. Standard Chartered is a founding member of the Cyber Defence Alliance and

Criminals are agile and will frequently make use of technology more quickly than governments.

Bruce Schneier, chief technology officer, Resilient, IBM



works closely with government counterparts and SWIFT on promoting information sharing," said McGuire.

Another key point made by several different speakers was that cyber-threats are evolving and will continue to change, driven in part by the unrelenting speed and scale of technology innovation. When grasping the opportunities afforded by disruptive technologies to improve process efficiency and enhance customer value, banks and other institutions must also be mindful that they could be opening themselves up to new cyber-security risks. All firms looking to leverage blockchain, for example, should also be aware of the potential security implications, following the manipulation of smart contracts on a platform based on the Ethereum blockchain.

As Bart Preneel, professor at the University of Leuven and president of Leaders in Security, neatly summed up during Innotribe's 'DLT and cyber-security: Sibos week wrap-up' on Thursday afternoon, "The attack surface for cyber-criminals has grown exponentially as there are more points of penetration." ■

Data.
Research.
Analytics.

S&P Global
Market Intelligence

Get to the essential faster.

Bringing together the highest quality data and industry-leading solutions from the S&P Capital IQ and SNL Financial platforms, S&P Global Market Intelligence integrates news, comprehensive market and sector-specific data, and analytics into a variety of tools to help clients track performance, generate alpha, identify investment ideas, understand competitive and industry dynamics, perform valuations, and assess credit risk.

spglobal.com/marketintelligence

Copyright © 2016 by S&P Global Market Intelligence, a division of S&P Global Inc. All rights reserved.

Seizing the cognitive opportunity

Sibos 2016 explored the potential of artificial intelligence, machine learning and cognitive systems to help banks cut costs, add value and meet multiple challenges.

Financial services can and will lead the way in the adoption and exploitation of cognitive computing.

Ginni Rometty, chairman, president and CEO, IBM

Earlier this year, much was made of the ability of a computer programme, called AlphaGo, to beat one of the very best players in the ancient Chinese game of Go. Despite its relatively simple rules, Go is a very complex abstract strategy game. The programme's victory, which was clear-cut, was seen by some as a 'breakout' moment for machine learning and the prelude to its more widespread use in many fields, including financial services. Sibos 2016, through a series of panels and one plenary session, sought to explore the possibilities and opportunities in a number of aspects, including compliance and cyber-security.

Ginni Rometty, chairman, president and CEO of IBM, struck an optimistic tone in Wednesday's big issue debate, 'Cognitive business and the future of financial services'.

All banks are looking at ways to cut costs and also generate more revenues.

Sergio Ermotti, group chief executive officer, UBS

Her optimism stems in part from a belief that financial services "can and will lead the way in the adoption and exploitation of cognitive computing".

Operational benefits

IBM has seen its business evolve from tabulating machines, through programmable machines, and is now entering a world of cognitive or learning machines. By augmenting the capabilities of key individuals in any business, these machines can help generate better decisions, whether in detecting cancer or spotting financial fraud. To justify her prediction that banking would be a fast adopter of cognitive systems, Rometty highlighted two particular strengths enjoyed by the industry. First, banks are naturally digital in the way they operate and, Rometty believes, are about to reinforce their digital credentials through application of distributed ledger technology (DLT). Second, banks have always been at the forefront in the deployment of new computer technologies, precisely because their business is digital. By adopting cognitive computing early, banks have the opportunity to derive significant financial benefits, especially in the relatively untapped area of middle- and back-office processing.

By working with DLT directly, through an initiative within its global financing business, IBM understands better than most the scale of operational benefit that the technology can bring. As Rometty sees it, "Blockchain can create an environment of trust and efficiency in the exchange of almost anything, offering traceability as well as confirmation of authenticity to market participants." But IBM understands that for all its advantages, wide scale adoption will not occur without standards, governance and proven robustness. If these pieces are put in place Rometty is confident that "Blockchain can do for transactions what the internet did for information." IBM's continuing and significant support for the Hyperledger Project is testimony to their commitment to the use of distributed ledgers. The breadth and depth of blockchain discussions at Sibos this year (see separate article), suggests Rometty's assumption around early adoption is not misplaced either. More practically, the recent announcement between IBM and CLS Group, as well as initiatives around smart contracts, identity management and trade finance, involving SWIFT members, IBM and Hyperledger, are indicative of real progress moving towards implementation at scale.

Ripe for innovation

If everyone has a robust digital platform operating with the efficiency enabled by blockchain, where will competitive differentiation come from? Joining Rometty on stage following her keynote, Sergio Ermotti, group chief executive officer of UBS, noted that, "Few banks are earning enough to cover their cost of capital and all are looking at ways to cut costs and also generate more revenues." Both speakers agreed that the middle- and back-office operations of banks offer enormous scope for cost reduction through use of smarter technology. Whereas banks have been quite successful at deploying technology in the front office, other areas remain ripe for greater process efficiency through improved deployment of technology innovation.

In the long run, of course, banks have to grow revenues by winning market share and adding value to customers. To that end, Ermotti sees the ultimate difference between banks as being in "the quality of their people, the relationships they enjoy with clients and especially the level of trust that exists both personally and institutionally". Those firms that put together the best quality learning machines with the best personnel as 'teachers' to guide their development will generate both cost savings and the opportunity to create new products. "This process is already underway," Rometty noted, "with IBM's Watson system being deployed in areas as diverse as customer service, clinical decision support and legal businesses." IBM's stated goal is to build commercial revenues from Watson to more than US$10 billion per

annum over the next ten years. Financial services offers interesting opportunities in that regard.

Gaining traction

Subsequently, at the Innotribe session 'AI in financial services' on Wednesday, three institutions presented their current work. Eric Rosenblum, an executive at data analytics solutions provider Palantir, described an application originally designed to give an institution a clear view of its overall relationship with any particular client. Once created, the tool could be used to understand all interactions between the firm and each client, which improves users' ability to target new product initiatives. As Rosenblum noted, Palantir is far from a single-minded advocate of artificial intelligence (AI) solutions, believing that much of the opportunity comes from better structuring of underlying data. Nevertheless, Rosenblum's example, together with use cases from US-based robo-advisor Betterment and BNP Paribas, reinforced the sense that AI technology is beginning to gain traction. BNP Paribas' use case also involved a view of client connections and interactions, in their case interfaced with natural language programming to provide an easy to use internal tool.

Some speakers tempered the general level of enthusiasm, with those speaking in the session 'Machine learning – The future of compliance?' suggesting that new innovations must find their place alongside existing processes and techniques, rather than replacing them wholesale. As Anthony Fenwick, global head of AML at Citi, pointed out, unlike Go, "Financial crime does not stand still. The rules of the game, already complex, are constantly changing as criminals respond to current techniques aimed at their detection." But there is no clear distinction between black and white. "A typical financial criminal these days looks very much like a normal legitimate client, whether representing themselves as a high net worth individual or a representative of a corporate entity seeking to open accounts," Nick Ryman-Tubb, CEO at the Institute of Financial Innovation in Transactions & Security, observed in the same session. Similarly, artificial intelligence should work in tandem with existing cyber-security defences, suggested Kalyan Veeramachaneni, principal research scientist at the Massachusetts Institute of Technology's Laboratory for Information and Decision Systems, who gave a primer on the machine learning and AI before exploring the latter's use in information security defence and response on Thursday's 'Cyber 101 – Artificial intelligence for information security' session.

Moderator **Dean Garfield** (left), president and CEO of the Information and Technology Industry Council, in conversation with **Ermotti** (centre) and **Rometty** (right).

Blockchain can do for transactions what the internet did for information.

Ginni Rometty, chairman, president and CEO, IBM

Time to fulfil potential

Such caveats do not of course render machine learning and artificial intelligence ineffective in compliance or security, but it does perhaps place a potential limit on what even its supporters might consider its impact to be. Indeed, some observers with longer memories noted that chess grandmaster Gary Kasparov's 1997 defeat by a computer (IBM's Deep Blue) was heralded as a breakthrough for AI and led to an outpouring of prophecies about the growth of intelligent machines which nearly 20 years on remain unfulfilled.

When discussing the use of AI in compliance, speakers were quick to recognise that the regulatory burden on banks and other financial institutions continues to grow. As such, anything that can have a material impact in improving efficiency deserves serious consideration. "Large global banks like UBS face 40,000 alerts every year of changes in regulation that might affect them," acknowledged Ermotti. "Even employing 10,000 people in compliance, as some banks are said to do, may not be enough." The last word should however go to IBM's Rometty and her assertion that, when the history of the present time is written, it will be seen as the era of data. Those companies that have done most to collect, analyse and gain insight from that data will be the businesses that are remembered, along with the technology companies they relied on to help make it happen. ■

Get ready for the fourth industrial revolution

The effects of technology innovation on the finance industry – and wider society – are of a scale rarely witnessed before.

Are disruptive innovations transforming the financial services landscape, or are we simply in the middle of a new technology cycle?

The premise of Thursday's big issue debate on disruptive innovation's impact on financial services mirrored discussions earlier this year at the World Economic Forum (WEF) in Davos. At the forum, policy-makers, business leaders and opinion formers focused on the coming 'fourth industrial revolution' – a culmination of the ongoing electronics-driven revolution of the second half of the last century that will transform the role of technology in our daily life and the workplace.

According to Klaus Schwab, WEF founder and executive chairman, the scale, scope and complexity of this revolution means that, "the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society."

It was in this context that Sibos 2016 delegates in Geneva were asked whether we were in the midst of a quantum shift in innovative technology or merely experiencing the latest in a series of technology cycles. Before the three speakers put their case, 63% of the audience polled said they were convinced it was a shift.

Technology acceleration

We are witnessing a "technology acceleration", said Sanoke Viswanathan, chief administrative officer at JP Morgan's corporate and investment bank. Why now? he asked. Three conjoined forces are at work. First, there has been a fundamental change in the way we interact with technology. "We all have supercomputers in our hand today," he observed. Secondly, there has been an explosion in the availability of capital to innovators with venture capitalists, angel investors and corporate venture funds targeting FinTech startups. And finally, banks are under pressure to find new growth and efficiency opportunities.

