ISSN 2633-1969

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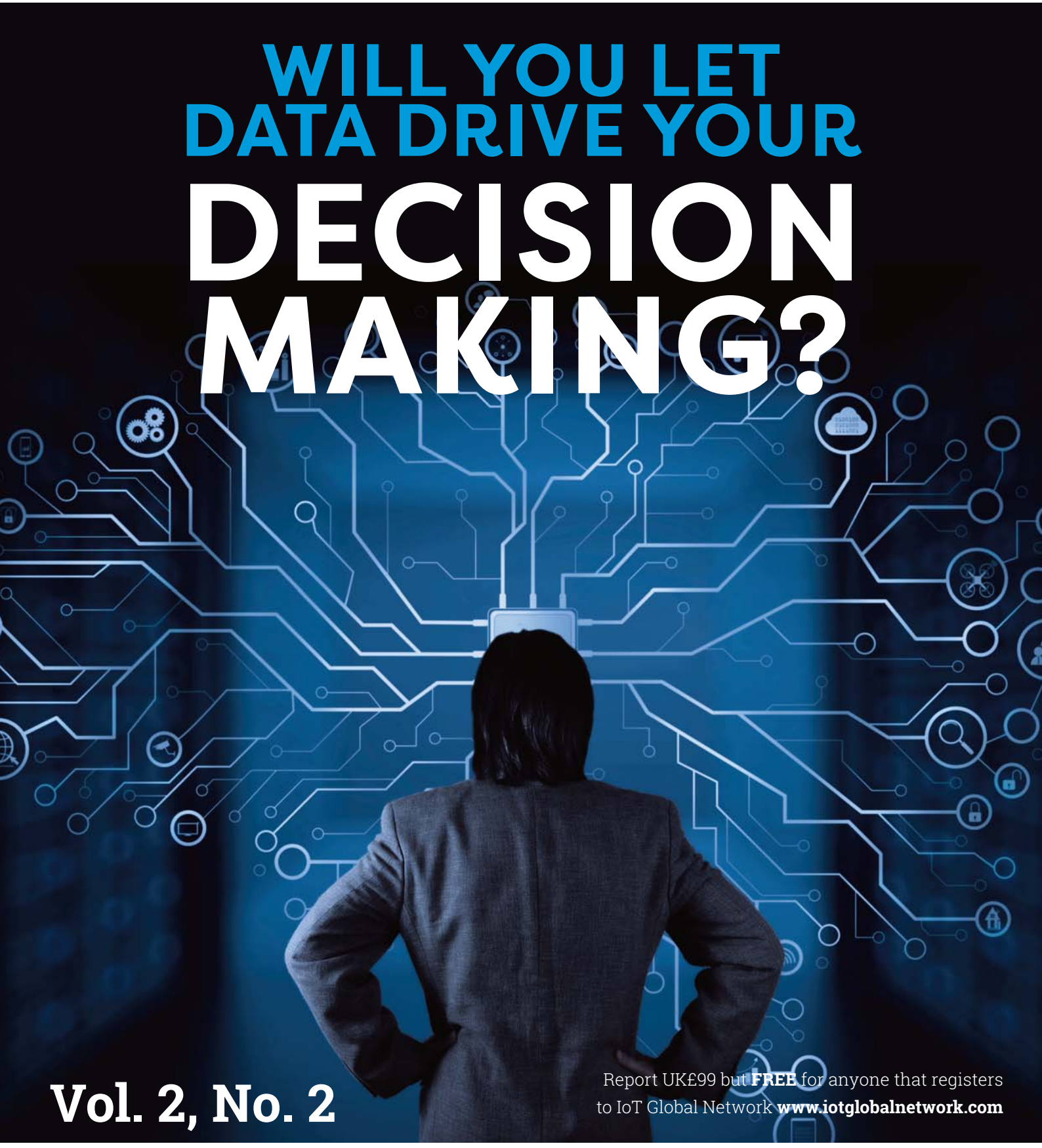

