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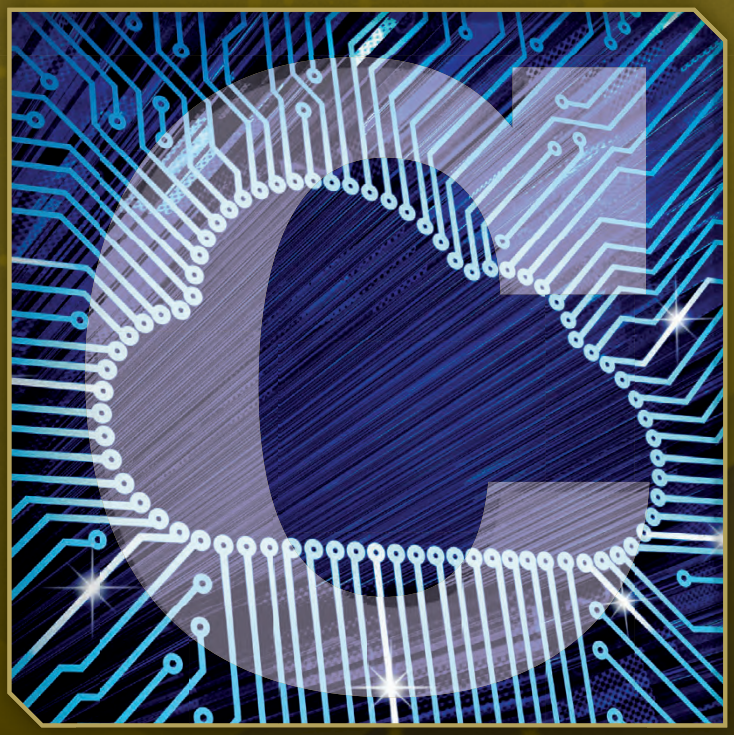

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Putting fintech in the lab

How and why **SmartStream** is taking a white coat approach to testing new applications for artificial intelligence, machine learning and blockchain

The number of fintech solutions on the market increases as the industry gains trust in them. But wider choice brings added confusion, with the danger that decision-makers in financial services begin to feel like harried tourists in a digital souk.

Rick Striano, MD of digital product development for global cash management at Deutsche Bank, sums it up: "We are presented with new solutions at every turn. Some are great and others completely outlandish, but they'll both promise the same thing – fantastic results."

New technology can be fantastic when applied in the right context. But where it has usability and feasibility are questions that lie at the heart of procurement – and financial institutions themselves are not always best placed to answer them, especially when it comes to the emerging areas of artificial intelligence (AI), machine learning (ML) and blockchain.

> "All fresh tools have the potential to breathe value into systems. But their development is a long road filled with mistrials

Global software and managed services provider SmartStream examined the market to pinpoint challenges felt across the industry before making its move.

"All fresh tools have the potential to breathe value into systems," says Andreas Burner, the firm's chief innovation o□cer. "But their development is a long road filled with mistrials.

"Our research showed that the biggest struggle faced by solution providers today is with the quality of data. If companies had known all along that one day their files would be worth gold, they would have perhaps stored them di□erently. As it is, we often find data quality or formatting to be subpar.

"Once we grasped the achievable potential of AI, blockchain, Cloud and data analytics, we decided against creating tools first and instead founded an innovation lab to create an environment where a real banking problem's workflow could be meticulously examined by experts before our programming began."

Composed of mathematicians, applied data scientists and exceptional computer scientists, SmartStream's first lab in Vienna, Austria, was opened in late 2018 for the sole purpose of evaluating banking case studies to decode and, ultimately, deploy the best possible models in AI, ML and blockchain.

The case studies being prodded and poked by the Vienna team are taken from SmartStream's extensive client list of leading asset managers, custodians, broker dealers and banks.

Mark Roth, chief marketing o□cer, explains: "No two of our 13 projects are alike. Some serve the purpose of driving down costs, others boost match rate e□ciencies or automate inter-systems reconciliations. One uses advanced data analytics to re-engineer the middle and back-o□ce processes."

SmartStream CEO Haytham Kaddoura believes this software development strategy, based on a mix of targeted research and intimate model-building, is its secret sauce. It's also the reason the client banks who've undergone pilots with SmartStream are already reporting tremendous returns.

"We have built ourselves a framework where we can observe the workflows of users and businesses and take the time needed to detect not only what's physically accounted for but infer the rest from the gaps in data," he says. "There is no better position from which to start."

For details of some of the banks currently in SmartStream's Innovation Lab, turn to page 34

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VIEW FROM THE

Having kept a watching brief on potential applications for artificial intelligence, machine learning and blockchain in financial services, SmartStream announced towards the end of 2018 that it was to open two new innovation labs – in Vienna,Austria, and Cambridge, UK. Here, **SmartStream** CEO **Haytham Kaddoura** talks technology, strategy and company culture

THE FINTECH MAGAZINE: There's been a lot of expectation around what artificial intelligence (AI) and blockchain can deliver for financial services. In your opinion, in which operational areas could they prove most useful and how is SmartStream looking to leverage them?
HAYTHAM KADDOURA: With both of those technologies, the net for potential use cases was cast pretty wide. But I think financial institutions and fintech players alike are increasingly trying to get greater focus on what their priorities should be now.

You'll find divergent paths attached to specific institutions. Tier 1s in Europe, for example, are more focussed on using the technologies to achieve cost e□ciencies and handle Brexit (which is still a big uncertainty). In Asia and the US, banks' priorities might be di□erent.

We've picked up 13 use cases for AI and are involved in proofs of concept (PoC) with four Tier 1 financial institutions.

Blockchain is a lengthier process than AI because you need to align your partners, bring them all onboard and make sure that the value is e□ectively realised in collaboration. Although it's a longer selling cycle, it's necessary to build value within blockchain.

We have a longstanding history with multiple financial institutions that have relied on our solutions for years. Some of these solutions are running on an on-premise basis and a lot of the interaction between the financial institutions happens o□ine, via phone calls or other communication channels. What we are doing is building bridges, so that the authentication validation or whatever is needed, gets done instantaneously by simply linking what's already on-premise in a blockchain environment. That results in better operating e□ciency.

We have the audience, we have the technology and we have the reputation so, for us, it's a minor jump to bring those institutions currently running on-premise solutions into a cooperative, distributed ledger structure – to have the banks cooperate fully, as opposed to running some components of the operation on our systems and having to track, through emails or phone calls, with their counterparties. When everybody is on the same blockchain, then it's much easier to validate, verify and cross-check.

We're working on a couple of PoCs in the blockchain environment and, by Q3 this year, we'll be making some major announcements in that space.

TFM: There are a number of (potentially competing) industry-led blockchain initiatives emerging. Does that concern you?
HK: I think a high level of accuracy is what's needed by a lot of financial institutions – and blockchain addresses the risk measures at a high level. It touches multiple areas, and that's why I think it's taking time, across the industry, for blockchain to be adopted, because di□erent pieces within each financial institution need to be tuned in to derive the best value.

Having said that, if you look at the clearing systems – SWIFT versus Euroclear, versus di□erent sorts of institutions that are carrying out similar functions in the US – I hope blockchain doesn't go down that route, because that will not derive the maximum value I spoke of. You'll have financial institutions in certain parts of the US focussing on one blockchain and similar entities in Europe coalescing around others. I hope this isn't the model, but I suspect there'll be di□erent blockchain environments addressing di□erent markets, each with their own key supporters. Ultimately, it comes down to who retains control. Deciding who to be aligned with is going to be the big challenge for Tier 1 institutions.

TFM: Banks have always had access to vast and detailed amounts of data; up until fairly recently, they just weren't doing very much with it. How will applying AI to that data in the ways you are exploring transform the world of finance as we know it?
HK: You're right. Banks have collected data ever since they existed but it's only in the last decade that they have started realising the value in it. Having the right

TOP

data in the right format, updated consistently across their client base and across their operations is now the big challenge. There have been some major reports recently that have looked at the banking infrastructure's ability to clean and enrich this data, so that it's useful from an AI utilisation perspective. This is one of the major hurdles we have today, but I trust that the banks, within a short time, will be able to address that, so that they are able to predict the direction their clients' requirements are going to take.

AI is going to make financial services much smarter and more e□cient. It has the ability to pick up data trends faster than any human can and that makes the banks much more responsive in addressing their own regulatory requirements, their feedback to clients and all their stakeholders.

> We have the audience, we have the technology and we have the reputation so, for us, it's a minor jump to bring those institutions currently running on-premise solutions into a cooperative, distributed ledger structure

The vital link: Kaddoura says SmartStream is ready to make blockchain happen for banks

There are so many different uses of AI, it's impossible for anybody to actually frame it and say 'this is where it's going to be most useful'. While there is a lot of hype out there, few companies actually have anything proven, though. SmartStream is in a fortunate position because more than 2,000 financial institutions already rely on our solution – and that's a great source of knowledge and support when it comes to rolling out our technology initiatives.

TFM: Can you give us an example of how you might use this technology?
HK: One of the components is effectively allowing banks to predict their cash and liquidity requirements by tracking historical data and analysing variations – across time frames, holiday period, etc – and allowing banks to better understand what their cash position is going be two hours down the line, at the end of the day, at the end of the month. That will make the treasury function much more efficient.

A lot of people in our Vienna lab are involved in building this solution. It's fascinating to see how they operate – how they bring a different perspective to addressing problems around data use and interpretation. It's a refreshing change to the way the industry is used to operating.

TFM: The opening of the Vienna lab was a step change for SmartStream and, given how the company is embedded within the banking landscape, could have a major impact on financial infrastructure. What's your vision for the company?
HK: The changes in the sector, in technology and regulation, are creating a perfect storm. There are so many moving parts that it's pushing us, as a fintech, in a direction that is super dynamic: to look at new ways to serve the industry around digital payments and reconciliation, and using Cloud environments to do that.

We are very well tied in with the financial institutions that we've been serving for almost 20 years now, and so there's a strong level of trust that's moving us increasingly into a greater strategic role in relation to these financial institutions. I think it's down to the changing nature of the environment that banks are increasingly wanting to work strategically with a fintech such as SmartStream. Banking IT departments, with all due respect, are not necessarily sufficiently funded, or geared up, to address requirements from a wider industry perspective. It's much more efficient for a fintech player, that is well embedded with financial institutions on a global basis, to do so.

SmartStream is happy to be playing that role. And it means our portfolio of products and services is growing. I love the dynamism within the organisation, within the solutions we're offering and within the services that the banks are now asking us to provide. To be honest, I feel very lucky to be at the helm of this company at this point in time.

Sky's the limit: SmartStream is stepping up innovation to lead the fintech push

TFM: How does your global footprint help to di□erentiate SmartStream from other providers?
HK: One of the key things that will set companies apart in the future will be their ability to attract different skillsets.