The conclusion was simple. "We are witnessing disruption at work," said Viswanathan, who then outlined five areas of technology-led disruption – big data, robotics, APIs, the cloud, and distributed ledger technologies (DLT) – on which JP Morgan is focused. Agreeing with an observation made earlier in the week that "data is the new oil", Viswanathan said JP Morgan had doubled the number of its big data nodes over the past 12 months. He also cited use of algorithms to assist equity markets bankers in identifying prospects as an example of the potential benefits. In robotics, JP Morgan is using software bots to explore opportunities for 'process automation' and assist with repetitive tasks in areas such as sales, research and operations. "In the future we will be able to integrate more machine learning," he predicted. APIs are already changing the way businesses interact in terms of information exchange and the ability to utilise each other's platforms, noted Viswanathan, explaining, "A FinTech startup can plug-in and build an app on our platform." Although it grabs fewer headlines these days, Viswanathan said he considered use of the cloud as the most important change, because of its removal of the high entry costs to business. "In the past, it took a long time to build products and services and move from one platform to another," he remarked. DLT would become increasingly influential, Viswanathan added, as momentum grew, with individual firms contributing intelligence from their own projects, helping to promote standards convergence and accelerate adoption through open-sourcing of software, thus driving value creation.

"Technology is now a business activity," said Viswanathan. "The silos that existed between different business areas are disappearing in the interest of serving the client." This is the biggest change of all. Technology is taking business to another level and leading to a fundamental cultural change within banks and across the industry. "The boundaries are shifting," he said, with banks becoming more agnostic as to whether they develop and distribute all products themselves or source them from specialist providers in order to deliver best value to clients.

People's revolution

Fellow speaker Eric Pradier, general manager, consulting, EMEA at Hewlett Packard Enterprise, is in little doubt as to the transformative nature of disruptive innovation.

"We are in a window of disruption, where computing and data storage technologies are at a peak in terms of innovation," he said. The key impact of this will be a change in human behaviour, explained Pradier.

The silos that existed between different business areas are disappearing in the interest of serving the client.

Sanoke Viswanathan, chief administrative officer, corporate and investment bank, JP Morgan

We are in a fantastic moment. Either we manage the paradigm shift or we will be disrupted.

Eric Pradier, general manager, consulting, EMEA, Hewlett Packard Enterprise

"We are in a fantastic moment," he declared, where large innovative ecosystems – most focused on digitalisation – will create disruption and boundary shifts. "Either we manage the paradigm shift or we will be disrupted," he cautioned. "There is a revolution around people and digitalisation."

In an environment in which there is a growing move toward use of digital assets, how we protect those assets will become key. And it is here that regulation in its current shape and direction threatens to have a negative impact on innovation, Pradier warned. He used the example of Uber, a 'machine-to-machine' service that has revolutionised the way people travel and has seriously disrupted the licenced taxi industry. In some jurisdictions, lawmakers have ruled against Uber to protect the regulated taxi sector. "Should regulation be protecting the incumbent provider of service or the user?" queried Pradier. "Regulation should set out to protect the beneficiary, not the system."

Call for collaboration

As a venture capitalist and partner at Passion Capital, Eileen Burbidge invests in FinTech startups. She is also special envoy for the FinTech sector at HM Treasury. In answer to the question – is this a shift or a cycle – Burbidge diplomatically declared for "both". It is commonplace for business to go through cycles, she pointed out. The present cycle is different because it comprises two marked shifts, not only in technology but in the culture surrounding the use of technology. Take the example of blockchain, she said, "the big shift is cultural, with banks talking about the use of distributed ledger technologies." It shows that the mindset has changed away from the purely proprietary to a wider acceptance of collaborative approaches.

Burbidge confirmed that we are in the midst of a fourth Industrial Revolution and predicts that its impact would be bigger than the changes wrought so far by the development of the internet. "This is much more holistic and affects all of society," she said. "The nature of this revolution will have a profound and far-reaching effect on the way people relate to money."

A 'call to action' to collaborate is needed, said Burbidge, not just between startups and amongst institutions but also at the level of the regulatory system. And while a lot of innovation today takes place outside of the financial services sector, SWIFT and the companies it serves share a long history of being at the forefront of change, she observed. Innovators in the Fintech sector still rely upon banks, as trusted partners, to perform the final mile of a transaction: "FinTechs and financial services can't be separated." As for regulation, Burbidge agreed with Pradier that it must protect consumers as well as underlying industry with the intention of promoting innovation.

2020 vision

When speakers were asked to advance their near-term vision for the business world of 2020, Viswanathan repeated his conviction

FinTechs and financial services can't be separated.

Eileen Burbidge, special envoy for FinTech, HM Treasury

about the impact of the cloud. But he also said that the concept of open sourcing of software and APIs was a game-changer. "It changes the way we do everything." The real disruption will be come from the banking industry embracing digitalisation and moving towards the customer, said Pradier, who also called for "regulation for a real purpose". Technology will continue to accelerate along with customer expectations, said Burbidge. "If financial institutions can't adapt quickly enough they face becoming obsolete," she warned. They all agreed that a cultural change is key, with banks and regulators adopting a 'consumer-centric' approach. "In the future, people will demand access to everything about their own finances," said Pradier.

At the end of the session, the audience were asked to revisit the question they had been asked at the beginning. The 71% vote in favour of a 'shift' suggests the speakers' arguments had been persuasive. Geneva and Davos might be located on opposite sides of Switzerland, but on this point at least they would appear to be united. ■

equensWorldline

-the new-

pan-European leader

in payment services

Created by a merger between Equens and Worldline Financial Processing & Software Licensing activities in France, Benelux and Germany, equensWorldline is connecting payers and payees across Europe. Being a central pillar of the Worldline Group, processing c.10 billion SEPA payments and c.7,5 billion ATM and POS transactions each year, we combine long-standing proven expertise in traditional mass payment systems (issuing, acquiring, intra- and interbank payment processing) and innovative e-commerce and mobile payment solutions. Our unparalleled footprint allows us to benefit from synergies and accelerate our clients' time-to-market, making us a cost-efficient and competitive business partner for seamless, secure and efficient payment solutions.

Interested? Visit equensWorldline.com

Singing from the same songbook

When adopting common standards for new projects, you can still play your own tune – within reason.

The Standards Forum may lack the edginess of Innotribe, where the environment is conducive to slightly off-the-wall thinking about future technologies and how they may impact financial services. But with a free gift of colourful plastic kazoos, this year's was certainly in tune with the Sibos 2016's ambitiously practical and forward-looking ethos.

At one point, forum participants were encouraged to try and produce, in unison, a harmonious sound with their kazoos. With harmonisation being a major theme at this year's forum, the idea that an occasional 'off note' may be sounded is likely to resonate with a community that is used to dealing with multiple standards (not to mention slightly different applications of the same standards framework).

One key insight from the forum is that coexistence of different standards is likely

to persist for some time. At the closing of the Standards Forum on Thursday afternoon, Stephen Lindsay, head of standards at SWIFT, acknowledged that an end date for SWIFT MT message standards was unlikely in the near term. That said, the forum heard that new (and not so new) financial market infrastructures have agreed to coalesce around the ISO 20022 XML standards framework.

"Beyond the tipping point"

With ISO 20022 increasingly becoming the standard favoured by financial market infrastructures globally, adoption has gone "beyond the tipping point", said Lindsay. The forum heard that more than half of the European transactions in central securities depositories (CSDs) have now migrated to TARGET2-Securities (T2S), the single, pan-European platform for securities settlement in central bank money, operated by the European Central Bank; all using ISO 20022.

Denmark's VP Securities was the first Nordic CSD to migrate to T2S. Speaking at a session on ISO 20022 implementation planning during the Standards Forum, Niels Hougaard, senior product manager at VP Securities, said adoption of ISO 20022 was do or die for the Danish CSD, which saw it as a business opportunity to expand outside its domestic borders and build a standardised global platform with lower entrance fees (VP Securities' Luxembourg-based subsidiary VP Lux).

Europe might be considered the home of ISO 20022, as its use in constructing the Single Euro Payments Area was such a major factor in the standard's initial momentum. But it is now a truly global presence. To ensure consistency with international standards, the US Federal Reserve also plans to adopt ISO 20022 for high-value payments and for The Clearing House's real-time payments project. On the securities side, the Depository Trust & Clearing Corporation (DTCC) already supports ISO 20022 for corporate actions and reference data. Since April this year, as part of its payment system transformation, Payments Canada has been live with the ISO 20022 messaging standard for bulk retail payments.

With capital markets further opening up in China and expected increases in trading volumes, Hong Kong Exchanges and Clearing wants to build more efficient and scalable next-generation securities processing and listing platforms based on ISO 20022. "We want to bring China to the world and the world to China," stated Kevin Rideout, head of client and marketing services, Hong Kong Exchanges and Clearing.

We want to bring China to the world and the world to China.

Kevin Rideout, head of client and marketing services, Hong Kong Exchanges and Clearing

Efficient regulatory reporting

In Europe, Switzerland's SIX Interbank Clearing introduced ISO 20022 for interbank clearing in Euro in April 2015, and will do the same for the Swiss franc this year.

The Standards Forum also heard that the European Payments Council will leverage ISO 20022 for its new Instant Credit Transfer project, which is due to go live in November 2017. Howard Middleton, executive director, information technology, CLS Bank, told the forum that it had recently completed the migration of 60 banks on its platform to ISO 20022.

The role of standards in improving the efficiency of regulatory reporting was another key theme at this year's forum. ISO 20022 is being used for reporting under securities and derivatives regulations such as MiFID II and the European Market Infrastructure Regulation (EMIR). Regulators – at least in Europe – have adopted the ISO standard. Paul Janssens, programme director, SWIFT, expressed the hope that next year's Sibos would witness US regulators talking about following the same path.

During the 'Standards and regulatory reform' session, Olga Petrenko, senior policy officer at the European Securities and Markets Authority (ESMA), stated that the regulatory community was looking to promote the common use of data and common ways of reporting data by prescribing common fields within ISO 20022. The reporting of derivatives transactions data to trade repositories in Europe under EMIR has proved challenging for market participants.

Emphasising the theme of variation within a common framework, Irene Mermigidis, managing director of REGIS-TR, which operates the European trade repository owned by Clearstream and Spain's BME Group, stated that every trade

repository had developed its own technical standards for reporting in the absence of an ISO standard. "The market expected trade repositories to play a more active role in supporting market participants' adoption of standards," she said.

While market infrastructures might be driving its wider use, ISO 20022 should also prove attractive for corporates, said Lindsay of SWIFT, as the standard could carry more remittance information, which aided reconciliation.

The market expected trade repositories to play a more active role in supporting market participants' adoption of standards.

Irene Mermigidis, managing director, REGIS-TR

Overcoming inconsistencies

In Standards Forum's corporate debate on Wednesday, the case was made for greater standardisation between banks and corporates. John Marshall, director, bank strategy & solutions, GE Treasury, highlighted the lack of standardisation in the way banks bill for different services. Such inconsistencies make it difficult for treasurers to accurately forecast cash, he stated.

