Welcome to the autumn 2017 issue of Velocitates. One of the core tenets of the SWIFT Institute is the dissemination of knowledge and information, and through this newsletter that is exactly what we'll do.

As ever Sibos and the tail end of the year seem to come round more quickly every year. As this issue of Velocitates is published, we are just one week away from descending on Toronto for the world’s premier financial services event. We have an exciting programme lined up, with 20 sessions taking place in the SWIFT Institute room at the Metro Toronto Convention Centre. Topics on the agenda include cyber, FinTech, quantum computing, regulation and the future of transaction banking.

In Toronto we will also host the grand finale of the second annual Student Challenge. This year we focused on protecting banks’ channels to its customers from cyber attack, and put the challenge to students at Canadian universities. Eight teams from across the country will pitch their ideas at Sibos. We will announce the winner, who will receive CAD $20,000, as part of the Sibos Closing Plenary. Even before the 2017 Challenge is complete, we are looking ahead to the 2018 Challenge, which will take place in Australia to culminate at Sibos Sydney next year. More details will be announced soon.

Cyber continues to be a dominant issue in our lives. We have recently published three SWIFT Institute sponsored research papers on cyber security. The research focuses on enabling financial institutions to get ahead and stay ahead of their cyber adversaries by providing a better understanding of the actors involved, examining a means to effectively share threat information, and establishing common terminology to allow meaningful discussions between industry stakeholders. All three papers will be presented at Sibos Toronto.

Our hot topic article in this issue examines some of the leading examples of technologies that are expected to bring about fundamental changes to the financial industry. DLT, open APIs, AI and quantum computing are all creating challenges and opportunities to our core business. The more we understand these technologies, the better we can make productive use of them for the future.
And finally, our own SWIFT Institute’s Advisory Council continues to evolve. I am pleased to welcome the two newest members to the group that oversee the work we do. Stella Cramer is a Partner at Norton Rose Fulbright (Asia) based in Singapore. She brings a wealth of expertise on technology, innovation and cyber. Soumitra Dutta is the Dean of Cornell SC Johnson College of Business at Cornell University. He is a leading authority of technology and innovation policy. Stella and Soumitra are helping to raise the already impressive level of expertise guiding the SWIFT Institute.

I hope you enjoy reading this issue. And I look forward to seeing many of you at Sibos in Toronto later this month.
News

Three new cyber research papers published

Following on from our two cyber security conferences held in London and Singapore earlier this year, and just ahead of Sibos in Toronto later this month, we are pleased to publish three new working papers on cyber. Each aims to contribute towards the establishment of better cyber defences for the financial industry. The research papers focus on enabling financial institutions to get ahead and stay ahead of their cyber adversaries by providing a better understanding of the actors involved, examining a means to effectively share threat information, and establishing common terminology to allow meaningful discussions between industry stakeholders.

As cybersecurity threats continue to grow, the financial services industry needs to understand the forces at work, identify patterns of behaviour, and create a common syntax around cybersecurity to facilitate better communication. In order to help organisations better equip themselves against cyber
attacks, the SWIFT Institute issued three grants on cybersecurity; the resulting three research papers are now available:

- “The Cyber Security Ecosystem: Defining a Taxonomy of Existing, Emerging and Future CyberThreats”, by Dr Jason Ferdinand with Richard Benham, attempts to establish a common language for cybersecurity to help all organisations deal with the cyber threats in their environment, and to enable meaningful discussion of these threats within and between organisations.
- “Forces Shaping the Cyber Threat Landscape for Financial Institutions” by William A. Carter, aims to provide an understanding of the forces that shape the threat landscape in a belief that this is essential for financial institutions to get ahead and stay ahead of their adversaries in cyberspace.
- “Sharing Insider Threat Indicators: Examining the Potential Use of SWIFT’s Messaging Platform to Combat Cyber Fraud”, by Elizabeth M. Petrie and Casey D. Evans, focusses on identifying the patterns of behaviour typically indicative of efforts by criminals to use insiders to cash out on fraudulent activity. The objective of this research is to enable organisations to use an existing telecommunication platform, such as SWIFT, to communicate cyber fraud threat information by establishing indicators of cash out behaviour, which could warn of cyber fraud activity.

These papers are freely available to download here.

Cyber 3.0 - Better Together - Singapore

Cyber Security Conference

On Friday 18 August the SWIFT Institute, in partnership with Nanyang Technological University (NTU), hosted its second cyber security event of the year. The aim was to share new research, and bring together cyber experts from academia and the financial industry.