Operating, as SmartStream does, across the globe, you realise the values in different education systems. In Austria, we have strong technical schools, specifically focussed on mathematics and data analytics. In Asia, you get greater technical skillsets.

So, I think, for us, being a global player allows us to tap in to different skillsets. It allows us to go after good people, just as they're coming out of university – whether with a PhD, masters or bachelor degree – and leverage the strength of different educational systems across the world, because, for any global player today, it's the people who make the business.

Everything at SmartStream is driven by people, whether it's the sales teams or the research and development teams. It's not a luxury, it's a requirement for any business that wants to grow, to be able to leverage the best skillsets, wherever they are.

TFM: One of your flagship products is, of course, the Reference Data Utility (RDU) unit. What's on the horizon for that this year?
HK: The RDU has been growing quite significantly. I've seen a ramp up in demand over the last two years, driven by regulatory changes, especially in Europe around the second Markets in Financial Instruments Directive (MiFID II) reporting requirements for financial institutions, and around the systematic internaliser (SI) registry function. We've been offering the latter in collaboration with a group of approved publication arrangements (APAs), including Bloomberg, Deutsche Börse, NEX

> One of the key things that will set companies apart in the future will be the ability to attract different skillsets. Operating, as SmartStream does, across the globe, you realise the values in different education systems

Confident: Kaddoura believes SmartStream is best placed to help

Scaling new heights: By tapping into the best skills worldwide

Regulatory Reporting, TRADEcho, Tradeweb and Trax, since April 2018. That service enables SIs to register the financial instruments for which they are providing SI services in a centralised database through their APA, so that they can determine which counterparty must report the trade.

The RDU started out focussed on derivatives. However, in 2019, we've launched reference data on equities and towards the end of 2019, into early 2020, we're providing reference data on fixed income securities, too. So, the RDU is growing, even if it took a little longer than I'd expected it to. That was simply because of the diverse nature of the sources of data that need to be gathered.

We are currently catering for more than 160 capital markets and it took time to get there, because you need to, effectively, negotiate with every market separately to acquire their data. Now that we've achieved that, though, there's been a tremendous uptick in growth which, I believe, is only going to continue.

TFM: Moving on to digital payments, which is a relatively new area for SmartStream, what's your USP in that space?

HK: Digital payments is being driven out of our Austria venture, with support from our Bristol team in the UK.

Using the Austria team's product knowledge is critical because they've been involved in the evolution of digital payments for at least seven or eight years, historically focussed on emerging markets – places like Africa, the Middle East and Asia. This is where digital payments are growing and mature markets are followers in this space.

But now we're leveraging that knowledge across the globe.

TFM: SmartStream's other key area of operation is fees and expense management where you've done some major work with Credit Suisse. How is that unit performing for you?

HK: It took a while for financial institutions to realise its value, but now SmartStream is a significant component of the fees and expense management operation within at least five Tier 1s. This is where we're talking strategic value added, where financial institutions, including some Tier 2s also, are pushing quite a bit of their strategic data and operations to our teams.

Growth in Europe and the US has been significant, I think simply because banks are working to get greater transparency on their exposure to other financial institutions.

We are in a very sweet spot when it comes to helping banks become more accurate, more relevant and more efficient in their handling of fees and expenses and we've saved them millions of dollars in less than a year. So, I think the business case is there for the taking.

If AI represents the north face of financial services technology, then **SmartStream** is determined to get to the summit

The ascent of Artificial Intelligence

It's difficult to talk about artificial intelligence (AI) without first acknowledging that many people regard it as an existential threat – a tool that will automate us out of our jobs (for better or for worse).

The truth, for financial institutions (FIs) at least, is far less theatrical. In the words of US research firm Gartner, having endured a troubled journey along the 'hype cycle', AI has ascended the 'peak of inflated expectations', descended into the 'trough of disillusionment,' and, finally, there are promising signs that it's approaching the 'plateau of productivity'.

For instance, Nasdaq has taken confident steps to integrate AI into its internal processes, helping human workers write reports, spot fraud and assess data more efficiently. According to Gartner, this kind of 'AI augmentation' is forecast to recover 6.2 billion hours of human productivity by 2021. But not all financial institutions have the research and development (R&D) clout of the world's second-largest exchange, with its own in-house machine learning (ML) team. The financial world might be emerging onto a productivity plateau, but there still exist barriers to AI implementation for many, if not most, FIs.

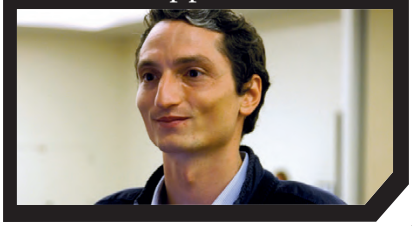
One such barrier is a lack of internal expertise. A survey conducted by WatersTechnology last year showed that 70 per cent of FIs are reliant on external providers to integrate AI solutions into their systems. Meanwhile, another report from Bank of New York Mellon and Eagle Investment highlighted the fact that AI can only function with clean, centralised data – something that's hard to come by, given dataset variation across the financial world.

With more than 20 years of experience in managing that data, SmartStream commands a particularly strong position in helping FIs overcome obstacles to AI integration. The transaction lifecycle management (TLM) specialist currently works with 70 of the world's top 100 banks among around 2,000 financial services providers, giving it access to huge data reservoirs that reach decades into the past.

To process such vast quantities of information, SmartStream has been obliged to develop something of an obsession with data hygiene – aligning data across countries, currencies, sectors and institutions in order to derive the insights its clients seek. This experience means it has already developed the tools to organise and store vast quantities of data in a standardised format – just what's needed to run efficient AI. Or, as CEO of SmartStream's Reference Data Utility (RDU), Peter Moss, puts it, avoid the 'garbage in, garbage out scenario, which is an unfortunate tendency, in some cases, with AI'.

The data filtering for which Moss is responsible in the RDU was developed in partnership with Goldman Sachs, JPMorgan and Morgan Stanley. It helps the company's global clients by providing complete, timely and accurate reference data on request. Automating and centralising this requirement has already saved SmartStream's partners and clients tens of millions of dollars. But in 2018, SmartStream judged that the time was right for it to climb up the north face of technology and contribute to the productivity plateau, pulling together a multi-disciplinary innovations team to design new AI and machine learning techniques to drive down costs and improve work flow efficiencies. In doing so, it's taking advantage of advanced data analytics to re-engineer traditional work models across back office processing.

> **"Eventually, we want to use AI to really tailor our banking experience to the end customer. I think the technology will play a huge role in how we use the data of our customers, string together actual tangible insights and o□er valuable products to customers. Very short-term, what we use AI for is fraud protection and machine learning algorithms that block or question potentially fraudulent transactions**
>
> Nicolas Kopp, N26



A window into the future

The team is based at the company's new technology lab in Vienna, which is currently looking at 13 use cases for AI and carrying out proofs of concept with four FIs.

For SmartStream CEO Haytham Kaddoura, visits to the lab are a glimpse into the future.

"I think it's going to represent a quantum shift in what we do," he says. "There isn't a lot of competition in the areas of AI that we are working in… there's a lot of hype, but there are few companies that have anything proven.

"We are in a very sweet spot in helping banks," adds Kaddoura. "It feels like the perfect storm, and it's forcing us as a fintech to look at new ways that we can serve the industry."

As validated use cases of AI in the financial market continue to enhance operational efficiencies, he says, SmartStream has decided that now is the time to double down on AI innovation.

Last year's unveiling of SmartStream's innovation lab in Vienna, with a further research centre due to open in Cambridge, UK, constitutes SmartStream's emphatic arrival in the AI research and development space. Headed by chief technology officer Andreas Burner, an alumni of Vienna's University of Technology, the Vienna lab works on AI and machine learning use cases, as well as exploring blockchain, in partnership with external partners.

For Burner, whose 20-year career with SmartStream runs alongside his impressive academic contribution to the field, every machine learning initiative is founded upon the power of historical data.

"If you look at how banks are required

Industry-changing technology: SmartStream's Innovation Lab is working up proofs of concept with clients

to store their data for so many years, for audit purposes, they have the knowledge living in their data," he says. "It's pretty straightforward to think about how to use that data – how to create experience from that data."

Burner has in recent interviews likened SmartStream's innovation lab to car manufacturers' Formula 1 teams. The real innovation takes place in fertile sandboxes thriving with creative expertise, with any proof of concept (PoC) breakthroughs transferred back to the mother company for wider application. Under the ever-widening tent of AI, Burner confirms there are many 'flavours' of breakthrough in the pipeline.

> "There isn't a lot of competition in the areas of AI that we are working in... there's a lot of hype, but there are few companies that have anything proven

The novelty of machine learning technology in the financial industry means that SmartStream is grabbing the low-hanging fruit first. "It's all pretty new," confirms Burner. "We're working on patents for the things we have invented in the lab."

A long-time scholar of the computer sciences, Burner is keen to clear up the muddied distinction between AI and machine learning – at least within his field of application. For Burner, machine learning is the here and now – the algorithms that help humans process data and produce insights at the present moment. AI, for Burner, is the next logical quantum leap.

"At the moment, in the lab, we use machine learning technologies," he explains. "They basically look at data, learn from that data, and can predict and understand that data. Artificial intelligence is the next evolution, really. It means technology will be self-aware. It will work on data without ever having seen the data – like we as humans do."

Burner predicts that this fully fledged AI will be available up to 10 years hence.

Within his definition, machine learning is the false summit that precedes the ascent of operational AI to its productive plateau. It is machine learning that's currently providing industry solutions, operating in a symbiotic, or 'augmenting', relationship with human workers.

But, considering SmartStream's expertise in data hygiene, and its heavy investment in research and development (a full 25 per cent of annual turnover for the past 20 years), one can discern in Vienna the development of the base camp from which the final climb to AI supremacy will one day be achieved.

The potential for this new string to SmartStream's bow – to deliver truly industry-changing technologies – is palpable across the company's departments. Nick Smith, SmartStream's global head of managed services, is just one executive to be brimming with excitement as SmartStream's investment in R&D turns out applicable results. "When we started to build out the innovation lab in Vienna, I was the first one to put my hand up and say 'me, me, me!'," he says.

For Smith, some of the first live examples of the Vienna innovations in managed services came in reconciliations. It's here where machine learning is currently reducing the manual, human work his branch of the business conducts. Having already saved millions of pounds for clients in mutualising and sharing data with the result that it has closed the exceptions gap to one or two per cent, it now sees a way of virtually eliminating it by applying AI and ML.

"Clients don't really care about auto-match rates of 98 per cent or 99 per cent. They care about the remaining one or two per cent because that's where their work effort is spent," he explains. "The AI developed in the lab sits above that, monitoring that one or two per cent and reducing those numbers. The clients then benefit, because they see fewer exceptions flowing back to their organisation – and I'm happy, because it's actually reduced the manual effort my side, too."