Michael Spiegel, global head of trade finance and cash management corporates, Deutsche Bank, said whilst global banks were more aware of the challenges posed by the existence of different standards in the corporate-to-bank space, this was not necessarily the case for regional and local players. He also pointed out that larger multinationals had different standards or requirements to other corporates.

As part of the ISO 20022 Common Global Implementation Market Practice (CGI-MP) initiative, banks and corporates are working together to find a common understanding around the standard and establish broad market practices. "ISO 20022 is a rich standard," stated Jan Pilbauer, chief information officer of Payments Canada. "It is tempting to think about how you can make it unique for national interests, but please don't do that."

The SWIFT ISO 20022 Harmonisation Charter – endorsed by more than 20 market infrastructures – establishes a framework for best practices and encourages the sharing of information to help develop a common framework. Philippe Verriest, director of change management at Euroclear, said the charter was an important step in the right direction. "The only [outstanding] issue concerns migration from the current situation to the new situation. Do we need to find market opportunities to migrate to ISO 20022?" Verriest said Euroclear had started its use of ISO 20022 with the funds business because of an existing lack of an agreed standard. He said equities and bonds would be more difficult, but would be helped by the adoption of T2S, which provided a strong business case for moving to ISO 20022.

A number of stakeholders also highlighted the need for market infrastructures to avoid working in silos when it came to standards development and to engage with vendors and market participants early in the process. Carlos Philippen, head of operations at Zürcher Kantonalbank, said standards development needed to embrace FinTech companies and business process outsourcing providers.

Supporting seamless connections

Looking ahead to the future where multiple, smart devices seamlessly connect and exchange data with one another and financial networks, standards are needed to stop these technologies from 'clashing', said Scott Smith, managing partner at research and consulting group Changeist, who presented on 'Data ethics in the internet of financial things' at the Standards Forum. "You may be integrating at a code level with industries you have never connected to before," stated Smith.

In an effort to engage with FinTech companies, Karla McKenna, chair of the ISO technical committee ISO/TC 68 on financial services, stated that ISO would set up a FinTech technical advisory group, as well as new reference data and information exchange sub-committees. McKenna, also director of market practice and standards at Citi, said ISO would look at regrouping reference data standards to ensure data consistency.

It may have been less edgy than Innotribe – but as usual, Standards Forum showed that there is a terrific and detailed body of content about how the future of finance will work inside the 'edge'. ■

Renaissance, not revolution

Innovation may inspire new ideas or spark the rebirth of old ones, but the ability to deliver experiences and service relationships will continue to be valued.

> **You are not the problem. The problem is the way we organise work.**
>
> **Niels Pflaeging,** co-founder and associate, Betacode Network

Science fiction, we were told by more than one speaker at Innotribe this year, is becoming science fact. Such claims were rendered more believable by being uttered in the hi-tech, sci-fi, sci-fact, audio-visual wraparound 'cocoon' that was this year's Innotribe space. There was coffee outside – Jimmy Monkey was on hand again – but staying sharp wasn't an issue. The programme at Innotribe was itself a wake-up call – a full-on, comprehensive and above all practical guide to the future: helping Sibos delegates how to work out what's coming; how to prepare for it; and how to maximise every opportunity. There were visionaries and technologists among the speakers – and real-world bankers describing their own experiences. There were presentations, discussions and workshops – and full houses pretty much throughout. Midweek, Innotribe even held its own networking event with live music.

"Innovation is a space for calmness," said Kevin Johnson, head of Innotribe innovation programmes at SWIFT, introducing a week that would end with 'Throwing Rocks at the Google Bus' – the book, by author and academic Douglas Rushkoff, whose closing keynote was provocative – growth can't

With a map, we can start to anticipate forms of change."

Simon Wardley, researcher, Leading Edge Forum

go on forever, Rushkoff told us – but also reassuring. "I'm not looking towards a digital revolution here. What I'm looking at is the possibility of a digital *renaissance*, a rebirth of old ideas in a new context," he concluded.

After 24 sessions over four days – ranging from 'Emerging technologies for financial services', through 'Organise for complexity' and 'Digital ethics', to 'Forward compatibility' – perhaps we did need that reminder: digital technology may be disruptive, but it also gives us the opportunity to raise our game, perhaps even to initiate a "renaissance" in our own business practices and value propositions.

Disruption fatigue?

Unsurprisingly 'disruption' was an early subject of discussion. "There is a bit of disruption fatigue these days," John Hagel, co-chair, Deloitte Centre for the Edge, told us on Monday morning in 'Patterns of disruption in wholesale banking'. Hagel went on to offer us his team's practical working definition. "Disruption is a powerful new business approach that has a significant likelihood of unseating the leading incumbents in a market or industry, because the approach is so challenging to replicate," said Hagel. To beat a disruptive challenger, an incumbent could have to cannibalise short-term revenue, and potentially write off the assets underpinning current practices. But the really hard part, Hagel stressed, is getting the mindset right. "Often, the powerful new approaches require leading incumbents to question some of their most basic assumptions about what's required for success," he said.

Disruption isn't just a series of one-off stories about overthrowing the old order; its patterns repeat across industries. A common motif is that disruption favours the brave. "Once you get to critical mass in a network-effects business, it is extremely hard to be a fast follower. That role is becoming less and less viable," said Hagel. Don't wait for somebody else to make the first move. The theme of urgency was picked up on Wednesday morning by Gerd Leonhard, futurist and CEO of The Futures Agency, in the lively (and packed) 'The future show live'. "Technology cannot save your business if the model is bad. Wait and see means wait to die," said Leonhard. We live in "a giant vortex of information," he told us, and "data is the new oil."

Relationships endure

By this point in the week, graphic illustrations of the key points of each session were beginning to decorate the outside of the Innotribe cocoon, with many passing

Once you get to critical mass in a network-effects business, it is extremely hard to be a fast follower.

John Hagel, co-chair, Deloitte Centre for the Edge

delegates capturing the boards on their smartphone cameras. Inside, the discussion around 'disruption' moved on to debate on 'construction'. "It is not enough to disrupt; we have to construct," said Leonhard. It is no longer enough to have "a mind-boggling idea" and "skim the cream off the top of new opportunities". Rather, he suggested, the future belongs to those who can construct services to deliver experiences, which was no doubt a positive thought for those incumbents that have a track record in construction.

Leonhard and other speakers were keen to remind banks to recognise their strengths as well as their vulnerability to disruption. "Right now, a computer can beat the world champion at Go, but it cannot talk to a two-year-old," he said. Technology will increase its capabilities exponentially, but we should embrace technology and not become it. "The marriage of relationships and technology is really what we're after," Leonhard said, pointing out that customers are loyal to the relationships they have with humans, not to their machines. Rather than automating ourselves out of the equation, we should leverage our humanity, enhancing our contribution through technology. This message echoed the comments made on Tuesday by Niels Pflaeging, co-founder and associate of the Betacode Network, in 'Organise for complexity'. "*You* are not the problem. Your *people* are not the problem. The problem is the way we organise work," he said.

That said, one key problem arises from our view of others, according to Pflaeging. We tend to view ourselves as 'Theory Y' people, creative and prepared to love our work, whilst categorising others as 'Theory X' people, who dislike work and have to be coerced to perform, he said, referencing the work of management theorist Douglas McGregor. "We created organisations for the way we imagined people were", said Pflaeging, who argued that centrally-managed structures are no longer fit for purpose and cited Sweden's Handelsbanken as a successfully decentralised organisation.

From here to there

If we need to (re-)organise for the future, what is the most effective way of getting from here to there, and what structures, if any, will serve banks and their clients best? These questions were taken up on Tuesday afternoon in 'Situational awareness maps' and on Thursday morning's 'Forward compatibility' session. On Tuesday, Simon Wardley, a researcher from Leading Edge Forum, a global research community (as well as self-styled industry and technology

mapper, and destroyer of undeserved value) outlined a methodology for mapping every aspect of a situation at a given moment.

If you play chess without being able to see the board, for example, you are in a "low-level situational awareness environment". This means you might develop theories as to why your opponents keep winning, but you won't win. Just as a chess player needs to see the board, so a business needs an accurate and comprehensive map of its situation (rather than a management theory, for example). "With a map, we can start to anticipate forms of change," said Wardley, pointing out that change is rarely linear.

The core thrust of Innotribe at Sibos 2016 may have been about helping banks to change inside to ensure they can deliver value in a technology-fuelled future. But it also reminded us that changes are still taking place; new challenges continue to arise. Winners of this year's Innotribe Startup Challenges for Latin America and for Africa were given a platform to explain what innovation looks like in their respective regions, while participants in Innotribe's Industry 'Challenges on Securities and on Compliance' highlighted how innovation had been applied to meet specific industry needs.

Make them all rich

Meanwhile, Bruce Schneier, CTO at Resilient, an IBM company specialising in cyber-security solutions, discussed changes in the nature of cyber-security threats arising from the emergence of the internet of things, which he describes as "a world-sized robot". "Interconnected systems give attackers ways in that we haven't even considered," he said, before offering a solution that aligned neatly with the week's over-arching themes on the value of the human element and the need to rethink the way we organise. "What works in security is lots of smart people looking at the code. So hire smart people or make it public and have lots of people look at it – that works if smart people care enough to look at it," he said.

And finally – the closing keynote. Rushkoff's core assertion – that the perpetual pursuit of growth above all else was becoming increasingly counter-productive – may have been hard for some to accept. His closing message was only a little less so: "The mantra for every business and every bank," Rushkoff told us, "should be: make them rich. Make your suppliers rich, make your partners rich, make everybody in your ecosystem rich." ■

Age of renewal

From real-time payments to correspondent banking to corporate treasury, core banking services are being upgraded to meet the needs of the digital economy.

For the vast majority of Sibos delegates, a similar experience will have marked the start of the conference week. Landing on the runway at Geneva airport, they will have switched on their mobile phones and been immediately able to call, text and use data services, albeit probably at a higher cost than at home.

This standard feature of modern travel is taken for granted because of seamless connectivity between telecommunications providers. Compare this with the processing of cross-border payments, and finance appears to be lagging well behind. This analogy was drawn by Anthony Brady, head of global product management at BNY Mellon Treasury Services, at one of several discussions dedicated to improving cross-border payments efficiency during Sibos 2016's banking stream.

"In general, banks can't tell their clients how long it will take to get the payment there, or how much it's going to cost end-to-end; we can't give them payment status information while the payment is in transit, and we can't tell them when the beneficiary receives the funds. Compared with telecoms, I'm not proud of that experience," said Brady.

Progress has been made towards real-time domestic payments in several countries, while the European Central Bank has set an ambitious deadline to implement a new scheme for instant payments within the Single Euro Payments Area by November 2017. There is widespread consensus on the need for such projects to bring payments services into line with other sectors. But the implementation of real-time cross-border payments requires banks to overcome a combination of technological, legal and cultural challenges.