The day featured two SWIFT Institute sponsored research presentations: Defining the Cyber Threat Landscape by William Carter of the Centre for Strategic and International Studies, and Sharing Insider Threat Intelligence by Casey Evans of the American University in Washington DC. A panel of local CISOs discussed how the industry needs to work together to stop cyber criminals. NTU presented new research findings of the Singapore Cyber Risk Management (CyRim) project, which examines how the effective adoption of cyber insurance can enhance cyber resilience. And Tim Maurer from the Carnegie Endowment for International Peace provided an overview of the importance of collaboration for cyber security risk at the international level, and the commitments that the G20 have made in respect of cyber risk collaboration. The event was closed by the SWIFT Institute’s newest Advisory Council member, Stella Cramer, a Partner at Norton Rose Fulbright (Asia).

Alain Raes, SWIFT Chief Executive for APAC and EMEA opened the conference underlining the importance of collaboration, and the responsibility of industry to manage cyber security risk, particularly in light of unprecedented levels of innovation.

Will Carter, Deputy Director of the Technology Policy Program at the Centre for Strategic and International Studies, gave a comprehensive overview of the forces shaping the next generation of attacks. He highlighted that investment was not keeping up with attacks, and that there is a new generation of attackers, launching massive co-ordinated attacks at scale across the industry. He considered the forces shaping the threat landscape examining the attack surface, attacker incentives
and new defences. The attack surface is generally wider than the defender’s narrow view of a computer – take for example the Internet of Things and mobile banking, which are providing new access points for cyber attackers and changing the geography of cybercrime. Financial cybercrime is growing rapidly in developing nations, driven by the proliferation of mobile banking. Attack incentives are changing as the nature of threat actors has changed. An audience discussion emphasised the importance of cyber attacks being treated as a strategic business issue and not just a technology issue – a theme elaborated further during the panel discussion.

Casey Evans, from the American University’s Kogod School of Business then gave an overview of an approach to share insider threat indicators, leveraging SWIFT’s messaging platform to combat cyber attacks. Casey highlighted that the growth in cyber attacks requires a new approach to defences, as highlighted by Will. The cyber landscape has diversified – in particular the scope and nature of attacks. She highlighted that it takes on average 146 days to detect a sophisticated attack. She also highlighted that Singapore came top of the UN Cybersecurity index, with Malaysia coming third. Casey provided an overview of a tool to facilitate sharing cyber attack information using the SWIFT messaging platform.

Download the full report here.

Download the presentations from the conference here

2017 SWIFT Institute @ Sibos

TORONTO
16 - 19 OCT 2017

The SWIFT Institute
Once again, the SWIFT Institute returns to Sibos bringing some of the keenest thought leaders from academia (and industry) to share insights and the latest research on topics impacting the global financial services industry. This year, the SWIFT Institute has its own dedicated room with a full four days of exciting content. Included in this program is the grand finale of our Student Challenge, where you will have the chance to select the winner amongst the millennials from Canadian universities pitching their ideas on how banks can improve their cyber security. The Sibos Quiz returns for the third year running – always a fun, interesting and highly competitive event! And as we are in Canada during its 150th birthday, we have a historian who will give a brief lecture on this amazing country.

Who should attend?

Knowledge is the cornerstone of any business decision. Fostering new research and sharing knowledge about the financial services industry is what the SWIFT Institute is all about. Anyone working in, responsible for, or just curious about any aspect of banking will be interested in these sessions. Whether you work in payments operations, securities clearing, the middle or back office, IT, security or compliance, you will benefit from new insights into topics impacting your business.

Why attend?

Time is our most precious commodity. We have so little of it. Rarely does anyone have time to read a 40 or 50 page research paper. The SWIFT Institute programme at Sibos offers you the opportunity to hear directly from experts who will share insights from their latest research. Topics being presented and discussed throughout Sibos include cyber security, regulation and the potential changes being brought about by President Trump, a look at the future of transaction banking, diversity in the financial industry and quantum computing, amongst others. Each day will also see a unique Lunch & Learn session. These sessions are ‘snapshots’ of publicly available courses aimed at financial industry practitioners. Join the SWIFT Institute at Sibos, and learn something new.

A potted guide to Quantum Computing

“As far as the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality.”
— Albert Einstein

Conventional computers, the marvel of our modern age, have provided us with the ability to rapidly solve complex problems. They cannot solve “intractable problems” though - those problems that can be solved in theory, but in practice the solution would take far too many resources and time so as to be useful.
Quantum computing, on the other hand, uses subatomic particles stored as qubits which can be in either two states of a 0 or a 1, as well as a statistical combination of both a 0 or a 1 at the same time.