This chimes with the findings from the WatersTechnology report on AI adoption, which found that 75 per cent of FIs named either data analytics or cost reduction as the key benefits of AI. But Burner is keen to avoid the impression that the innovation in Vienna is solely concerned with the straightforward automation of previously manual work. With experts in finance and data science hard to come by, the individuals working in the lab are also engaged in groundbreaking projects, conscious that the best way of predicting the future is to shape it.

"In my lab, there's an excellent mathematician who created a machine learning model based on echo state networks: a very interesting technology to predict data," says Burner. "It took him two months, and it was amazing when we saw the results – how well it can predict holidays and other events."

> "We've seen the use of this technology actually advance job skills. Studies show that companies that aggressively use artificial intelligence increase, not decrease, net jobs. We also believe that
>
> William Borden, Bank of America Merrill Lynch

This represents a shift from machine learning used to highlight irregular data, to the same technology being used to predict the patterns of data in the future. For Nadeem Shamim, head of cash and liquidity at SmartStream, this is just the breakthrough he's been waiting for.

"Prediction is becoming more important," he says. "It's a challenge for a lot of banks, because you only have historical information. With future information, there are a vast number of events that can have an impact. This is where artificial intelligence comes in – to predict what the liquidity forecast will be."

The roll-out of MiFID II in January of last year has seen European regulation tighten around the movement of banks' cash. Regulation authorities now require reports on banks' liquidity on an intra-day basis, which has led embattled financial institutions to engage with SmartStream for tools to monitor and manage liquidity.

"At the moment, the first element of AI application has been around predicting what the liquidity forecast would be – not just based on current cash flows, but potentially what events could be taking place," says Shamim. "It can actually predict what the intra-day flow will look like."

And that's a major step forward for the treasury function in an era of real-time payments, not to mention regulatory requirements that put systemically important institutions under pressure to see how they – and the wider financial network – performs under duress.

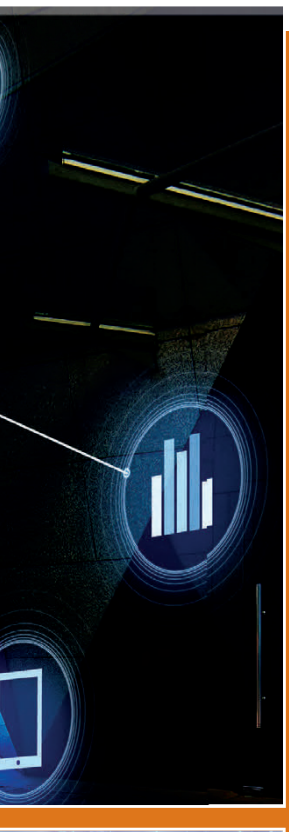
SmartStream has developed technology that deploys 'future information' in a variety of cash and liquidity stress tests run by regulators. It's also helping SmartStream's partners run their own, internal stress tests, which they can pass on to regulators during their biannual inspections.

"Using artificial intelligence, you can create scenarios of stress, whether your counterpart is delaying payment for four hours, your counterpart's not able to make payments, or you haven't got the right funds

Innovation: SmartStream's Innovation Lab has attracted the brightest minds

Shaping the future: Today's AI applications are just the beginning

> **"You want to make experiences – be they for a corporate legacy player or an incoming customer, consumer or business – smarter, better, faster. You want to be using AI to really solve a problem**
>
> Patricia Kemp, Oaknorth



> **“With the use of technologies such as AI and data analytics, we’re really able to understand what the customers want and from that we are able to determine what is the best experience and what the pain points are that exist in our process. We work with partners around the world to understand how we as a network can help them improve their customer experience, from helping them to tell customers where they can use their cards to figuring out what is the best o□er that has the highest probability of being taken up by customers**
> Ricardo Leite, Discover Global Network

in place to make payments,” says Shamim.

And yet, it’s worth noting that only 2.2 per cent of the financial institutions that responded to the WatersTechnology survey felt that AI could benefit cash and liquidity management – an area of the financial industry still seen as a largely manual undertaking. This highlights the fact that the technology emerging from SmartStream’s lab is quite literally redefining the possibilities of machine learning application across those departments that financial specialists have tended to see, until now perhaps, as being incompatible with AI.

One fact that’s certainly becoming clear is that the technology being developed in SmartStream’s Vienna lab has innumerable applications across the banking sector. For Burner, this means more PoCs and more use cases – and more products to add to SmartStream’s expanding portfolio.

“You can train machine learning algorithms on so many levels: you can run it on your bank’s balance, you can break it down on a department level, you can break it down per currency, or per country,” he says. “It’s easy to train a machine on all those levels, on thousands of levels, and it will monitor and predict on those thousands of detailed levels where, as a human, it’s impossible – you would need a massive amount of people working on that.”

> “You can train machine learning algorithms on so many levels: break it down per currency or per country

In SmartStream’s investment in innovation one can sense a more global shift in labour requirements. The masses of human data processors are slowly being replaced by machine learning algorithms, designed by those select few individuals with just the right cocktail of skills.

In Vienna, simply understanding machine learning isn’t enough. “Currently, lots of machine learning technology is invented to be used on pictures – like identifying cats or dogs,” explains Burner. “In the fintech space, you really need very good people that understand both financial data as well as machine learning technology and can combine these two.”

Thankfully, for a global operator like SmartStream, these individuals are easier to come by. With offices across the world and an extensive client list, it is able to recruit the best technology talent from all corners of the globe. And, as SmartStream’s CEO points out, different regions offer different skillsets to enrich his fintech team.

“In Vienna, we’re tapping into strong technical schools, specifically focussed on mathematics and data analytics. You can compare that to places like Asia, where there are greater technical skillsets,” says Kaddoura.

“As a global organisation, having the ability to tap into different skillsets across the globe is a great advantage – it allows us to leverage the strength of different educational systems across the world.”

BNYM and Eagle Investment’s AI report found that the largest obstacles to AI adoption for FIs are clean data and technical expertise. Perhaps awakening to the fact that these are two domains in which it excels, it’s no surprise that SmartStream has chosen this moment to capitalise on its data management dominance by investing heavily in AI research and development.

SmartStream’s UK annual client conference was rebranded this year as the 2019 Innovation Forum, to reflect the huge strides the company was making in AI, machine learning and blockchain. With a further innovation lab due to open in Cambridge, UK, SmartStream has positioned itself as *the* fintech to approach for those tools, for transaction lifecycle, reconciliations and liquidity management.

The emergence of self-aware AI might be a decade hence, but it would seem that now is the right time for FIs to partner with SmartStream in order to have a say in the development of what could be the key efficiency-driving products of the future.

A strategic view of DLT

The fundamental principle of distributed ledger technology (DLT) is 'a single truth' – knowledge based on shared ownership and transparency, which are already key to **SmartStream**'s model of service. To derive maximum value, though, industry and regulators must come together

It's easy to understand why the wild value swings of Bitcoin, its adoption by organised crime, and crypto exchanges that were breached or disappeared with investors' money, put a brake on banks' investment in the distributed ledger technology (DLT) that underpinned it.

It is a decade since Satoshi Nakamoto launched Bitcoin and the first blockchain database but, still bruised by a massive loss of public trust following the global financial crisis, banks have often taken a hedged approach to adopting DLT technology – dipping a toe into a pilot scheme here or tentatively partnering with startups for a project there.

But the slow take-up can also be pinned on the business process revolution that blockchain presents. Banks fear that adoption means they must turn their back on existing ways of working and write o years of spending and expertise in legacy systems. For that reason, SmartStream points to its mutualised model as an answer for the financial industry. The cost of developing blockchain is driven down because it is shared between SmartStream's clients.

It is a logical extension of the premise on which the company is founded, says CEO Haytham Kaddoura.

"Bank IT departments are not necessarily su ciently funded, nor do they possess the expertise, to develop a technology like blockchain. It's far more e cient for a bank to partner with a fintech player that is embedded with financial institutions globally and let them address the requirements," he says. "In that way, blockchain o ers better operating e ciency through improved accuracy and speed, and can revolutionise back-o ce operations."

Given that blockchain is comparatively new territory, the pool of technology talent available to the industry is still small. So it helps that SmartStream takes a globalised view on recruitment while the company's well-established position in the industry – counting 70 of the world's top 100 banks among its 2,000 clients – also works to its advantage. It means it can draw upon a pool of exceptional expertise, experience and, of course, data.

"We've been serving some of these FIs for nearly 20 years now. There's a strong level of trust," says Kaddoura. "A client may ask for help in a particular area, or to link with one of our solutions. They may ask for greater visibility when looking into their own blockchain projects. So we're actively partnering with banks to address solutions and meet their needs. We're moving increasingly into a greater strategic role."

Sharing a wealth of knowledge

If barriers to entry for blockchain development are high for a Tier 1 bank, you'd assume they are insurmountable for smaller organisations. But again, SmartStream's mutual model means that systems developed with major players can be packaged and delivered at an a ordable rate for businesses as modest as regional building societies or stockbrokers.

"We're creating solutions for smaller institutions to automate their process and adopt technologies that permit them to keep pace," says Kaddoura. "This year these solutions will become commercially available to even smaller partner institutions. With their modular design, they can be plugged into our existing platform, or the client's own IT system."

In this way, SmartStream is helping to accelerate the technology because, to truly flourish, ledgers need to be universally used and widely understood.

> "I suspect there may be di erent blockchain environments addressing di erent markets. This is going to be a bigger challenge for the Tier 1 institutions – they will have to decide who they are aligned with"
>
> Haytham Kaddoura, SmartStream CEO

The innovation engine

SmartStream's innovation lab in Vienna – launched last year – is the engine room for the fintech's blockchain development. The fact that blockchain has been prioritised alongside artificial intelligence (AI) and machine learning demonstrates how critical an area of development it is for the firm.

Making the link: DLT is a natural extension of the mutualised model

The lab's young and diverse team works independently from SmartStream's client contracts so that they avoid the distraction of day-to-day demands. And banking clients are invited to sit within the lab so that their own specific processes can be tested with real data.

Indeed, it is the company's clients who help determine what blockchain problems and solutions are examined – the lab has a clear focus on solving real-world issues.

The lab's chief innovation o□cer, Andreas Burner, says the beauty of blockchain is its inherent simplicity and security. "Because blockchain can be applied wherever there is a workflow in place, you can simplify workflows that are distributed between companies and within companies," he says.

"Our existing product range is about workflows and corporates working together, with decentralised storage, and all that points to using blockchain technology. So, we're looking at our products and asking 'how we can employ blockchain?'"

So what can blockchain deliver?

Ultimately, a blockchain is a vehicle for sharing data. It allows multiple parties to work on a process and use the same data, but no one party owns that information – it is decentralised.