PSD2 will be a paradigm shift in the European payments landscape.

Dirk Haubrich, head of consumer protection, financial innovation and payments, EBA

Infrastructure investments

One of the toughest issues is interoperability, as payment service providers and market infrastructures in different countries and regions need to be able to guarantee that cross-border transactions will indeed be settled without interruption or delay. Once interoperability is achieved, it could drive up competition and standards – and service levels – among providers.

"A lot of major investments by territories are focusing on modernising and opening up their payment systems, because connecting payment systems more efficiently improves user experiences for individuals and businesses," said George Evers, director of immediate payment services at VocaLink.

Among the countries actively seeking to modernise their payments infrastructure is the UK, where the Bank of England's Real-Time Gross Settlement (RTGS) system settles an average daily value of around £500 billion (US$615 billion) – nearly a third of the UK's annual GDP.

The RTGS system itself is now 20 years old and suffered a major outage in October 2014, prompting the Bank to initiate an overhaul earlier this year. A consultation paper was published in September, with the aim of finalising a timetable next year and delivering a new system in 2020.

"We hear strong support for the risk mitigation characteristics of RTGS, but also recognition that rapid change in the external payments market requires a more flexible system, underpinned by a comprehensive technology refresh, and better access options for a wider range of entities," said Andrew Hauser, executive director for banking, payments and financial resilience at the Bank of England.

The UK's central bank plans to grant access to non-bank payment service providers, in recognition of their increasingly influential role. "The challenge is to ensure we are not taking in risk we don't understand, so we have said we are open to non-bank providers getting accounts with us, enabling innovation and competition, but we won't dilute our standards of stability to achieve that," said Hauser.

Competitive forces

The plans of central banks and other payments market infrastructure operators in Europe are informed both by increasing demand for real-time payments and the phased introduction of the revised Payment Services Directive (PSD2), which drives further harmonisation of the pan-European payments landscape and increases competition from non-bank providers of payment services.

PSD2 entered into force in January 2016 and will apply from January 2018. The European Banking Authority (EBA) is responsible for drafting 11 technical standards and guidelines in support of the implementation of the directive, in cooperation with the European Central Bank and the national supervisors in the 28 EU member states. A series of EBA consultation papers are being issued on these rules, with the aim of finalising them in 2017.

"PSD2 will be a paradigm shift in the European payments landscape that will introduce new types of payment services

When you process US$5 trillion of payments a day, you have to monitor liquidity on an intraday basis.

Mark Trivedi, managing director of firm wide intraday liquidity, JP Morgan

and increase competition between service providers," Dirk Haubrich, the EBA's head of consumer protection, financial innovation and payments, told Sibos delegates.

Haubrich admitted that the introduction of greater competition posed challenges for regulators as well as incumbents. "One of the challenges the EBA has been facing when developing the draft technical standard for the consultation paper on strong customer authentication and secure communication is that there are many new and small-sized providers in this space that may never have engaged with regulators and may never have responded to a consultation paper, but whose views the EBA is keen to hear before finalising the requirements."

As banks and other service providers adjust to a more standardised, inter-connected global payments system, the

The development of the SWIFT gpi initiative over the last year will give corporations the information they need.

Susan Skerritt, Americas regional head, Global Transaction Banking, Deutsche Bank

Rapid change in the payments market requires a more flexible system, underpinned by a comprehensive technology refresh, and better access options.

Andrew Hauser, executive director for banking, payments and financial resilience, Bank of England

traditional means of effecting high-value, cross-border payments is also undergoing something of a makeover.

In a session on correspondent banking, Anurag Bajaj, head of banks at Standard Chartered's transaction banking business, recognised the need for change in some core services, but also noted the level of trust and relationship knowledge that provides high barriers to entry for new service providers. Harnessed correctly, this could work positively for incumbent correspondent banks. Susan Skerritt, global head of institutional cash management and Americas regional head of Global Transaction Banking, Deutsche Bank, said correspondent banks' expertise in fostering networks of long-standing cooperative relationships would prove valuable at a time of when collaborative networks of actors were defining the usefulness of new technologies.

On the collaborative front, panellists also saw significant potential for SWIFT's global payments innovation (gpi) initiative to improve the user experience of cross-border payments customers through greater certainty and transparency on fees and schedules.

"The development of the SWIFT gpi initiative over the last year has demonstrated a high level of urgency and will give corporations the information they need to reconcile and forecast when they're going to receive money," said Skerritt.

Room for improvement

Progress of this kind is likely to be welcomed by corporate treasurers, many of whom are struggling to adjust to the compliance obligations of their banking counterparts, and are feeling less benefit from technology-led innovation than retail customers. Know-your-customer (KYC) requirements have increased in scope over the past decade, but some corporate treasurers believe banks' due diligence processes are placing unnecessary pressure on client resources.

"KYC is a significant issue for us, and I do have a problem when banks ask us for more information than they need because it's 'nice to have', or they change their mind after three months or there is document creep. We fully intend to be compliant with KYC rules, but I have a fixed size of team and I am concerned that in the future it will be a team of administrators, lawyers and compliance experts that has nothing to do with getting our business done," said Phil John, treasury director for Europe, the Middle East and Africa at Mars.

In a session on corporates' needs from banks, similar concerns were raised by other treasurers, who suggested that basic processes were still in need of improvement. John's call for banks to assume an advisory role with clients, rather than "classic" selling, was echoed by his peers.

"I want my banks to be consultative," said Betsy Clark, treasury director at Alliance Data Corporation. "I want them to come to me with best-practice solutions, and to tell me lessons learned from other implementation projects. I would love to say we're working with the banks on some really visionary corporate initiatives, but we're still drowning in the basics of paperwork and KYC."

The challenges of handling new regulatory requirements were also apparent in a discussion on intraday liquidity management, although panellists emphasised the need for banks to go beyond the rules. The Basel Committee on Banking Supervision has called for banks to implement monitoring tools for intra-day liquidity management by January 2017. For many, however, the complexity of large banks means real-time liquidity management should be a matter of standard business practice rather than a regulatory mandate.

"We don't manage intraday liquidity for regulatory reasons. We do it because it matters to how we run our organisation. When you process US$5 trillion of payments a day, you have to monitor liquidity on an intraday basis," said Mark Trivedi, managing director of firm wide intraday liquidity at JP Morgan. ■

Building momentum for change

Regulatory and industry initiatives are driving efficiency and harmonisation – but the path is far from smooth.

The harmonisation of post-trade processes has been an ongoing project in the European securities market for some time, but has enjoyed only varying degrees of success. Optimists hope that the European Commission's Capital Markets Union (CMU) initiative will provide new impetus. Far-reaching policy programmes such as CMU are happening at a time of enormous technological innovation in areas such as data management and distributed ledgers which may provide new opportunities for process efficiency and harmonisation.

In terms of recent efforts toward standardisation across Europe's securities markets, the Central Securities Depository Regulation (CSDR) has effected adoption of T+2 ahead of migration to TARGET2-Securities (T2S), the European Central Bank's (ECB) pan-EU single settlement platform. The third wave of migration took place in mid-September, with central securities depositories (CSDs) from Belgium, France, Netherlands, Luxembourg and Denmark linking up. Nine more CSDs will connect next year, making 21 connecting to T2S by September 2017.

A survey at Monday's 'EU securities markets transformation – Is the glass half empty or half full?' session revealed that 54% of the audience believe CSDs will be most impacted by T2S, while 36% anticipated that the strongest effect would be felt by sub-custodians. Sub-custodians, particularly those operating in single markets, have been

We need a more intelligent use of capital markets across the EU to boost jobs and growth.

Kay Swinburne, MEP

alarmed by the competitive forces unleashed by T2S and CSDR. By providing a single entry point for European securities settlement, T2S enables global custodians to forego establishing sub-custodian relations in many local markets. Moreover, a handful of local market CSDs are launching asset servicing services in competition with sub-custodians.

"T2S could be challenging for banks which operate as single market sub-custodians. But it will be broadly positive for multi-market sub-custodians and will increase competition. This will help organisations remove inefficiencies," said Mathieu Maurier, global head of sales and relationship management at Societe Generale Securities Services.

Removing barriers

While T2S removes a number of the hindrances to harmonised securities clearing and settlement identified by the Giovannini Group at the turn of the century, it will not erase them all. CMU may help, via its mandate to review and remove regulatory barriers to market-based finance. As part of its efforts to help mid-tier firms source non-bank funding more easily, for example, CMU will ease the provisions around prospectuses contained within the Prospectus Directive.

"There is a general concern about over-reliance on bank financing throughout the EU, compared to the US. We need a more intelligent use of capital markets across the EU to boost jobs and growth. Impeding capital flows is something that needs to be removed in the EU," said Kay Swinburne, Conservative MEP for Wales and long-standing member of the European Parliament's Economic and Monetary Affairs Committee. Swinburne was speaking in the Monday afternoon session, 'Single market and capital markets union – The future role of financial market infrastructures'.

In the same session, Laurence Caron-Habib, head of public affairs at BNP Paribas Securities Services, indicated that the European Post Trade Forum, a European Commission working group comprising of a number of securities market trade associations and experts, was working towards the removal of barriers in the post-trade space, in support of CMU's efforts at harmonising the post-trade industry.

T2S will be broadly positive for multi-market sub-custodians and will increase competition.

Mathieu Maurier, global head of sales and relationship management, Societe Generale Securities Services

Removing the Giovannini barriers requires consensus on cross-border harmonisation in the public as well as private sector, meaning broader political discourse can impact progress. A poll held in the CMU session found that 59% of attendees believed the recent UK referendum in favour of leaving the EU would delay the progress of CMU. While some panellists and delegates felt 'Brexit' would inevitably prove a distraction from CMU, others identified T2S as a force for securities market post-trade harmonisation that is already going ahead without the UK's involvement.

Godfried De Vidts, director of European affairs at inter-dealer broker ICAP and chairman of the ICMA's European Repo and Collateral Committee, said that public and private sector parties needed to sift through and identify the most pressing issues.

"CMU is fundamentally a good thing, but it has not yet drilled down into clearing and settlement," he asserted. "Member states need to be brave when it comes to CMU formulation, and there are a huge number of issues that need to be addressed in the post-trade space in rules, such as the impact of European Market Infrastructure Regulation (EMIR). Take the challenges around collateral and margining: one of the unintended consequences of Basel III capital requirements is that there is less high-grade collateral to post to central counterparties,

CMU is fundamentally a good thing, but it has not yet drilled down into clearing and settlement.