Because this information exists in many simultaneous states, a quantum computer has the ability to concurrently run a number of different calculations leading to an exponential increase in power that will far outperform today's advanced supercomputers. As a result, computer scientists believe that we will soon be able to solve some of these problems previously thought of as intractable, due to the enormous increase in processing power that quantum computing will provide.

Hot Topic

**Banking’s 'Kodak moment'?**

**How to leverage technology for transformational growth**

Large technology firms like Facebook, Amazon and Google are a bigger threat to banks than fintech startups according to a study by the World Economic Forum that dissected the evolving landscape for financial services. Anthony Jenkins, ex-CEO of Barclays agreed when he stood up at a recent fintech conference in Copenhagen and gave banks a stark warning. "We will see the possibility – not necessarily the probability – of what we call a 'Kodak moment', where increasingly banks become irrelevant to their customers."

The post-recession years within the financial services industry were defined by regulatory constraints and squeezed margins. Lately, however, banks are focussed on the potentially threatening developments from outside the finance industry. The combination of technology developments, reduced barriers to entry, and consumer demand have allowed large technology firms to position themselves as challengers to incumbent banks.

"Banks can avoid that," continued Jenkins, "But they have to act now, and what they really need to do is think about innovation, but also transformation, doing something radically different." In order to survive, financial organisations need to focus on leveraging technology to underpin this transformational growth. The SWIFT Institute, in line with one of its core objectives of extending an understanding of future needs in global financial services, examines some of the leading examples of these technologies that are expected to bring about fundamental changes to the industry.

**DLT - a technology enabler**

It seems like not a day goes by in the financial press without a new blockchain, or distributed ledger technology (DLT) solution popping up. Most banks are currently working internally with DLT and at times teaming up with other banks and cross-trade organisations; even credit card service providers are looking to provide corporate cross-border payment services based on the new technology. Ruth Wandhöfer, Global Head of Regulatory & Market Strategy at Citi is currently co-writing a paper for the SWIFT Institute on the Future of Transaction Banking 2030 and Beyond, examining how technology innovation such as DLT could play a part in this future. "Old infrastructures will take a long time to adapt, and central banks will not be quick in issuing digital currencies," explained Wandhöfer in an interview with the SWIFT Institute. "So the industry needs to think, first, about how this revolutionary technology can be leveraged to create a much smoother cross-border payment experience and, second, examine some of the different business models that are beginning to appear. Wandhöfer’s
paper will cover these subjects in addition to suggesting some potential designs of DLT and alternative systems that could be used in the future.

In terms of the organisation and eventual setup of DLT systems, it is important to note that the technology, while still in the midst of development and configuration, has been designed with interoperability capabilities from the outset. Different domestic blockchains will therefore have the ability to interconnect. “In a way you could replicate the idea of real-time payment systems today, with domestic systems running on blockchain in the future with that interoperability layer built in,” described Wandhöfer. The industry still has work to do to make this a reality. Developments are needed in the areas of technology, operations, business models, governance policies and potentially regulations in order to achieve any substantial progress.

**AI: the art of data capitalisation**

Some bankers predict that Artificial Intelligence (AI) could provide the biggest technological shift in our history, bigger than either the computer, Internet or smartphone revolutions. The financial services industry not only needs to prepare for it, but recognise the fact that consumers are rapidly coming to expect the same level of service that is being provided by the technology giants of today.

When it comes to AI (or machine learning) in the financial industry, the key point for financial organisations is the need to identify and work with more data - not only in customer payments, but in relation to every aspect of the organisation. Banks, for example, are sitting on large amounts of unstructured data across many different business segments. The consolidation of this information in a meaningful way, through data analytics firms and self-learning algorithms, will allow a bank to immediately see how much credit risk is on the books. In order to achieve this, however, a firm would first need to undertake the daunting task of digitising past data held in legacy systems.

Machine learning is expected to assist bankers with customer experience, risk management, operational efficiency, and inventing new business models. Nevertheless, despite promises of efficiency, firms need to be wary of the risk of endorsing and replicating existing biases. “The idea is that AI will deliver better decisions because there will be more access, visibility and understanding of the data. But this needs to happen with less bias going forward, hopefully not repeating mistakes of the past,” warned Wandhöfer.

**Open APIs: making data work**

Public application programming interfaces (Open APIs) have been used by technology companies for many years now, making real-time data available and creating value out of that process. As described above, banks have been sitting on the key asset of data for far too long without doing much about it. One big push is about to come through in Europe in the form of the Revised Payment Services Directive (PSD2) which will allow other parties to use banks’ customer data for different purposes. What this means in practice is that technology companies, including the likes of Facebook etc., will be able to access bank account information and provide payment services through online messaging applications such as Messenger and WhatsApp.