SmartStream's executive vice president of product management, Darryl Twiggs, explains: "Blockchain has some unique advantages. It's immutable, so it's non-editable, but it can contain permissions, meaning only certain parties can see particular information.

"Importantly, it shares a single source of truth. Without blockchain, various parties may possess and process the same information in their own systems but come up with di□erent results. This attribute of a single truth is exciting for banking because, in the middle and back o□ce, banks will run a multitude of systems and external services, which is highly ine□cient. For example, a simple foreign exchange payment involves multiple parties and systems and processing it takes up to three days, from inception to settlement. Blockchain allows us to radically re-engineer those operations so that it takes seconds, and everyone has visibility of the data."

Twiggs argues that blockchain's power lies in its ability to streamline fractured processes, but that banks are yet to fully appreciate its potential, because they have only considered narrow use cases, such as interbank payments.

"Blockchain can streamline segregated data processes and bring them into one channel," he says.

Use cases currently examined by SmartStream include:

- **Trade finance** which typically involves numerous intermediaries between seller and buyer
- **Collateral management** where liquid assets are offered as security to mitigate lending risks
- **Communicating verification and reconciliation of orders**
- **Digital payments infrastructure**
- **Corporate actions processing**
- **Reconciliation**
- **Fees and expenses management**

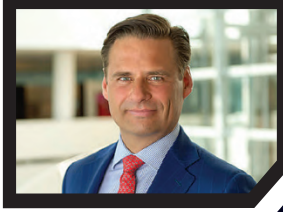
"Because we have a longstanding history with some of our clients, and they have relied on our solutions for years, they are running on an on-premise basis," says Kaddoura. "What we realised is that a lot of the interaction between the financial institutions was happening offline, or via phone calls or various communication channels. What we're doing is bringing our key solutions into a blockchain environment. That means better operating efficiency.

"Obviously, there are initial cost implications when changing systems, but a higher level of accuracy is needed by many financial institutions right now.

"Blockchain solutions can tick the boxes of regulatory compliance – it touches multiple areas."

That wide scope of the operational change posed by blockchain means it is taking time for the technology to be adopted, says Kaddoura, because various departments and partners need to be tuned in to derive the best value. But its full potential is only realised through collaboration, and having all the players in a process taking part.

> **"DLT technology will change the clearing and custody side of capital markets. But we need standards, which are not there yet**
> Kim Fournais, Saxo Bank



All playing a part

One clear example of a process involving multiple institutions is corporate actions. SmartStream's corporate actions processing solution is one of its fastest growing business lines, says Kaddoura, and is used by organisations that need to make regulated

A single truth: But a distributed ledger still relies on clean data

ANZ focussing on projects with customer value

ANZ – Australia and New Zealand Banking Group – is a longstanding client of SmartStream, and has used its Transaction Lifecycle Management (TLM) reconciliations service as its standard reconciliations application since 2005.

The bank already uses blockchain technology to digitise the bank guarantees it issues for rental bonds. And it has partnered with the Hong Kong Monetary Authority on its trade finance platform that is underpinned by blockchain technology.

Michael Lim, head of financial institutions and trade and supply chain for the bank, says: "We're careful to choose projects that solve a problem for our customers – if you want a project to be scalable you've got to ask what value it provides them.

"We don't go after projects that simply replicate something we can already do for the customer. Our bank guarantees project, for example, solves a pain point because it eliminates paper, so it improves e□ciency and eliminates fraud. Large property companies have to audit all of these paper guarantees and store them in fireproof safes. It solves a genuine customer problem."

announcements across various financial jurisdictions. That could be the reporting of a trading update or annual results, or news of a merger and acquisition.

Since each jurisdiction will have its own rules around communication, the process is hugely laborious. But because these rules can be applied to a blockchain, the blockchain becomes a so-called 'smart contract', whereby one action triggers another.

Building on blocks

Such instances of added value are a key theme that SmartStream has developed with its blockchain. Twiggs says that due to the technology's automated nature, services can be 'layered on top', whereby actions are triggered or data is used to provide supplementary insight.

He says: "In the last couple of years there have been initiatives that have provided cross-border payments via a cryptocurrency, for example, but, ideally, you also consider the consequences of such a trade on the bank. The bank may want a measure of liquidity management over the top of the blockchain network itself. So we're looking to provide such value-added services as well as the basic blockchain network."

Keep it clean

Of course, sophisticated though it is, adding levels of automation to the process demands that the data inputted is error-free.

Accurate data has long been the cornerstone of SmartStream, a firm that has built its reputation on outsourced reconciliation. But, despite recent advances, Twiggs does not believe a day will come when no one works in bank reconciliation departments. With reconciliation software now being driven by blockchain, machine learning is employed to flag up data outliers that still merit human investigation.

But critically, given the inherent simplicity and speed of blockchain processes compared to what went before, the business of reconciliation can move from being a post-settlement operation to one performed in real time, which has huge implications for the treasury function.

"The advantages of blockchain are speed, the number of participants is substantially reduced and there's a wider set of data on the block so you can fully understand the status of a transaction," says Twiggs.

Cooperation: The full value of blockchain will not be achieved without it

ING BANK looks to DLT for 'zero knowledge' KYC to protect privacy

ING is a leading blockchain player in the banking world – a status largely driven by its standing in trade finance. Since launching its blockchain programme in 2015, it has developed 44 proof of concepts and eight live pilots.

ING was involved in the development of Easy Trading Connect, a blockchain-driven trade finance platform that slashed trading times when tested using commodities ranging from soy beans to crude oil.

Mariana Gomez, ING's distributed ledger technology programme director, says: "Our journey with this technology did not only involve the investigation of various use cases, but also allowed for experimenting with several distributed ledger technologies. These initiatives can be conducted via independent projects, in industry groups, with consortia, and through bilateral partnerships."

One recent project was the Zero-Knowledge Range Proof algorithm. The code can validate that a number lies within a certain range without revealing it – so, for example, it could verify a person is aged over 18 but not reveal their actual age. Another algorithm followed, which provided similar security using alphanumeric data. ING wholesale banking chief innovation o□cer Annerie Vreugdenhil, explains: "We want to allow our clients to maintain privacy on the blockchain and select what they want to share. With our privacy algorithms, the user could prove they are an EU citizen without revealing where they live, or prove they are not on a blacklist without revealing who they are."

"Being able to understand the state of a transaction means we can update rogue data accordingly. We're very focussed on maximising the opportunity our clients have to use our systems to better understand their businesses. We want them to be able to identify, at the lowest level of granularity, where an error is occurring, where a trend is being developed, so that they can take robust actions to resolve that, from a process point of view."

Heads in the Cloud

Given that a blockchain is shared between organisations it naturally sits in the Cloud – and Twiggs believes blockchain and the Cloud will therefore develop together.

"Everyone talks about the Cloud, but there have been constraints within the industry in terms of control, management and ownership of the data," he says. "I think we're now seeing regulators accepting that Cloud operations are permissible, they are secure and data can be regionalised within a country's borders and so forth.

"If blockchain is in the Cloud, it's quite rational, then, to say 'if I'm doing all my payments in foreign currencies cross-border in this blockchain, the data's already in the Cloud, so why don't I take my reconciliations, my operations, my liquidity management, my fees and expenses, and put that into a Cloud operation as well?' And when a firm does that, the return on investment is almost immediate. They can look at using managed services and so the operational cost reduces on an almost exponential level."

Only one blockchain?

One potential pain point for blockchain is the lack of regulation – and the fact that the financial industry has not yet agreed a framework on which all blockchains will be based.

Part of the reason for this is that the ecosystem has clung to an open, startup mentality. But for ledger technology to be truly embraced, Kaddoura says an agreed model must be thrashed out between the competing blockchain developers.

He says: "To take the analogy of clearing systems, SWIFT versus Euroclear, versus the various institutions carrying similar functions in the US, I hope blockchain doesn't go down that route.

"We could have financial institutions in the US focussing on one blockchain model, and institutions in Europe working with another, and we won't derive maximum value from the technology. But I suspect this may be the model, with di□erent blockchain environments addressing di□erent markets. This is going to be a bigger challenge for the Tier 1 institutions – they will have to decide who they are aligned with."

Where are we now?

If SmartStream is at the point of seeing the revolutionary potential of blockchain, banks are not quite at that stage yet.

A survey of financial industry players carried out last year for a SmartStream-sponsored white paper by WatersTechnology, found nearly two

> "The better we can connect ourselves to our clients, and connect our clients to each other, the more useful this kind of technology will be. We haven't moved the needle very far yet but there's an understanding now that it's not really going to work unless everyone can do it and everyone has access to it
>
> Geoff Brady, Bank of America Merrill Lynch

thirds of firms had only got as far as discussing the use of blockchain, while the rest had no plans for it at all. Only nine per cent of those polled were using blockchain in a production environment. Meanwhile, a lack of knowledge and experience in dealing with blockchain was the biggest reason (24.3 per cent) cited as a barrier to adopting the technology.

The views of Saxo Bank chief executive Kim Fournais are perhaps typical of how many bank executives view blockchain. He recently revealed he'd been made nervous by the cryptocurrency dimension of DLT, but adds: "DLT has a lot of promise, and I also believe cryptocurrencies will one day be much more relevant. They need regulation and better technology. The technology in general, with respect to general ledgers, I think will change the clearing and custody side of capital markets. But it will take some time and we need standards which are not there yet."

For Geo□ Brady, head of global trade and supply chain at Bank of America Merrill Lynch, trade finance is an example of where blockchain can reform processes.

"In trade finance, a lot of the documentation facilitates the payment, so the documentation is the payment, to a large extent," he says. "The better we can connect ourselves to our clients, and connect our clients to each other, the more useful this kind of technology will be. We haven't moved the needle far yet but there's an understanding now that it's not really going to work unless everyone can do it and everyone has access to it.

"With blockchain we have an implementation issue, not a technology issue. The technology works [but] how do we plug in a global blockchain, how do we make it easy? Part of the answer will be implementing standards and creating uniformity of access."

Expect some of the answers to these questions to be provided by SmartStream.

"We'll be making some major announcements on blockchain this year," says Kaddoura. "Developing blockchain is a lengthy process. The value is in the collaboration. But the results have already started to show."

Adoption close – but greater collaboration needed

Blockchain needs mutualisation and standardisation in order to develop in the finance industry.

These were the conclusions of the WatersTechnology white paper on blockchain, published last October in collaboration with SmartStream. Based on a survey of global banks, European banks and broker dealers, it discovered 37.5 per cent of respondents had no plans to introduce blockchain. A further 36.8 per cent were discussing its introduction, 16.7 per cent were trialling it and nine per cent were using it in a live environment.

When asked when blockchain would be used in their domain, 45.3 per cent were unable to even predict a timescale. Meanwhile, 72.9 per cent had not undertaken a proof of concept on blockchain technology for their business and 42.1 per cent had no plans to. The biggest barrier to adopting blockchain in an organisation was found to be a lack of knowledge and experience. The paper concluded there was a need for greater collaboration among industry participants, ledger providers and market infrastructures.