Godfried De Vidts, director of European affairs, ICAP

There is industry pressure for the creation of a centralised market utility holding client data.

Cian Burke, head of securities services, HSBC

and limited collateral fluidity. These sorts of issues need to be resolved by CMU in the post-trade world."

Data quality

Another consequence of recent legislative reform that market participants would like CMU to resolve is the dual-sided reporting of derivative transactions under EMIR. Tuesday morning's panel on the evolution of the FX market also highlighted the difficulties caused by trade repositories receiving two sets of data from counterparties following the execution of any European derivatives trade, such as an FX option or swap. The introduction of the new rules in February 2014 has led to errors, inaccuracies and an inability by repositories to reconcile trades, particularly if the unique transaction identifier, the trade ID provided by both counterparties, does not match. "Dual-sided reporting has its challenges, and this is something we would like to be addressed as we have been working with market participants to find solutions," said Steven French, head of regulatory strategy and product at post-trade solutions provider Traiana.

Although the European Securities and Market Authority is working with trade repositories and market participants to improve data quality in transaction reports, French suggested blockchain and machine learning could play a role in analysing the voluminous data sets currently being captured and stored. "The regulators have a huge amount of data and artificial intelligence or machine learning is a viable way forward to enable them to process all of this information," said French, adding that Traiana is exploring use of such technology in its own product offering to help regulators identify risks in the derivatives market.

Rules such as EMIR have reinforced the importance of sound data management among securities and derivatives market participants; from January 2018, MiFID II's reporting requirements will push it even higher up the c-suite's agenda. The surging volume of reporting requirements and increased client disclosure is already forcing financial institutions to introduce better mechanisms to control, manage and aggregate their data. Speaking at Thursday's session, 'Data management – The quest of the endless journey', Cian Burke, head of securities services at HSBC, acknowledged that disruptive technology could play a role in streamlining data management for securities services providers.

"There is also industry pressure for the creation of a centralised market utility holding client data. This would not give any particular provider a competitive advantage, but I suspect any utility holding on to all of that data would be reluctant to take on the huge liability which could arise in the event of a problem," said Burke.

Achieving alpha

The evolving role of innovative technologies in client relationship management was also explored in a panel session on the emergence of robo-advisors, platforms which combine increasingly sophisticated user-interfaces with machine-learning systems to provide investment advice, such as portfolio weighting recommendations. Robo-advisors first made their presence felt in the US market, where a number of startups grabbed market share by offering cheap, user-friendly investment advice to retail customers. US asset managers responded with their own platforms and the European market is beginning to witness the launch of similar offerings, both from incumbents and from new entrants.

Panellists agreed that cost pressures and regulatory change were driving the growth of robo-advisors, with some noting the recent challenges faced by asset managers in producing satisfactory returns. "Cutting costs at asset managers is one way by which organisations can achieve alpha in the current interest rate environment and volatile market conditions," said Edward Glyn, managing director and global head of relationship management at solutions provider Calastone.

In terms of regulatory drivers of robo-advisor market share, some panellists pointed to the negative impact on the availability of investment advice by regulatory restrictions on commissions in the investment industry, notably under the incoming MiFID II. Others saw the growth of robo-advisor platforms in terms of a generational shift, pointing to their high levels of success in engaging millennials in retirement planning decisions and other aspects of saving and investment. Whether deploying new technologies, re-examining recent reforms or adjusting business models, the securities stream at Sibos 2016 demonstrated that there are many ways in which the industry is working to improve the efficiency of the investment process in the services of end-users. ■

Stronger together

Collaboration and information-sharing between institutions and across the public and private sectors will be vital in fighting financial crime and preserving the integrity of the global financial system.

There is a need for wholesale reform in the way financial crime is tackled. This was the blunt message delivered by Stuart Levey, chief legal officer, HSBC, and keynote speaker at the opening of Sibos 2016's compliance stream.

"We are poised to create the momentum to make a true paradigm shift," said Levey. Two countervailing forces are at play; a deep public policy commitment to combat financial crime and preserve the integrity of the financial system, coupled with growing concern among policy-makers over the unintended consequences of financial exclusion through de-risking. "De-risking is being applied as an alternative to managing risk," cautioned Levey.

To reconcile these imperatives, more precision is required in how illicit conduct within the global financial system is targeted. This can only be achieved by improving collaboration and information-sharing across the public and private sector, said Levey. There are four critical components to this increased level of interaction. It has to be cross-border, in real time, among private sector actors, and between government and industry.

"The case for a new standard on information sharing is overwhelming," said Levey. The Financial Action Task Force (FATF) has a critical role to play. "They could set

> **The case for a new standard on information sharing is overwhelming.**
>
> **Stuart Levey,** chief legal officer, HSBC

The decline and concentration of correspondent banking is a cause for concern for regulators globally.

Alexander Karrer, chair of the correspondent banking coordination group, Financial Stability Board

standards around the sharing of information for financial crime risk management."

Information-sharing takes many forms – between regulators and banks, within and between banks, between banks and their clients, and between banks and third parties such as utilities, to name a few. Over the course of four days, panels and presentations across Sibos 2016's compliance stream explored all these and more in detail, with the aim of enhancing industry efficiency and effectiveness in tackling financial crime.

Zero tolerance

De-risking was the focus of Monday's panel, 'How to safely bank low-risk clients in high-risk jurisdictions'. Banks were de-risking correspondent relationships even before FATF mutual evaluations were done, said Julie T Katzman, chief operating officer at the Inter-American Development Bank. "Banks looked like they were developing a zero tolerance on the risk spectrum."

Correspondent banking relationships decreased significantly over the course of 2014 and 2015, noted Richard Lalonde, senior financial sector expert, IMF. The effect was most marked in the Caribbean where more than a dozen indigenous banks have had their relationships severed with global banks. "There's a danger that some countries could be cut off the global payment network," said Jochen Metzger, director general of payments and settlement systems, Deutsche Bundesbank.

What seemingly amounts to a blanket approach to de-risking is due in part to banks operating in an environment in which they are unsure what regulators will do. "That creates fear and when banks make decisions based on fear, they do not tend to optimise," said Katzman.

Correspondent evolution

The need for clarity from regulators was echoed in the session, 'Evolution of correspondent banking', which examined the impact of increased financial crime compliance obligations on the correspondent banking model. "Regulators need to give us clear standards," said Patricia Giangrande, global head of business control office, institutional cash management, Deutsche Bank.

"The decline and concentration of correspondent banking is a cause for concern for regulators globally," observed Alexander Karrer, Switzerland's deputy state secretary for international finance, speaking in his capacity as chair of the correspondent banking coordination group at the Financial Stability Board (FSB). This can affect the ability to send and receive international payments and drive financial flows underground, he cautioned.

Faced with sanctions compliance, a nuanced approach to de-risking is called for. Larisa Zalomikhina, group head of compliance at Sberbank, said it was imperative that customers understood and identified different types of sanctions. In the case of Russia, she said, "It took time to explain that restrictions applied to long-term financing and not correspondent banking."

The cost and inconvenience caused to customers by correspondent banks' financial compliance measures could play a significant role in their ultimate effectiveness, suggested Olivier Denecker, director of knowledge, McKinsey. To this end, regulators should focus as much on the cost of compliance as its effectiveness. "It is where you draw the line on risk," he said.

Karrer agreed there was a need to distinguish between higher and lower risk situations in correspondent banking and that this was an area being explored by the FSB. "There is no intention to add additional layers of regulation. Rather, we are looking to provide clarity and to make regulation as effective and cost-friendly as possible," he said.

Tipping point

Are shared utilities reaching a tipping point? That was the central theme of the panel focusing on compliance utilities. For David Fleet, managing director, client onboarding & management at Standard Chartered, the answer was a qualified "yes" when it came to The KYC Registry and its use in correspondent banking for onboarding and review. At a regional and national level, utility solutions are gaining momentum for a variety of purposes, such as SIRESS for cross-border payments between member countries of the Southern African Development Community. "It remains to be seen what will happen on a global scale, but certainly within local and industry-specific areas we are definitely reaching a tipping point," concluded Fleet.

ATTITUDES TO UTILITY SOLUTIONS

Current use of shared utilities for compliance

71% implementing
18% evaluating

Areas of compliance suitable for utilities

80% KYC
64% sanctions screening
62% AML

Source: Digital polling during 'Utilities: Reaching the tipping point?' session (27 Sept 2016)

"Reaching a tipping point doesn't mean we are out of the woods in terms of how we will best use utilities," observed Mark Gem, chief compliance officer and member of the executive board, Clearstream. While bank-

> Regulators need to give us clear standards.

Patricia Giangrande, global head of business control office, institutional cash management, Deutsche Bank

The whole concept of a utility is about breaking down barriers.

Barbara Patow, global head of money laundering, financial crime compliance, HSBC

to-bank KYC is forging ahead, in the world of the end-client and corporates, the jury is still out, he said.

On the subject of further mutualising financial crime compliance costs and efforts, Matthew Russell, partner, financial crime, PwC, said there was a lack of consensus between banks over use of internal versus third-party sanctions screening solutions. "The whole concept of a utility is about breaking down barriers," said Barbara Patow, global head of money laundering, financial crime compliance, HSBC. "As banks we have to get together, dispel the fear factor and innovate."

Mother of invention

Banks have always been able to make a virtue out of a necessity. Opportunities to extract value from compliance data were discussed in the session, 'Utilising compliance data assets to generate new business opportunities'. Jim Wadsworth, managing director, Accura at Vocalink, said the UK payments processor was already aggregating billions of transactions annually to create a real-time picture of the UK economy. "That is potentially valuable from a public policy or capital markets perspective."

FIGHTING TERRORISM

Banks are fighting terrorist financing effectively in the view of two-thirds of the audience canvassed at the session on 'Recent trends in counter terrorist financing'. The panel begged to differ. "The large-scale attacks in Paris and Brussels were a wake-up call," said James Freis, chief compliance officer, Deutsche Börse." There is a funding element to all these attacks. There are many sources of intelligence but the financial component is critical because it represents one of the concrete steps in uncovering a terrorist network."

Recent developments are challenging banks to update their approach to tackling terrorist financing, according to Tom Keatinge, director of the Centre for Financial Crime & Security Studies, part of the Royal United Services Institute, a London-based think-tank. This was not a criticism, he said, merely a reflection of the switch by terrorists from the formal banking system to use less 'auditable' channels.

Closer collaboration is needed between financial institutions and intelligence services, said Troels Oerting, group chief information security officer at Barclays and former director of operations in the Danish Security Intelligence Service. While panellists agreed that public and private partnership was key, Keatinge stressed the importance of gaining access to higher value information, while Oerting acknowledged the challenges in balancing security and privacy. Put to a vote, two-thirds of the audience felt that banks' should agree to sharing confidential information within an appropriate framework. It reflected a change of mindset, noted Freis.