“The banks need to act soon. These tech companies will be able to use Open APIs like any other fintech startup if they get regulated, moreover, these tech platforms will be able to become banks much faster than the banks will be able to become platforms,” explained Dr. Markos Zachariadis of Warwick University, co-author of SWIFT Institute Working Paper entitled *The API Economy and Digital Transformation in Financial Services: The case of Open Banking*. Dr. Zachariadis expects that Open APIs will at first focus on account information and payment initiation, eventually moving into lending services, such as mortgages, and investment applications.

In their paper, Zachariadis and his co-author, Dr. Pinar Ozcan...

Read more: [here](#)

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**Research**

*The name of the SWIFT*
All SWIFT Institute sponsored research is freely available to download on our [website](http://swiftinstitutemail.org/47RJ-3D2W-EE9G64A53/cr.aspx). Our aim is to spread knowledge far and wide, so we encourage you to download our papers and distribute them throughout your own institutions and networks.

Our most recently published papers are:

- The API Economy and Digital Transformation in Financial Services: The case of Open Banking
- The Cyber Security Ecosystem: Defining a Taxonomy of Existing, Emerging and Future CyberThreats
- Forces Shaping the Cyber Threat Landscape for Financial Institutions
- Sharing Insider Threat Indicators: Examining the Potential Use of SWIFT's Messaging Platform to Combat Cyber Fraud

Our most recently awarded grants:

- Future of Global Payments Market Infrastructure - awarded to Daniel Gozman of Henley Business School, and Jonathan Leibenau and Dana Lunberry both of London School of Economics.
- Financial Crime Compliance and Increased Data Sharing, awarded to Paula Chadderton of Australian Transaction Reports and Analysis Centre (AUSTRAC) and Simon Norton of Australian Strategic Policy Institute (ASPI)

Details of all SWIFT Institute research grants, including those that are still in progress, can be found [here](http://swiftinstitutemail.org/47RJ-3D2W-EE9G64A53/cr.aspx).

**By the Numbers**

Grants Awarded = 38  
Papers Published = 30

**Research Underway**

- The Impact of Regulation and Governance on Competition and Innovation in Payment Systems
- Transatlantic Extraterritoriality & the Regulation of Derivatives
- Future of Transaction Banking 2030 and beyond
- China Fintech vs the West
- Future of Payments Markets Infrastructure
- Financial Crime Compliance and Increased Data Sharing

For more details visit our web site.

**Completed Research**

- Can mobile money be used to promote savings? Evidence from Northern Ghana
- The Prospects for a Common Language in Wholesale Financial Services
- Internationalisation of the RMB: New Starts, Jumps and Tipping Points
- New Regulations and Collateral Requirements – Implications for the OTC Derivatives Market
- Financing the SME Value Chains
Since launching the SWIFT Institute in 2012 we have hosted several events bringing academia and financial industry practitioners together to debate and learn from each other. These events have proven to be very successful, with both groups enjoying and benefiting from greater engagement.

Below you can find details of the upcoming events. Full details when available will be on our website.

Upcoming:

- **Sibos 2017**
  - **Venue**: Metro Toronto Convention Centre, Toronto

  The SWIFT Institute is participating in Sibos 2017. This year, the SWIFT Institute has its own dedicated room with a full four days of exciting content. Included in this program is the grand finale of our Student Challenge, where you will have the chance to select the winner amongst the millennials from Canadian universities pitching their ideas on how banks can improve their cyber security. The Sibos Quiz returns for the third year running – always a fun, interesting and highly competitive event! And as we are in Canada during its 150th birthday, we have a historian who will give a brief lecture on this amazing country.

  More details including registration are available [here](http://swiftinstitutemail.org/47RJ-3D2W-EE9G64A53/cr.aspx).

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**Conferences**

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Continuing Education in the Financial Industry
Knowledge is the cornerstone of any business decision. And as we are never too old to learn, the SWIFT Institute is pleased to endorse selected third-party executive education courses.

For more details on each course including how to enrol, click on each logo.

Coming Soon

Here is what you can look forward to from the SWIFT Institute in the months ahead...

- New research on Regulatory Compliance - The Extraterritorial Challenge - Q4 2017
- New research on the Future of Correspondent Banking 2030 and beyond - Q2 2018
- New research on China Fintech vs the West - Q2 2018

Visit our website to see what else is happening at the SWIFT Institute.