It said: "While DLTs have come a long way, there is some distance to go before a critical mass is reached and a majority have taken a blockchain live on their back-o□ce stack, or trading takes place on a major public venue secured entirely by the technology.

"Still, there are indicators of new expectations: greater adoption being only a couple of years away; a switch in thinking that will focus more on improved data management as much as process rationalisation; and new sources of industry support and influence. Should those trends continue, long-awaited breakthroughs will soon be in the o□ng."

Ahead in the Cloud

Silver linings: Cloud-hosted services are faster and cheaper

There's nothing fluffy about **SmartStream**'s Cloud-hosting strategy. **Peter Hainz**, Global Product Manager for Managed Services, and **Nick Smith**, Global Head of Managed Services, set out their blue sky thinking

Flexibility to scale instantly (up or down as the market or business performance demands); a Ninja-like agility to respond to regulatory change; substantially reduced total cost of ownership (TCO) with no upfront IT investment; and onboarding slashed from months to weeks... the Cloud's silver linings have been apparent to many sectors of industry for some years.

According to the UK's Cloud Industry Forum (CIF), overall adoption had reached 88 per cent by 2017, with 67 per cent of organisations expecting to increase their usage. But in financial services, the pace of change has been slower, despite the Financial Conduct Authority's stated aim to facilitate Cloud computing in the regulated sector.

SmartStream was one of the first to forecast – correctly – that a combination of increased data volumes, tougher reporting regimes and pressure on back o□ce costs would force chief technology o□cers (CTOs) to look beyond terra firma for solutions to their business processing challenges. It began o□ering managed services, accessed via the Cloud, alongside on-premise and outsourced solutions, in 2009, but has recently seen an uptick in interest in Cloud hosting.

"Up until around 12 months ago, many of the businesses taking advantage of our Cloud-hosted software as a service (SaaS)were new clients to SmartStream. But we've now started seeing a pipeline of existing clients, who were hosted on-premise, moving to the Cloud with us," says Nick Smith, global head of managed services for SmartStream. "They range from small clients with very low volumes to Tier 1 investment banks."

In the case of the latter, the critical tipping point is often an awareness that legacy systems have been pushed about as far as they can go for the business to remain competitive and compliant.

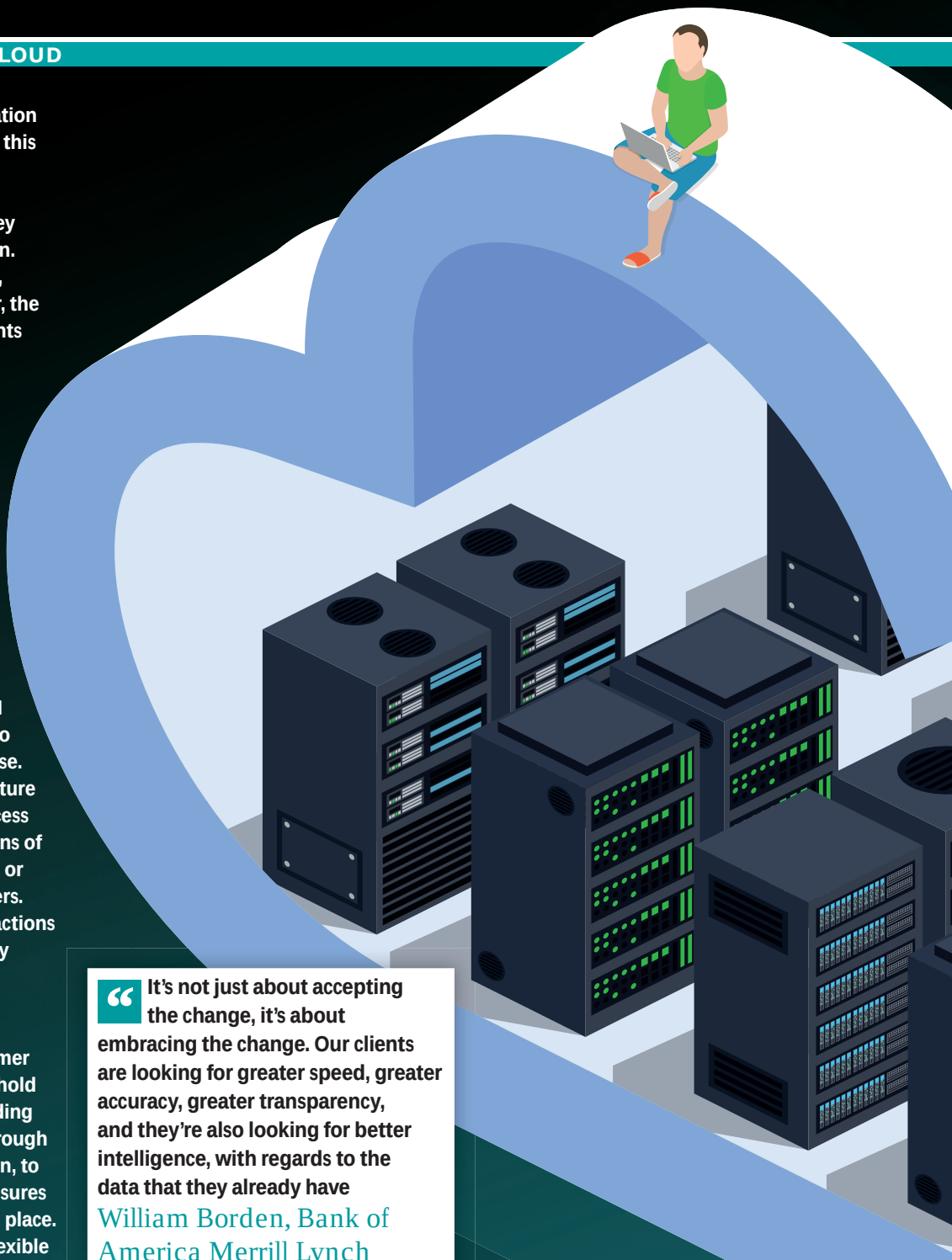
"Upgrading servers is an expensive proposition for a Tier 1 bank," says Smith. "They can avoid that capex and the additional and ongoing expense of maintaining the hardware by moving to the Cloud.

"A lot of businesses have a Cloud strategy already in place," he adds, "but we can demonstrate the value that we add, part of which is around cost, but it's also about the service delivery. There's a real value proposition that trickles right through their organisation. And we can validate that by providing live case studies – people can talk to our clients, and they will confirm exactly what we're telling them."

SmartStream primarily leverages the AWS Cloud platform, which allows it to o□er data hosting in the client's country of operation.

"AWS has a global footprint so, for instance, clients in Australia benefit from using AWS's Australian data centres and our clients in North America benefit from AWS's data centres there. One of the other benefits of using AWS is that we're able to onboard clients quickly," says Smith. "I'm currently onboarding a household name asset manager's global business to our platform and it looks like it's going to take six to seven weeks from initiation to going live – that's extremely fast and it's down to AWS's global coverage and our in-house capabilities."

> "We've started seeing a pipeline of existing clients, who were hosted on-premise, moving to the Cloud with us



"It's been a J-curve in acceleration because we recognise that, in this day and age, nobody wants to sign up with a vendor and then hear it's going to take six months before they see any benefit to their organisation. Our dedicated teams do this day in, day out and, as they've got smarter, the automation of onboarding the clients has got better and faster."

TLM OnDemand, SmartStream's Cloud-hosted managed services platform, uses data templates to assist in ascertaining individual customer requirements and, wherever possible, SmartStream has eliminated the need for existing internal resources for activities such as hardware set-up, software installation, configuration and training, saving the client time, e□ort and money. The 'pay as you go' structure of TLM OnDemand is also incorporated into the platform's implementation phase. There is no upfront capital expenditure required on behalf of a client to access the service, and any cost implications of managing hardware, infrastructure or upgrades are shared with other users. Simply put, if you match 100 transactions using TLM OnDemand, you pay only for those 100 transactions.

All bases covered

SmartStream provides every customer with an experienced consultant to hold their hand throughout the onboarding period, from initial consultation through project planning and data definition, to highly collaborative testing that ensures a full knowledge transfer has taken place. The result of this streamlined yet flexible implementation procedure is that SmartStream's Cloud-based solution is always quick to deploy and perfectly aligned with a client's needs, no matter how specific they may be.

Once a client's requirements are locked down, automated tools for data extraction, transformation and loading (ETL), facilitate a fast and frictionless migration, followed by functional testing.

"We actually have model banks within the system, so there is a fixed amount of configuration with automated tools that help clients with user acceptance testing (UAT) and system integration testing (SIT)," says Smith. "One of the other products that we o□er is quality assurance as a service. Some clients already have their own UAT test scripts that they would normally undertake themselves. They, in e□ect, outsource that to us and we undertake our own testing in parallel and display the results back to the client. That enables us, again, to speed up the time to market, not just for the initial implementation, but also for future upgrades. So the client doesn't even need to resource or finance its regression testing, because we do all that for them."

> "It's not just about accepting the change, it's about embracing the change. Our clients are looking for greater speed, greater accuracy, greater transparency, and they're also looking for better intelligence, with regards to the data that they already have
>
> William Borden, Bank of America Merrill Lynch

The database administrator's (DBA) role is covered 24/7, whichever part of the world the client resides in.

"The client doesn't need to have a full-time DBA, because, in e□ect, they're paying to share one with multiple other

clients and, as we scale up, we simply hire more DBAs, but again, it's a shared resource," says Smith.

And what if the client wants to benefit from the cost savings associated with mutualised data and outsourcing, but is hesitant about signing up to a fully shared Cloud-based utility?

"We have clients that want to ringfence everything," says Smith. "For those, we have dedicated sta who work out of restricted access clean rooms, in highly secure environments – CCTV, security guards and everything that goes with it. We can o er what is, in e ect, a shared platform with lower costs, but in a completely segregated way."

The platform's hosting environment complies with the highest standards of information security management, including ISO 27001 and OnDemand's data protection and security practices are regularly certified by auditors to verify that the solution is fully compliant with all United States and European Community regulations. But the additional option to ringfence the service counters any concern a client may have over Cloud security, while the pay-as-you-go nature of SmartStream's TLM OnDemand also allays fears of 'vendor lock-in', which has been associated with Cloud-hosted services in the past.

The model demonstrates that regulatory compliance and managing risk do not need to be the enemies of innovation.

> We have clients who want to ringfence everything. For those, we we can offer what is, in effect, a shared platform with lower costs, but in a completely segregated way

Peace of mind: SmartStream's outsourced team take care of everthing, ensuring compliance

"Cloud is often more secure than in-house," says Peter Hainz, SmartStream's global product manager for managed services. "More and more banks are saying 'I want to have experts on the job who know what they are doing. I want to have the security'. That's what they get with TLM OnDemand – a Cloud-based service whereby the client is fully protected, but also doesn't have to worry about managing the platform for themselves."