Although almost a quarter of audience members said they were already reusing data collected for compliance purposes to personalise banking products and services, with a further 20% at a planning stage, over a third had no plans. The panel felt the polling provided an accurate reflection of the market, with Eric Clapton, head of retail financial crime prevention programme, Lloyds Banking Group, encouraging banks to utilise their investment in compliance to create sustainable resources. ■

Keeping up with the customer

Both individuals and organisations must continue to evolve their behaviour in order to serve a diverse and fast-changing society.

It is increasingly recognised that the culture of an organisation is fundamental to its ability to meet the needs of stakeholders, from customers to regulators to shareholders to employees.

On one level, we expect the makeup and structure of organisations to reflect the society in which they operate. Financial services firms are expected to meet these norms, for example, in terms of gender, ethnic and religious diversity, as well as being LGBT (lesbian, gay, bisexual and transgender) friendly. At the same time, organisations are also expected to meet new technological changes and adapt to new trends in customer demand in a fast-changing world. In this sense, the culture of a firm must be alert and responsive to new dynamics. Across the financial services sector, for instance, building a culture that understands cyber-security risks, while also embracing the lessons from new entrants such as FinTech, is becoming critical.

Change is inevitable

But changing or just managing the culture of any organisation as large and complex as most global banks is a considerable undertaking. And in the current climate of higher regulatory costs, competitive pressures, lower growth forecasts and revenue levels from traditional

Cultural change is perhaps one of the hardest things to do in an organisation.

Kim Newell Chebator, head of global markets for EMEA, State Street

Client decisions are being shaped by cultural expectations.

Mark McLane, head of diversity and inclusion, Barclays

sources, it is imperative for c-suite executives to maintain focus on long-term cultural issues, especially if a company has retained the same structure and organisational makeup over recent decades.

The culture stream at Sibos 2016 touched on many themes related to how the culture of financial institutions should evolve in line with the society around them, including gender diversity and inclusion, organisation and decision-making, and dealing with technological change. One recurring message echoed across these sessions: change is inevitable. Cultural issues leading up to the financial crisis are seen as a contributing cause. As well as regulatory reform, it was recognised that a change in culture was also needed to avoid a repeat.

"Since the financial crisis, we found that cultural change is perhaps one of the hardest things to do in an organisation," said Kim Newell Chebator, head of global markets for EMEA at State Street. David Puth, CEO of CLS Bank, agreed, noting residual levels of mistrust due to the scandals that emerged in the aftermath of the financial crisis. "The industry recognises the need to change that perception through changes in conduct and in certain practices," he told delegates in Wednesday's session, 'Behaviour and culture under the spotlight'.

The financial crisis also awakened the industry to the risks of a male-dominated culture at the top of many leading financial institutions, with a tendency toward group-think that can leave many assumptions unchallenged. From a gender diversity perspective, despite the huge amount of research highlighting both the social and business benefits of having a diverse array of people at high level positions, there is still a widespread lack of female board members and directors.

Diverse talent pool

Mark McLane, head of diversity and inclusion at Barclays, said the financial crisis was a turning point. "We have to attract the best talent to compete. The client expectations of banks are changing and their decisions over who they do business with are being shaped by cultural expectations," he told delegates on Tuesday in 'Diversity and inclusion – The leaders' perspective'. "For example, are you LGBT friendly? Do you market to women? We have to look more broadly at how we conduct business."

On a wider scale there is still significant under-representation in banking of women and people from different ethnic and religious backgrounds. Tinna Nielsen, a behavioural economist and an expert on unconscious bias, believes a fear of disrupting the status quo has been a factor in the continuing lack of women in leadership roles.

"Our unconscious mind operates on survival mode. We seek out people who are similar to ourselves, because it is safe and therefore maintains the status quo," said Nielsen, founder of Move the Elephant for Inclusiveness, in a presentation on encouraging inclusive behaviour. "On some levels we are tribal people, we feel more comfortable to be with those that resemble ourselves."

Despite the lack of overall progress, there is now increasing recognition amongst leaders of financial institutions on the benefits of diversity, with more initiatives to bring a more diverse set of people into leadership roles as part of wider efforts to change banking culture.

Jennifer Boussuge, head of global transaction services, EMEA, at Bank of America Merrill Lynch, highlighted that over half of the bank's global workforce is female, 38% of its leaders are women, and six of its 14 board members are female. Speakers agreed that change had to be led from the top. Chebator said there was no single method for assessing a bank's culture, but noted three criteria in use at State Street.

"One is the tone from the top, how is the leader – and the people that make up the board of directors – portraying the firm's culture?" she explained. "Second, are executives and senior management taking personal accountability? Third, is there evidence that change occurred from debate, and have a diverse set of opinions and voices been heard?"

Sharing experience

When it comes to ensuring the efficient delivery of valued services to customers, a change in the status quo – in terms of how of how resources, processes and systems are deployed – is becoming vital for banks looking to keep up with new demands and threats. In 'Building a culture of security', panellists discussed how banks are increasing employee understanding of

It is not just a matter of employing millennials, it is about looking at a change in cultural norms.

Stephen Bayly, CIO, securities services, HSBC

We seek out people who are similar to ourselves, because it is safe and therefore maintains the status quo.

Tinna Nielsen, founder, Move the Elephant for Inclusiveness

cyber-security threats through testing and sharing experience.

"We are considering a number of methods to test our culture. One approach is to hire someone to work for 18 months to get an outsider's view. This requires us to put a number of safety mechanisms in place to protect that individual, but there is real value is in the discussions and stories that result from the experience," said Martijn Dekker, chief information security officer at ABN Amro.

Like inclusivity, building a culture of security is also a top-down process, according to cyber-security expert Assaf Egozi, also entrepreneur in residence at Eggsplore, a Brussels-based Fin-Tech ecosystem. "Implementing a culture of security can't just be done with a small security team. You have to talk with the c-suite and individual departments about how they think about cyber-security and the level at which they engage in the security process. You then have to look at entire organisation to understand how it behaves," said Egozi.

Banks also need to embrace a new generation of staff as they compete to provide services in a market redefined by the digital user experience. With the arrival of new FinTech firms that are smaller, less structured and thus more able to adapt to changing customer experience trends, it has become vital for banks to harness these new technologies and attract millennials.

"The generation of people that will be operating the systems will be millennials, we need to accept this as part of day-to-day operations and leverage their skills," said Stephen Bayly, CIO at HSBC's securities services business, in the session titled 'Digital disruption in securities services: fear and courage'. "It is not just a matter of employing millennials, it is about looking at a change in cultural norms in order to generate new ideas and provide a competitive stimulus."

The diversity of the topics discussed in the culture stream at Sibos 2016 is a reflection of the range of changes taking place in society as well as in the financial services market. The structure, organisation and above all culture of banks and other institutions must be able to take account of these shifts. Those unable to embrace change risk being left behind. ■

From theory to practice

Distributed ledgers have come a long way in just 12 months, but still face further hurdles before they can fulfil their potential.

The successful completion of series of smaller projects will help position the industry to complete larger scale efforts in the future.

Brian Behlendorf, executive director, Hyperledger Project

As in 2015, blockchain was on the lips of many Sibos attendees this year. In formal conference sessions, Innotribe and Open Theatre presentations, talk was about practice rather than theory, with many discussions covering applications that are already up and running, whether in proof-of-concept, pilot or production mode. Attendance was high, and questions focused on threats, opportunities and the pace of change, the latter perhaps being the area of greatest interest.

For those still catching up with the concept of distributed ledgers, the discussion started on Monday morning with 'Blockchain 101', a primer from Michael Mainelli, executive chairman of Y/Zen Group. Concluding a concise run through the history of ledgers and the link to cryptography, Mainelli noted, "If civilisation was made possible by ledgers, then it was war that drove cryptography and computing." In terms of structure and access, ledgers have moved from centralised to decentralised to distributed, and from single-user to multi-user, to multi-organisation. Meanwhile cryptography has evolved from single codes shared between senders and receivers, to a situation in which each may maintain a private key, and also offer a public key to their correspondents.

Public/private key arrangements are not new, neither are shared ledgers. Cryptocurrencies may have energised discussions around distributed ledgers in the finance sector but, as Mainelli observed, other sectors have been using the technology for some time.

Regulatory support?

For many, the issue is no longer what the technology *can* do, but rather what it is already doing. Monday afternoon's 'Blockchain 2020' session represented a call to action. Philippe Denis, chief digital officer at BNP Paribas Securities Services,

confirmed that the bank, which had previously announced blockchain capabilities around equity crowd funding, was launching a platform for private companies to issue mini-bonds. According to Denis, the French financial markets regulator (Autorité des Marchés Financiers) has indicated that the mini-bonds would not be regarded as financial instruments and could be recorded on a distributed ledger, subject to the passage of forthcoming legislation. This positive step – coupled with the pro-active approach of the UK's Financial Conduct Authority – suggests that regulators are determined to ensure that they are not seen as obstacles to innovation. In Tuesday's 'When RegTech meets FinTech' session, representatives from R3, SETL and Digital Asset Holdings all commented on the constructive role now being played by regulators as they review the implications of distributed ledger applications in the finance sector.

In terms of specific business areas, correspondent banking could be impacted by a number of nascent blockchain applications in areas ranging from KYC/AML and sanctions screening, to cross-border payments through to settlement, clearing and custody and trade finance. For correspondent banks in particular, a balance must be struck between opportunities to improve service and efficiency, and risks that could undermine longstanding relationships.

Practical examples outlined in Geneva suggested banks are at varying stages of a steep learning curve. In the 'Blockchain 2020' session, Vivek Ranachandran, head of product and propositions in HSBC's global trade & receivables finance business, said the bank had learnt a number of important lessons about the security and scalability of distributed ledger technology through its development of a trade finance application within the Hyperledger Project.

Despite all this activity, one sceptical member of the audience argued that the initiatives were too modest in scope, and

If civilisation was made possible by ledgers, then it was war that drove cryptography and computing.

Michael Mainelli, executive chairman, Y/Zen Group

especially scale, to justify the hype around the technology. Reflecting on the realities of adopting new technologies in a highly regulated industry, Justin Chapman, global head of market advocacy and innovation research at Northern Trust, gave the example of a proven blockchain solution to KYC/AML compliance, which had faced barriers due to legislation which requires individual banks to use their own processes, thus undermining the benefits of a shared ledger.