Facilitating innovation

There is another distinct advantage for CTOs trying to predict future IT needs: SmartStream's Cloud services also act as a gateway to Industry 4.0, but without having to go down a protracted internal procurement route that might see the technology superseded by the time it's operational.

SmartStream's recently launched innovation lab provides clients with an opportunity to work collaboratively on artificial intelligence (AI) and machine learning applied to data in the Cloud where outcomes can be tested and scaled accordingly. In this mutually beneficial relationship, clients provide the data, while SmartStream supplies the dev ops.

According to Hainz, AI and machine learning have plenty to offer in the areas in which TLM OnDemand and managed services operates. As the number one reconciliation provider, with 20 years of experience in dealing with banking workflow, the company is well positioned to establish use cases.

"For example, we're receiving more and more requests from traders looking to identify abnormal transactions that require investigation, and AI is much better at supplying them with these than any back office employee," says Hainz. "Artificial intelligence can help in a very efficient way across the entire workflow. In combination with the Cloud, it's a perfect solution. Hence our innovation lab in Vienna's current focus. We have, for example, an AI financial monitor that looks at anomalies along balances in combination with stress scenarios. Another use case is using natural language processing (NLP) to help extract data from invoices sent to banks by hundreds of brokers and reconcile that information."

Citing reconciliations as an area where AI could bring tangible cost and risk reduction to institutions, Nick Smith says: "Clients don't really care if we can achieve auto match rates of 98 to 99 per cent. They care about the remaining one or two per cent because that's where their work effort is. The AI monitors that one or two per cent to understand how it occurs and then sets about reducing those numbers. We've already started to bring AI from the innovation lab into managed services and our clients are already seeing fewer exceptions flowing back into their organisation."

Hainz likes to measure client satisfaction in managed and on-demand services against the 'four Ps' of positive outcomes.

"The first P is Profit, or more precisely how a service helps a bank to reduce costs," he says. "The second P is for Peace of mind, which, for a financial firm, means outsourcing a service to a specialist provider that knows what it's doing, such as SmartStream – that allows your compliance manager to get a good night's sleep! Thirdly, we have Pride – everyone wants to be at the forefront of technology, and that sense of pride comes when you know your

Data centres: Processing can take place in the client country

> "Cloud is often more secure than in-house. Banks are saying 'I want experts on the job who know what they are doing. I want that security'

> **"It's about challenging whether the implementation of something radically new can lead to a complete change in the way that we do something. That creates a new revenue opportunity, it creates a new business model opportunity, it creates operating e□ciencies**
> Rick Striano, Deutsche Bank, on adopting new business processes

> **We look at the world as a series of stats: payments, lending, asset management, insurance, mortgage, etc. And we look for solutions up and down that stack: native Cloud, SaaS-based, data, AI, outsourced service – regtech businesses that are enabling ecosystem players within each industry vertical. Everybody likes a time advantage or a technology advantage; you need a proprietary asset, whether it's data or the technology you've built**
>
> Patricia Kemp, Oaknorth Investments on what makes a successful B2B provider

Cloud analysis: Targeting the 'four Ps' of positive outcomes

platform is incorporating all the latest technological developments. Finally, there's P for Pleasure, which mostly relates to back office staff whose previous manual roles can now become more strategic and therefore more satisfying."

While back office job satisfaction may not be the first benefit that comes to mind when signing up to the TLM platform, it's not to be undervalued. By employing SmartStream's TLM OnDemand, back office roles have been transformed into value-added account management responsibilities that focus on serving customers more effectively, winning more business and, ultimately, generating more of that important first P – profit.

Uncompromising approach

Even in challenging market conditions, SmartStream has continued to invest more than 20 per cent of revenue back into research and development projects. This continuous bankrolling of innovation means that its customers always have access to market-leading tools.

TLM OnDemand is SmartStream flexing its technology muscles to the max, and demonstrates how adopting an innovative approach can deliver exceptional client value. The increasingly shared nature of financial data, encouraged by Open Banking, the arrival of challenger banks entirely built in the Cloud, and the compelling need for speed and cost reduction for data-intensive tasks, such as compliance with Europe's General Data Protection Regulation (GDPR), is forcing a change of attitude towards Cloud services.

But when it comes to choosing a Cloud-based service provider for core activities, albeit it non-competitive ones, Nick Smith believes financial institutions are looking for something more than a technology fix.

"A lot of it comes down to trust. Trust and confidence," says Smith. "I've spent around 25 years working in Tier 1 investment banks, doing exactly the same role as I do today at SmartStream, running the day-to-day operations. We have a core team who are similar – people who've got decades of experience with major names in the banking industry. Therefore, the standards we bring to the organisation and our clients are exactly what the banks would experience themselves, including the risk and control framework and the constant drive for improvement. Clients come in with their auditors and their vendor management teams, and everything they would expect to find within their own organisation, they find here at SmartStream, whether it's data security or disaster recovery planning. We're not an outfit making a play because we see a space in the market. There's a real commitment here and real investment in SmartStream to make sure our clients are going to want a long-term relationship."

In a world of fast-moving data and closer scrutiny there are many clouds on the horizon. But only one has a silver lining.

Crunching the numbers

Financial institutions are looking to cut costs just as, in many cases, the cost burden for increased regulatory reporting rises. How can the **SmartStream** approach to data management help?

"It is often said that banks are only as good as the quality of their data." This telling quote from a 2017 report on how banks can prepare to profit from change in European financial markets, sums up the critical role of data management and the need for better data insights to meet regulation as well as gain competitive advantage.

But banks can't do it on their own. As that report went on to make clear, banks and financial institutions must collaborate with technology specialists if they want to make the most of data and turn revolution into revenue.

There is no doubt that European markets are being transformed by a combination of forces that necessitate new partnerships and business models. In the face of challenges such as the second Markets in Financial Instruments Directive (MiFID II) and the risk limitations imposed by Basel II and III, there is an urgent requirement for greater transparency and detailed data on counterparties, financial instruments and transactions across all asset classes. And let's not forget the unresolved issue of Brexit, or the continuous impact of economic and political events beyond Europe. All are important change factors that demand greater insight into the information financial institutions have in front of them.

More than 10 years on from the financial crisis, banks are still feeling their way back to prosperity and are ever-mindful of their reputations and the need for rigorous controls and oversight. Having reliable and comprehensive data today is a must, and there is a huge challenge – not to mention cost – for them in building reporting systems and managing and storing data.

As Nadeem Shamim, cash and liquidity management strategic advisor at SmartStream, puts it: "If you don't have the ability to gather data e□ciently, then you don't have the ability to respond to requirements e□ectively, either."

It is a challenge that can't be ignored, and those that remain tied to legacy systems are likely to face mounting costs and complications. As the European *Financial Markets – Preparing to Profit From Change* report from TABB Group's analysts advocated, far better to adopt agile, flexible, fintech-based approaches, especially for back and middle-office functions where there are often high costs associated with manual processing for onboarding, reference data and regulatory reporting.

"Data is the key driver for innovation," agrees Ruth Wandhöfer, global head of regulatory and market strategy at Citi. "Banks have been sitting on legacy technology for many years, but they've had to invest a lot more in regulatory compliance. The question is, how do you revamp your internal systems to become more agile? How do you work better with data, not only for compliance reasons, but also so that you can innovate and create new services based on data?"

> Over the last 20 years, SmartStream has built its own business by helping others to manage their data and grow their operations more effectively

One thing seems certain: the huge increase in data volumes, coupled with new data requirements, means it is difficult for businesses to be self-sufficient. Recent surveys from the likes of LexisNexis show a strong preference for industry collaboration, to streamline and improve areas like client onboarding and know your customer (KYC) activities, and share data for risk reductions such as watch lists. According to TABB's research, a centralised and automated shared utility for onboarding has advantages for everyone, enabling businesses to handle up to 90 per cent more transactions.

Over the last 20 years, SmartStream has built its business by helping others to manage their data and grow their operations more effectively. Focussing at first on reconciliations, it evolved to cover a wide range of managed services, such as cash and liquidity, corporate actions and expense management. At the heart of them all is data.

The key to SmartStream's success has been its ability to respond to change, which underpins the value that it brings to thousands of global banks, asset managers, custodians and broker dealers, during the current period of rapid technological and regulatory transformation.

CREDIT SUISSE: A NEW PERSPECTIVE ON DATA

With **SmartStream**'s fees and expense management system in place, business management teams at Credit Suisse can focus on the real job at hand

In its 2017 annual report, Credit Suisse, the global wealth manager and specialist investment bank, reaffirmed its intention to 'rigorously execute a disciplined approach to cost management across the group to lower our cost base and increase positive operating leverage'.

It had already made consistent progress towards its goals of achieving less than US $4.8billion in costs on an adjusted basis and reducing total operating expenses globally by seven per cent while maintaining stable revenues.

A portion of this cost reduction and optimisation was down to SmartStream's fees and expense management solution, which was originally focussed on the bank's over-the-counter fixed income derivatives, US-listed equity options and cash equities businesses, when it was introduced as a managed service in June 2016. By February of the next year, that was extended to include the processing of listed derivatives brokerage fees.

CASE STUDY

Consolidating its brokerage payments onto one platform not only improved operational efficiency, but also gave Credit Suisse the option of retiring legacy systems and reducing its ongoing IT spend as it came to the conclusion that 'fees and expense management [is] an area where the financial services industry can benefit from service mutualisation'.

To be able to deliver this kind of comprehensive service, SmartStream's fees and expense management solution collects internal data from banks, maintaining a repository of all the fee schedules and rate agreements, and runs through every transaction to come up with a precise calculation of costs. With this data knowledge, the system can offer total transparency of transactional costs specific to each client, be they bank, trader or corporate. Additionally, this information forms the foundation for predicting similar variable costs for other transactions and helps integrate the cost data with the books and records of the banks. This enables data to be recorded and analysed from both expense and revenue standpoints and, in the words of Ben Harrison, Credit Suisse head of global brokerage, allowed the bank to 'transition away from firefighting to a full, front-to-back control model' with management information previously collated manually now available at the press of a button.

The platform records the expense data linearly, whereas earlier it had to be sourced from multiple locations and laboriously documented. Having

Strength in numbers: Collaboration is key to harnessing data

> "Western Union invests nearly $200million a year in compliance. We have 20 per cent of our workforce – 2,500 people – that work in compliance in order that we can be present and our services can be o□ered in all the countries we operate in. Technology is nimble. And technology is basically the direction that this whole industry is taking
>
> Jean Claude Farah, Western Union

complete records around fees and expenses and the way they were estimated and processed, all in one place, made it easier to read and analyse the data, and present it e□ectively for management decisions, as well as to automate the processes. For example, validating invoices with trade records was automated and the earlier method of manual spreadsheet reconciliation was abandoned. This removed any chance for human error and laid the path for better transparency in the transaction costs. Automation also directly helps to maintain the integrity and accuracy of procedures as well as client servicing.

Another deciding factor for Credit Suisse, which was becoming increasingly active at the time in emerging wealth management markets like Asia, was that SmartStream's expense management platform is highly scalable and its functionality very modular, which enables it to focus on one or more asset classes and fee categories, depending on specific client requirements – a model that makes the solution as suitable for Tier 1 banks as it is for small hedge funds.

Credit Suisse ended up with a changed perspective on data – adopting such a highly organised approach significantly impacted management decisions, which are now based on accurate, comprehensive and real-time data. There is a linear record in one place that provides a full account of the fees incurred and how they were calculated, accrued, validated, allocated and paid in real time,.

"This has been critical in explaining the narrative of transaction expenses to management," says Harrison. "With all our data in one place, we have the ability to automate some key control functions.

> With all our data in one place, we have the ability to automate some key control functions

For example, the link between accruals and payments has been important in automating our balance sheet reconciliations. These are critical in monitoring our aged balances and has become a key tool in closing periods across the number and variety of vendors we use.

"Typically, banks maintain an array of fee schedules internally to calculate monthly fees," adds Harrison. "However, there are considerable advantages to be gained in having this information maintained through a managed service provided by a partner such as SmartStream, which can maintain uniform fee schedules across a number of industry participants."

A recent example of how it is supporting systemically important institutions to manage that environment and reduce costs is its partnership with Deutsche Bank. Announced in June 2018, SmartStream is providing the bank with access to its Centre of Excellence (CoE) utility, which was developed in response to the rising number of reconciliations that need to be performed to meet regulations, coupled with the mounting pressure that authorities are placing on financial institutions to accelerate the process.

As part of its transformation strategy, Deutsche Bank is using the CoE to streamline, simplify and reduce cost by outsourcing three managed services to SmartStream: reconciliations onboarding, production support and operational reconciliation.

When the partnership was announced, Bobby Handa, head of the global reconciliations group at Deutsche Bank, said: "Modernising our reconciliation processing is critical to increasing productivity and reducing costs, as well as meeting regulatory requirements."

While SmartStream works with some of the biggest names in the financial world, it is also helping lower tier businesses. Increasingly, these are caught within the scope of European regulation but typically do not have the budget for large scale infrastructure investment to meet their data challenges.

Take corporate actions, one of SmartStream's fastest growing business lines, which is experiencing high demand from smaller market participants.

If an organisation announces an action globally, across numerous jurisdictions, the information will be disseminated through many di□erent channels. The data needs to be acquired by financial institutions so that they have market intelligence, but it's usually been a labour-intensive exercise performed by banks because very few institutions can a□ord automated processing. This is where SmartStream steps in, helping smaller institutions to automate and adopt technologies to keep up with the pace of change.

Working together for better data

In 2015, SmartStream formed a partnership with Goldman Sachs, JP Morgan and Morgan Stanley. This led to the creation of SmartStream's flagship Reference Data Utility (RDU), which provides banks with a managed service to deliver complete, accurate and timely reference data for regulatory reporting, trade processing and risk management.

The RDU is both an industry initiative and an industry first, described by the utility's CEO Peter Moss as a 'security master for the industry'.

"We joined forces to take the complexity out of creating security reference data, enabling financial institutions to automate their operations," Moss explains. "We've come a long way and have widened the original scope."

Focussed up until now on exchange traded derivatives, the RDU has recently onboarded its first clients using additional data sets for equities and, later this year, it plans to upload futures, options and fixed income data.

The RDU's main value for Tier 1 customers is in the improved quality of the data they are able to process, substantially reducing the number of corrections that need to be made (usually manually), and the amount of data they need to input themselves. The results can be spectacular.

"The success I like to quote most," says Moss, "is the reduction in exception processing. When banks roll out our data, they are seeing a 70 to 80 per cent reduction in exceptions. It means that, for a large organisation, 80 per cent of the times where they would have had to step in and investigate what went wrong, fix something manually and then run the whole trade through manual processes, simply go away. For one of our Tier 1 banks, 21,000 exceptions in Europe alone evaporated overnight – and we probably saved the bank a couple of million dollars, just like that."

A common resource to resolve an industry-wide problem, the RDU handles basic operational information that doesn't put users at a competitive disadvantage.

Joining forces: SmartStream brings together the brightest ideas to help crack data challenges

"It covers mundane operational tasks," says Moss. "It takes away the pain but isn't going to win you any new business. Rather, what we provide allows you to adopt best-in-class practices, pulled together from various organisations, freeing up time for other activities that do help you create competitive advantage. This way, everyone benefits."

Moss highlights a European initiative to show what this collective approach can

achieve: "We provide consolidated data every day to brokers in Europe. We gather the data from around 100 brokers, consolidate it, apply a range of quality checks and then publish the data in the market. Without that data, no one in Europe can effectively trade report, so we're instrumental in helping markets operate."

There is no doubt that achieving such strategic status is hard won. Over 20 years, SmartStream has consistently returned more than 25 per cent of revenue to research and development (R&D) in a relentless pursuit of improved data collection and validation. This stuff is hard to do, as demonstrated by the challenges faced recently by the Financial Instruments Reference Data System (FIRDS), a new data collection infrastructure established by the European Securities and Markets Authority (ESMA), together with EU national competent authorities (NCAs), which has struggled with missing data, incorrect data and data duplication.

Already being used in APAs (approved publication arrangements), which are authorised under MiFID II to publish trade reports on behalf of investment firms, Moss expects to see the RDU soon extend its coverage across the buy and sell side. Demand for a clearer view of the market, a better understanding of real-time liquidity and where to trade and execute effectively will be enhanced by the additional futures, options and fixed income content, serving the buy side in particular more effectively.

> "SmartStream works with some of the biggest names in the financial world. It is also helping lower tier businesses, increasingly caught within the scope of European regulation

> "Banks are all about data. That's the heart of banking. So, how do we use big data rather than bad data – because banks are full of bad and inaccessible data? If you want to use big data, if you want be more like big tech companies, you have to transform your core banking systems, because one of the reasons banks are so slow is that their core banking systems are from 50 years ago

Ronit Ghose, Citi Group Global Bank Research

Partnership in TLM

At the heart of SmartStream's business is its Transaction Lifecycle Management (TLM) platform. Launched in 2006 and progressively expanded over the years, TLM is a trademarked approach for solving operational processing challenges and understanding end-to-end transaction flows, from trade inception to settlement. TLM enables customers to build scalable, flexible processes that deliver real-time visibility and control. Rather than ripping out legacy systems, it protects investments by focussing only on points of weakness and integrating new systems with existing ones.

In addition, partnerships with other service providers add strength to the proposition. In March 2019, for example, SmartStream announced a partnership with Cassini Systems, a provider of pre and post-trade margin analytics for buy side derivatives trading, to help firms meet uncleared initial margin obligations. SmartStream's TLM Collateral Management solution, which provides automated data management to reduce operational risk associated with collateral management, is being integrated with Cassini's platform.

A month earlier, SmartStream had announced a similar partnership with Numerix, again to integrate with TLM Collateral Management. Numerix provides technology to help banks manage risk and build competitive advantage across capital markets.

Open and instant

Open banking and instant payments are creating increasingly complex transactions with a range of new demands for reconciliations, exception handling and cash and liquidity management reporting. Because regulators and central banks require all payment providers to comply with international and domestic regulations, and the field is opening up for new providers, SmartStream's TLM solutions have a valuable role to play here, too.

As Moss has previously pointed out, the financial crisis turned the spotlight on deficiencies in liquidity management monitoring, which has only become more acute with the advent of real-time payments.

SmartStream's work in the area of digital payments is being driven by its team in Austria.

"I think mature markets are followers in the digital payments space," says Haytham Kaddoura, SmartStream's CEO. "For us, using the Austrian team's product knowledge is vital because they are well-informed about the evolution of digital payments in, for example, Africa, where we have been strongly present for the last seven or eight years. We are using this knowledge and experience to develop services worldwide."

At the end of 2018, SmartStream launched a new digital payments solution called TLM Aurora, which is the next-generation version of the company's Corona reconciliation platform. The first module of TLM Aurora is designed to support the new industry standards for digital payments and covers mobile, cash and card payments, digital currencies, settlements and reconciliations.

It connects with SWIFT gpi (the global payment initiative), RTGS (real-time gross settlement), as well as blockchain-based networks. This enables real-time operational control, proactive exception management and low total cost of ownership.

With transactions increasing in volume, variety and speed across the digital marketplace, it is more important than ever to have a solution that provides scalable, real-time, integrated reconciliations and TLM Aurora can support organisations of all sizes. TLM View, an intuitive analytics layer, allows real-time MIS and in-depth reporting at the transaction level, and organisations can search and retrieve payment transactions from anywhere via a payments layer. There is also an integrated trade process management function that enables asset managers to oversee their multi-class trade operations, both internally and externally.

"TLM Aurora is far more than just an upgrade," says Kaddoura. "It's the result of years of R&D at SmartStream and draws on valuable insights and intelligence from our clients and partners. As digital transformation increases, banks need more controls to link existing infrastructures through a single solution. We discussed TLM Aurora with several banks, and focussed on the need for better data discovery, data modelling and data simulation. We recognised that liquidity management, reporting to the regulators and understanding future cash flows are critical on a daily basis."

> "TLM Aurora is more than an upgrade. It's the result of years of R&D at SmartStream and draws on valuable insights and intelligence from our clients and partners

Santosh Tripathy, SmartStream practice lead for digital payments, underlines the importance of collaboration in the digital payments space: "We work with processors, networks, issuers and acquirers. Transactions worldwide are going digital and, as they become real-time, our job is to help our clients manage exceptions and risks when transactions are processed. The big challenge in the operations space is how to handle volume, velocity and speed."

Real-time payments are set to take off in 2019, notes Tom Durkin of Bank of America Merrill Lynch.

"The opportunity to build real-time reporting is probably generating more interest than other payments initiatives," he says. "With the number of countries adopting real-time payments growing, we are going to see real momentum in 2019."

One of SmartStream's clear advantages is that it has been in the payment space for a very long time and it has an in-depth understanding of the transaction lifecycle.

"We're not just reconciling," says Tripathy. "We're managing the entire transaction lifecycle, the entire workflow and we are agnostic about how the transaction is captured. So, if a transaction has happened, let's say on a previous device or at an ATM or over a cell phone, we'll reconcile all the touchpoints in the transaction flow. Then we'll manage the rest of the lifecycle.

"We have a very good frontend layer, which gives our users a holistic view of what has happened, and it helps them to process the transactions better. It helps them analyse these transactions in more detail and be more productive because they can finish things more quickly and then focus on far more productive areas."