Exploring test cases

In the securities stream, experts considered the application of blockchain to the post-trade transaction life-cycle, and the opportunity to streamline workflows at central securities depositories (CSDs) in particular. Here too, test cases are already being explored by many infrastructure operators, including all of those represented on the 'Innovation in the CSD space' panel, namely, the Australian Securities Exchange, the Depository Trust & Clearing Corporation, Euroclear and Russia's National Settlement Depository.

Panellists suggested that the most promising areas for the deployment of blockchain could be corporate action issuance or proxy voting, both of which have so far resisted automation. Speakers also raised the question of how to implement blockchain-based solutions with maximum interoperability and utility. Should securities market participants and market infrastructure operators push ahead with initiatives to meet particular needs, or delay until consensus is reached on standardisation issues? With a number of pros and cons cited, this question may be revisited frequently in the coming years.

Understandably, speakers were reluctant to predict when large scale production systems would be rolled out, but were united in the belief that blockchain would prove its value over time. Brian Behlendorf, executive director at the Hyperledger Project, summed up the general view, noting, "It is the successful completion of series of smaller projects that will help position the industry to complete larger scale infrastructure efforts in the future." This view was echoed by speakers at Wednesday's 'Blockchain and correspondent banking – the way to go?' session.

The multi-organisation opportunities of distributed ledger technology were referenced throughout all sessions. The value appears to be greatest when there are many parties to a transaction and when institutions have a shared interest in developing a solution. While inertia is always a potential obstacle, this can be overcome by constructing appropriate networks, either via regulatory intervention or in response to commercial need. The nature of blockchain initiatives in part reflects the nature of the technology, but also seems to embody a new found zeal among highly competitive institutions to work together to develop and prove a technology that might help them meet common challenges, whether from regulation, cyber-criminals or financial crime compliance.

Get moving – fast

A consistent message from Sibos 2016 was that implementation is happening faster than many expected, and not just within financial services. In an Open Theatre session, IBM said it had worked with more than 40 firms in the past 12 months, helping them move through all the necessary pre-production stages – from short, business-focused, agile developments to senior management awareness and education – with a view to going live at scale by the end of 2017. John McLean, vice president, global blockchain labs engagement, IBM, had a simple message. If they have not already done so, banks need to start experimenting on practical use cases as soon as possible. "Create or join a business network in which distributed ledger technology can be useful and get moving fast," he said.

The good news is that the 'build fast, learn fast learn, fail fast' mentality that drives many financial technology start-ups is beginning to permeate the very largest of banks. How blockchain evolves, and whether or not it ultimately transforms financial services, it is clear from the breadth of the discussions and the large audiences attending them that it remains a hot topic for the industry. How will the pilots have matured by Sibos 2017 in Toronto? ■

Pushing the limits of the possible

The spirit of innovation and collaboration imbued Sibos 2016 in Geneva. Solar-powered adventurer Bertrand Piccard encouraged delegates to explore it further.

Having spent much of the week considering how technology innovation is transforming the industry, delegates attending Sibos 2016's closing plenary heard from a speaker who has pushed the limits of the possible in spheres well beyond banking. Bertrand Piccard – Swiss psychiatrist, adventurer and pilot of the first round-the-world solar-powered flight – treated his audience to an inspiring presentation on how to achieve success in an increasingly resource-constrained world.

If we want to keep on improving our defences, we will have to work together collaboratively.

Stephan Zimmermann, deputy chairman, SWIFT

No regrets

Being the first is something of a tradition in the Piccard family. Bertrand's grandfather, Auguste, was the first person to reach the stratosphere in a hot air balloon in the 1930s. Thirty years later, his father, Jacques, became the first man to reach the deepest point of the world's oceans, the Mariana Trench in the western Pacific Ocean.

With his grandfather and father reaching new heights and depths, it is perhaps unsurprising that Piccard has focused on length, completing the first-ever non-stop balloon circumnavigation of the globe in 1999, flying more than 45,000 km in 20 days.

To a packed audience, Piccard explained how he was both inspired and intrigued by the concept of the impossible. "You ask: why is that impossible? And the response you get is that nobody has ever done it before. But if you try, you become a pioneer. It is better to fail than not try and leave regrets," he said.

It was during his balloon-borne journey around the world that Piccard first began to think seriously about perpetual flight. At the time, solar-powered aircraft could only travel relatively short distances and were only able to fly during daylight. Piccard, alongside co-pilot Andre Borschberg and a team of scientists and engineers, set to work in a hangar in Zurich on designing an aircraft to circumnavigate the Earth powered by solar energy, flying day and night. The first fruit of their labours – a prototype named Solar Impulse 1 – was unveiled in 2009 and went on to complete a 26-hour flight, including nine hours of night flying in 2010.

Suitably encouraged, Piccard and his team then developed Solar Impulse 2, which took off from Abu Dhabi in March 2015, eventually racking up 558 hours of flight time on its multi-leg odyssey. The flight – punctuated by a nine-month lay-off due to damage sustained between Japan and Hawaii – was finally completed in July this year.

Creative differences

What can we learn from this feat of engineering and determination? Piccard said the flight had disproved the doubts of those that had thought his plan impossible. "Impossible means that you are limited in your view and that you stop before reaching your goal," he explained.

Piccard also emphasised the importance of having a diverse team. "Building teams is both art and science. The value of talent is created through differences, not similarities," he said. In the case of Solar Impulse, differences between Piccard and co-pilot Borschberg generated tension that could be channelled positively. "If you want to be creative and find solutions, you have to work with someone that is different. There will be conflict, but every conflict is a source of solutions," said Piccard. "If you want innovation you have to go outside of the system, and rely on people that will criticise you, but at the same time stimulate your strategy."

Solar Impulse was more than an exercise in team-building; it was a demonstration of the potential of non-carbon energy sources. Now, Piccard is taking this message one step further. With Borschberg, he has founded the International Committee of Clean Technologies, with the aim of developing and promoting use of sustainable energy sources and technologies. "Most of the problems caused by carbon dioxide are the result of old engines and systems, not lifestyles. We have to demonstrate that developing technologies for cleaner energy is not impossible," said Piccard.

Referring to his own experience, but no doubt echoing the thoughts of delegates looking to harness new technologies to compete in an uncertain and unpredictable future, Piccard said that only when we step through into the unknown can the impossible become reality. To illustrate his point, he

> **Innovation and transformation are everywhere.**
>
> **Craig Young,** chief technology officer, SWIFT

showed a photo of ice-frosted windows taken during Solar Impulse's circumnavigation. "When we innovate, it requires from us another relationship with the unknown. Often we are so afraid of the unknown that we prefer to suffer the ice that we know, rather than going through to see what is on the other side," said Piccard.

Certainly Piccard's message of pushing into the unknown can easily be applied to the key themes of Sibos 2016. A year ago, blockchain was just breaking out from the Innotribe stage, for example, while this year it was headlining throughout Sibos, as delegates discussed and listened to practical case studies. Banks might be stepping into the unknown with these blockchain pilot projects, but strong team-building and talent-nurturing skills will help them to deploy technology innovation and drive customer value to new heights.

New techniques

Speaking before Piccard's presentation, SWIFT deputy chairman Stephan Zimmermann highlighted the need for new mindsets and openness to new ideas. In the context of difficult economic conditions and evolving regulatory requirements, how financial organisations challenge themselves and identify new solutions will determine their progress. "Because of the size and complexity of the challenge, we will need to apply new techniques to master it," said Zimmerman.

New ideas and technologies would not only help banks to address macro-economic and regulatory uncertainties, but also enable them to tackle one of the key themes of the week: cyber-security risks. "If we want to keep on improving our defences, we will have to work together collaboratively – using new technologies and our ability as a network and a community to share information," said Zimmerman. "We also need to extend our dialogue beyond the inner circle of banks. We need to talk to our customers, our providers and our partners to ensure we all have an awareness that cyber-risks will be part of our daily lives."

Echoing Zimmermann, SWIFT chief technology officer Craig Young said that sharing best practice was a key element of the industry's cyber-security defences. "SWIFT takes its role in the community seriously. Collective agreement on knowledge-sharing helps enormously," he said.

Turning to the broader application of technology, Young said that collaboration with the FinTech sector would help banks to thrive. "Innovation and transformation are everywhere," he said, noting however that innovations such as distributed ledger technology would not fulfil their potential overnight. "There are many credible projects underway. But I still think there are a fair amount of challenges to be resolved, such as scalability, cyber-resilience and data privacy. They're all solvable but they're big things that we all need to work through. But we at SWIFT have a deep ambition to drive this technology forward," he said.

"Some refer to blockchain as the internet 2.0 and there are certainly parallels with those early development stages of the mid-1990. Now as then, we'll get there, but it will take time," he added. Having spent more than a decade developing Solar Impulse before achieving the impossible, this is a message that Piccard might also endorse. ■

Mastering the mega-shifts

The future of finance will be very different from even its recent past, due to technology innovation's impact on the industry and society.

Sibos 2016 was replete with practical examples of how technology innovation is transforming the banking and financial services industries. From cloud computing and blockchain to digital currencies and artificial intelligence, Geneva's Palexpo conference centre provided plenty of evidence that theory is very quickly turning into practice. In a series of timely interviews, Sibos TV's daily 'Game Changers' slot offered four forward-thinking experts the opportunity to share their ideas on the broader impacts of this era of breath-taking, far-reaching and almost all-encompassing technology-driven change. From the way we run our companies to the way we choose our careers even to the way we feed our pets, there is little we can be sure will remain the same over the coming decade.

I genuinely see billions of ledgers.

Michael Mainelli, executive chairman, Z/Yen Group

Diverse, numerous ledgers

On Monday, Michael Mainelli, executive chairman of Z/Yen Group, asserted that distributed ledger technology would soon become an integral part of the financial markets infrastructure, pointing out that the financial industry was already well behind several others in its adoption.

As an immutable shared record accessible by multiple organisations, distributed ledgers are already being used to validate clinical trials by the US Food and Drug Administration. Similarly, insurance brokers and their clients are using distributed ledgers as a commonly accepted resource on claims. Within three to four years, said Mainelli, the financial services industry will have stopped discussing whether distributed ledgers should be used to support a new service or infrastructure – because the answer will be self-evident.

For Mainelli, the core value of distributed ledgers in the financial markets lies in their ability to provide a central, mutually accessible database for recording and tracking complex transactions. Central counterparties exist in many markets already, but distributed ledgers offer greater transparency. "This allows you to create a central counterparty with less monopoly power. That's what makes it exciting," he said.

But he does not expect an immediate switch, nor does he predict a uniform landscape. This view is informed in part by research into the potential use of distributed ledgers in the securities markets that was conducted by Mainelli with Alastair Milne, professor of financial economics at Loughborough University, and funded by the SWIFT Institute. Based on interviews with around 100 securities markets experts, the research explored three hypotheses: do distributed ledgers need to be permissioned; should there be many distributed ledgers or one; and how rapidly will the industry move.