Shaping the future

Banks have always collected data, says Kaddoura, but it's only in the last decade that they have woken up to its full potential. The goal, he says, is for banks to have 'the right data, in the right format, and then to be able to update it consistently across their client bases and operations'.

SmartStream's core competency in bringing structure to those datasets not only helps organisations to solve regulatory and cost challenges today, but sets them up for the future.

"That structure is often very helpful in making artificial intelligence (AI) algorithms more effective," explains Moss, "because it allows you to combine data in a much more consistent way, across an organisation, meaning you don't get the 'garbage in, garbage out' scenario that you see in some AI cases. AI isn't applied to the data that we offer, but it can help to make AI work."

For more on SmartStream's work in the area of AI, see page 8.

Plugg

How would you like a programme built into your organisation's data architecture that helped you identify, record, analyse and present a detailed report on the variable costs your business incurs daily? And what if that could also give you the means to optimise and automate these variable expenses, and so help you to increase the profitability of your business?

Fixed costs are often heavy; they are also easily identifiable. But an organisation's profit is more often drained by a variety of tiny to mid-sized variable costs spent in fees, service charges and taxes.

SmartStream's Transaction Lifecycle Management (TLM) Fees and Expense Management solution assimilates that variable cost data and shows where the money leaks away so that the gaps can be plugged.

The variable expenses the financial industry incurs run into billions and significantly a□ect profitability. Accurate measurement of this data on variable expenses o□ers better understanding of it, and a means to optimise these transactional costs can lead to considerable savings. Evidently, the e□ectiveness of such a mechanism depends on how accurately an organisation captures its data on expenses, which in itself is a challenge.

In a white paper published in July 2017, Ernst & Young observed: "Every element of the cost management ecosystem, in order to be executed e□ciently and accurately, ultimately relies on the quality of the available data. And that is where the going gets tough for most banks, especially large banks with complex multi-billion-dollar cost bases. We have observed that most banks have data at the line of business level — e□ectively siloed and not consistently managed from line of

ingthegap

Costs can easily leak out of an organisation if you don't have an accurate handle on your fees and expense management data

business to line of business. Additionally, that data is inconsistent across lines of business in terms of its quality, definition, timing, and frequency."

The white paper also notes that financial organisations have been spending significant money in fixing how the data looks instead of plugging the core flaw that causes the data to look the way it does. This further complicates the existing problem of inaccurate data, making any subsequent data management project 'more complex and

> We are in a very sweet spot in helping banks become more accurate, more relevant, and more efficient

costly', worsening any chance to trace data back to the source and o□ering 'discrepant views across departments'.

SmartStream's TLM Fees and Expense Management solution uses proprietary technology and an inbuilt architecture to create an end-to-end automated process that not only captures the entire set of data on variable costs, but also accurately substantiates expenses across high volumes of transactional data. Organisations can, therefore, strategically manage their variable expenses and increase savings and gains.

Kaddoura explains: "Fees and expense management is an interesting model. It took some time for financial institutions to realise its value, but now we have a number of Tier 1s where we are a significant component of their operation. Here, we're talking strategic value added where financial institutions are pushing quite a bit of their strategic data and operations to our teams to help them address the gap and better understand their fees and expense management – that's in addition to a whole host of Tier 2s.

"Growth of our fees and expense management platform in Europe and the US has been quite significant, I think simply because banks are working to get greater transparency around what their exposure is to other financial institutions. We have been saving millions of dollars for financial institutions in a period of less than a year, so the value added and the business case is right there for the taking."

Universal scope

According to Bharat Malesha, executive vice president for fees and expense management at SmartStream, what makes the solution so impactful is the 'breadth of the coverage we provide across asset classes, the volumes we process on this platform, and the fee categories we support today, across all of the expenses, commissions and revenues'.

It covers entire asset classes, functions and features and enables managing the expense lifecycle end to end. In comparison, other similar products available in this space are usually isolated within certain asset classes, or focussed on very specific functionalities.

"There is not a product in the market out there that has the level of depth and analysis that's provided out of this platform," says Malesha.

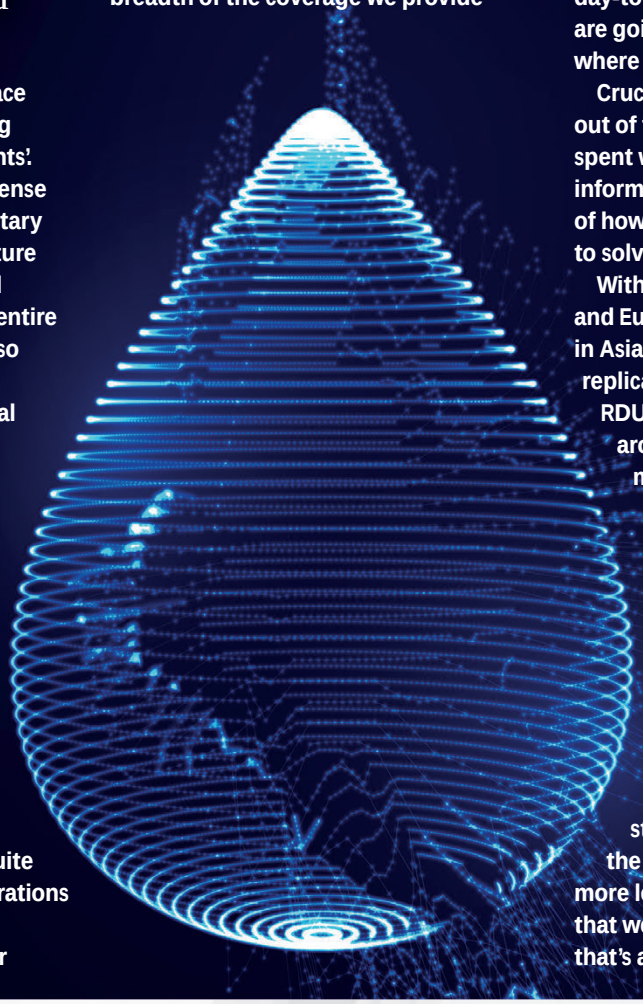
"The platform also gives customers the analytics to help them make day-to-day decisions about how they are going to operate their flow, and where they push that flow to."

Crucially, the solution was borne out of the combined wisdom of years spent working with and inside banks, informed by a banker's understanding of how the industry works and how best to solve its problems.

With a solid customer base in the US and Europe and now also growing fast in Asia, SmartStream is looking to replicate the success of its flagship RDU by building a similar utility around the entire expense management system.

Meanwhile, 2019 will see it exploring interoperability with key market infrastructures, like the Futures Industry Association.

Malesha explains: "The banks we work with are already participants of these market infrastructures. Interoperating with them streamlines and standardises the processes which gives us a lot more leverage and e□ciency – a benefit that we can pass on to clients. I think that's a great opportunity."



Best platform or 'platform boot'? Deciding if 'fashionable' tech is the right fit for you

SmartStream's culture of close partnership working is alive and well in its new innovation lab, as Chief Marketing Officer **Mark Roth** explains

SmartStream's global footprint gives it a uniquely geographically diverse view on the speeds of evolution and innovation taking place in financial technology across the world today: the full-throttle adoption of fintech in East Asia and China versus the multi-speed approach seen in the West as legacy gives way to new ways of working and banks respond to disintermediation in a multitude of ways.

The challenge is not that there are too few technology options available to financial institutions, but too many, and what's appropriate for one institution may not be the right choice, right now, for another. Timing is everything – wait too long to adopt the next 'best thing' and you've already been overtaken; move too soon and you could make an expensive mistake… it's a tension that frequently leads to paralysis of action. Then there is the issue of feasibility versus usability: it's possible, for example, to apply artificial intelligence to any data-rich process; whether it's advisable to depends on how confident you are in that data's accuracy and your ability to select the correct data in the first place.

Fashionable choices are not always the most enduring, which is why it's always handy to have a trusted friend alongside you when making your technology decisions. It's even better if you can 'try before you buy' – a luxury not afforded to most chief technology officers. But that's where SmartStream clients have the advantage.

> "Fashionable choices are not always the most enduring

Partnership working has been part of our DNA for 20 years. It's at the heart of SmartStream's mutualised service. Our 1,000-plus staff are focussed on working with clients to find the right solutions at the right time. Our people work with their people to properly observe the problem, then create a solution based on the issues that need to be resolved.

As Nick Smith, our global head of managed services, put it: "My core team are from a similar background to myself. People who've got decades of experience, from working with major names in the banking industry. The standards we bring to the organisation, to our clients, are exactly what the banks would experience themselves, whether it's to do with the risk and control framework or the drive for change and improvement."

The same level of involvement is also now evident in our new innovation lab, which is working on 11 case studies (see some below) with real clients, focussed on applying blockchain, machine learning and artificial intelligence to their data in order to find the best fit for them.

As much as technology is the enabler, SmartStream CEO Haytham Kaddoura believes it's the 'SmartStream spirit' that delivers results.

"When we all come together, the spirit, vibe and energy are palpable," he says. "When you see people who are relatively junior discussing strategic matters with senior executives, it's phenomenal. Everybody's contributing, everybody's listened to. I think that's a culture that's contagious and super-energising."

And it's one that SmartStream invites you to share in.

Clients in the lab

- **Credit Suisse** has an invoice processing agreement with SmartStream to include the handling of listed derivatives brokerage fees, using SmartStream's proprietary transaction execution fees and expense management software.
- **United Bank** selected SmartStream's Transaction Lifecycle Management (TLM) solution for its cash/nostro and ATM reconciliations, exception management and investigations, and archiving, implemented by SmartStream's local partner Intercom
- **Raiffeisen Bank** focusses on intraday liquidity management for regulatory compliance and increased operational efficiency.
- **Suncorp** has used SmartStream to upgrade its collateral management system to meet industry and regulatory best practices.
- **A leading Asian infrastructure investment bank** has implemented TLM Reconciliations Premium to reposition its listed derivatives offering.
- **Sydbank** in Denmark chose TLM Trade Process Management to deliver a single trade management platform to automate cross-asset transactions through to settlement.
- **VUB Banka** in Slovakia has created a single reconciliations team using SmartStream's Corona at its head office in Bratislava, halving the number of reconciliations staff needed. This has delivered greater visibility into a critical control function, while also enabling the bank to efficiently manage its continued expansion.

SmartStream

Digital transformation for today's challenging landscape

CONTROLS

REGULATIONS

REVENUE

RISK

Our customers tell us that they need to use transformative digital strategies to remain relevant in today's challenging financial landscape. Strategies that will allow them to improve operational control, reduce costs, build new revenue streams, mitigate risk and comply accurately with regulation.

To help you make the journey towards digital transformation, we provide a range of solutions for the transaction lifecycle. AI and Blockchain technologies are now embedded in all of our solutions, which are also available in a variety of deployment models.

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