On this final point, Mainelli is convinced distributed ledgers will be used for a wide range of market structure and product innovations, but will generally only replace existing capabilities in line with traditional replacement cycles. He calls it the ivy theory of technology. "No technology ever displaces an existing one exactly; it grows around it like ivy grows around a tree. Then 20 years later you wonder where the tree went," he said.

Noting the number of pilot projects for permissioned distributed ledgers, Mainelli expects a wider range of approaches to emerge as banks and other financial services firms explore the technology more deeply. "One only has to look at the diversity of distributed ledger architectures out there. Most banks have discovered this technology through Bitcoin, Ethereum or Ripple, but there is a whole host of other applications. For example, most mainstream ledgers can handle between 7-30 transactions a second, but some can handle 50,000. It's a much wider field than people give it credit for," he said.

Not only will ledgers be diverse, but numerous. Acknowledging progress already being made in industries from shipping to pharmaceuticals, as well as the potential of distributed ledgers to drive new product innovation in financial services, not just replacing existing processes, Mainelli envisages a future in which we all have access to multiple ledgers. "I genuinely see billions of ledgers; seven billion people on the planet – perhaps 20-30 ledgers each," he said.

Dig the new breed

But the distributed ledger is just one of many technologies with the potential to drive significant change. As banks and other financial institutions evolve to serve the needs of a new, highly digitised economy, a critical factor will be their ability to recruit and nurture staff with the necessary skills.

On Tuesday, Sibos TV heard from Bruce Weber, dean and professor of business administration at the University of Delaware's Lerner College of Business & Economics, about his SWIFT Institute-

Managers are going to have to get used to a much more continuous feedback loop.

Bruce Weber, dean and professor of business administration, Lerner College of Business & Economics, University of Delaware

We're not crawling along, this is basically warp drive.

Gerd Leonhard, CEO, The Futures Agency

supported research into changes in graduate recruitment needs in the banking industry.

Banks and millennials (today's 18-35 year olds) are not a natural fit and both have to adapt in order to get the best out of the other. According to Weber, banks are placing a higher emphasis on agility and self-awareness among graduate recruits. "That means being able to 'flex' yourself at work and being aware of where your strengths and weaknesses lie. Millennials are really good on the former, less so on the latter," he said. "Millennials are also very used to communicating via technology, which requires a change in the ways that managers work."

Perhaps more importantly, banks have to understand the millennial's desire to be engaged in meaningful work. Weber suggests that this new cohort will be far less motivated by run-of-the-mill work than previous generations. Being able to contribute positively to a project is more important than titles, status or perks to millennials, who are more interested in exercising their skills in the delivery of a particular product or service or achievement of a tangible goal. "The trophies of the past are not so meaningful today," he said.

This might sound like good news for employers, but Weber believes line managers will need to increase the flow of communication, both on individual performance and on the overall direction and progress of key projects. "Managers in their fifties are going to have to get used to a much more continuous feedback loop. Appraisals every six or 12 months is just too long for today's generation. You need to be back and forth with your team members providing real clear feedback – positive or negative – at least every two weeks," he said.

Millennials might need a lot of attention, but Weber is convinced they have the skills to contribute at an early stage in their development, which might be just as well, given their tendency to move roles more frequently than previous generations. Weber believes strongly that millennials will stay longest in environments that offer the most stimulation and encouragement, and suggests it is never too early to start engaging with new recruits.

Internships and mentorships can play a key role in nurturing today's talent pipeline, he insists. In part, this is because they help students to get a feel for the kinds of environments and situations in which they

feel motivated and can thrive well in advance of graduation. "I find that once they've done an internship and they go back to join an organisation that they like, they are much further ahead three or four years later than one might have expected," said Weber.

The multiplier effect

But it's not just HR practices that must evolve to adjust to a more highly technology-driven environment. Entire business models may also be in urgent need of review, according to Gerd Leonhard, CEO of The Futures Agency and Wednesday's 'game changer'. Leonhard helps firms to plan for, and adapt to, likely future scenarios. The furious pace of change being generated by today's 'mega-shifts' means that the future is likely to be very different from today and, very possibly, it will be unknowably different.

People tend to assume that business in 10 years will be very much like today, according to Leonhard, especially those that work in firms or industries with a recent history of strong revenue generation. "A lot of big firms are so successful that they cannot imagine that the recipe for success will not be the same in the future," he said.

But this time it really is different. Leonhard referred to the multiplier effect of rapid innovation in so many inter-connected fields of information and communications technology, arguing that the current pace of technology innovation makes it hard for us to imagine what the world will look like in even five years. "We're not crawling along, this is basically warp drive."

The impact of digitisation on transaction costs and information flows means that banks and other financial intermediaries may have to move very fast. Having watched transaction costs and margins collapse under the weight of transparency in other digitised industries, "financial transactions will become free or at least very cheap", Leonhard said, adding that revenues based on information asymmetry would also erode. "Now everybody knows everything", he asserted.

Business models may have to change, but that is no reason to expect banks to struggle. To succeed in the future, banks will need to harness technology innovation – but that's the easy part, Leonhard suggests. Business between humans will still depend critically on human factors, such as trust, relationships, meaning and relevance. "These human factors are more important than technology, but harder to get right," he said.

Particularly at a time of APIs, open source and interoperability, technology does not provide a sustainable competitive advantage, Leonhard reminded us, rather it levels the playing field, providing a new platform on which to build. In this respect, it changes core business priorities less than one might think. "It's great if you can move your clients to an automated customer service model but what else are you going to do to increase value? If you don't think about that you risk becoming commoditised," he said.

Designed for life

The search for the right balance between the roles of humans and machines was a common thread between Leonhard and Thursday's 'game changer', Amber Case, cyborg anthropologist and a fellow at Harvard University's Berkman Klein Center for Internet and Society. While Leonhard helps firms adapt to technological advances, Case makes the argument for

It's good to experiment, as long as you experiment with a small group at first.

Amber Case, fellow, Berkman Klein Center for Internet and Society, Harvard University

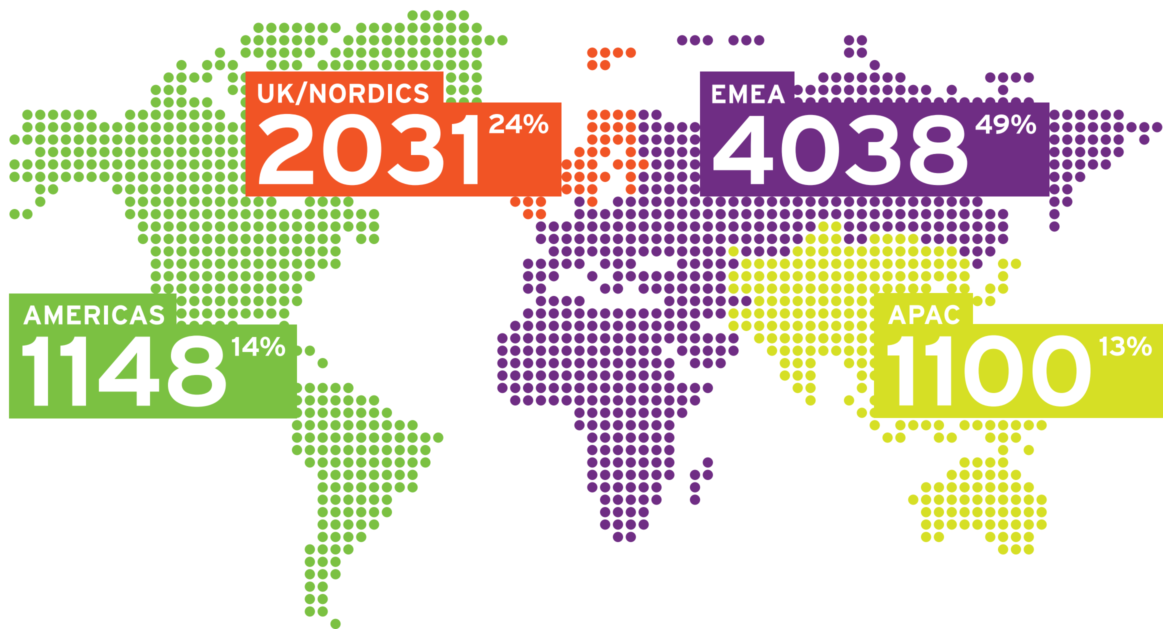
technology adapting itself better to human – and indeed animal – needs.

Although the internet of things is in its infancy, it is already possible to hook up automated cat feeders to central servers which control the flow of food remotely while the owner is away. In today's world of yet-to-be-perfected digital technology, central servers can – and do – go down, leaving pets and their owners in distress. Before we trust too many other every-day devices to remote control via cyberspace – suggests Case – perhaps we should expect a little more rigour from service providers. "Imagine that's your money, your pacemaker or your self-driving car. This is the canary in the coalmine for what could really happen," she said.

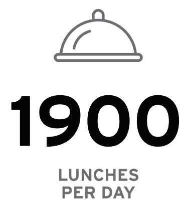
Case, nevertheless praises the efforts of several FinTechs that have produced banking and investment apps and have maintained a consistent focus on continually improving every aspect of the user interface to ensure that it's as customer-friendly as possible. This has the knock-on effect of reducing the flow of calls to customer service staff who are able to take more time on each caller, working to resolving their problem without having to worry about hitting numerical targets. In Case's view, this approach combines the best qualities of technology with the best qualities of humans.

The pace of technology change might be accelerating, suggests Case, but human evolution is much slower, meaning that designers and creators of service propositions based on new digital technologies should remember that they must meet the needs of fallible, flesh and blood users. Even in these times of dizzying and disorientating change, it still helps to take things step by step in order to minimise risk and maximise utility. "It's good to experiment, as long as you experiment with a small group at first," said Case. ■

Sibos 2016 Geneva in numbers

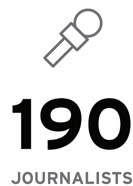


581	272	201	158
SPEAKERS	SESSIONS	EXHIBITORS	COUNTRIES



1900

LUNCHES PER DAY



190

JOURNALISTS

25

MEDIA SPONSORS

40000

EUR DONATED TO THE ANOUK FOUNDATION

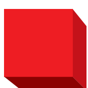
SIBOS 2017
OCT. 16-19

dh.com

Join us in Toronto

Home to D+H Global Headquarters

Learn more at dh.com



D+H FINANCIAL™ TECHNOLOGIES. SOLUTIONS FOR PEOPLE.

©2016 DH Corporation. All rights reserved. D+H is a trademark of D+H Limited Partnership.