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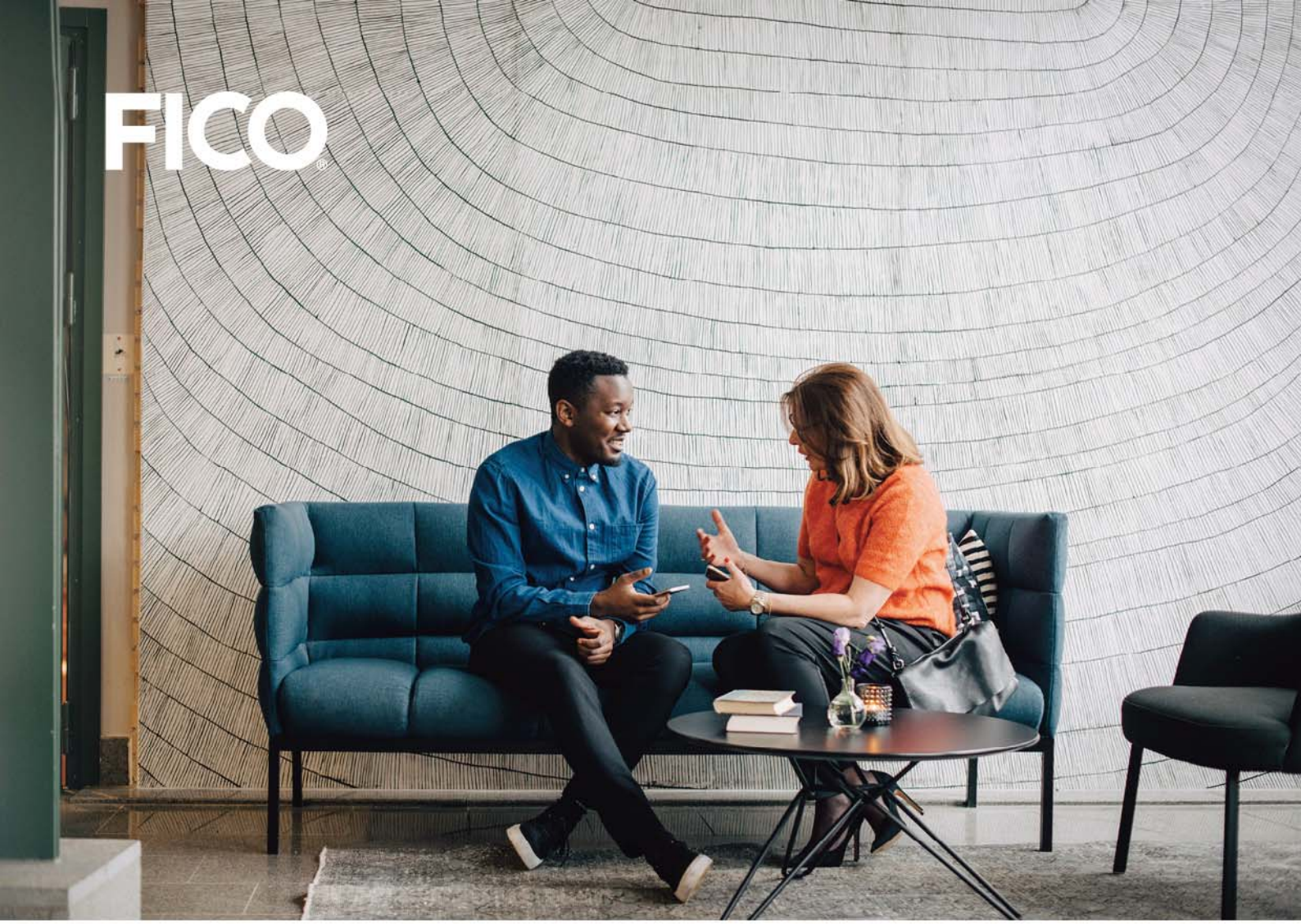

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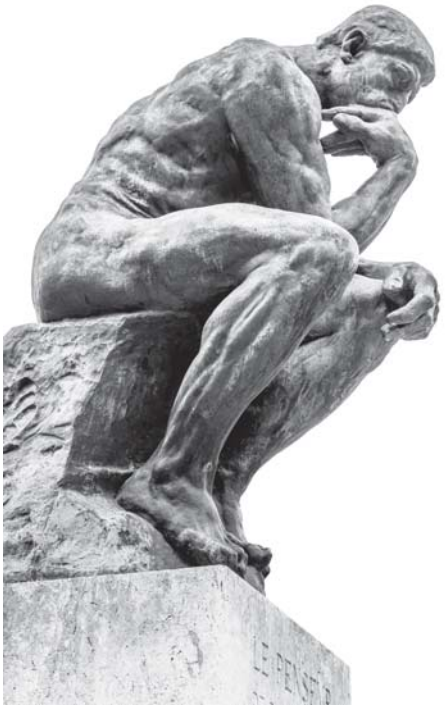

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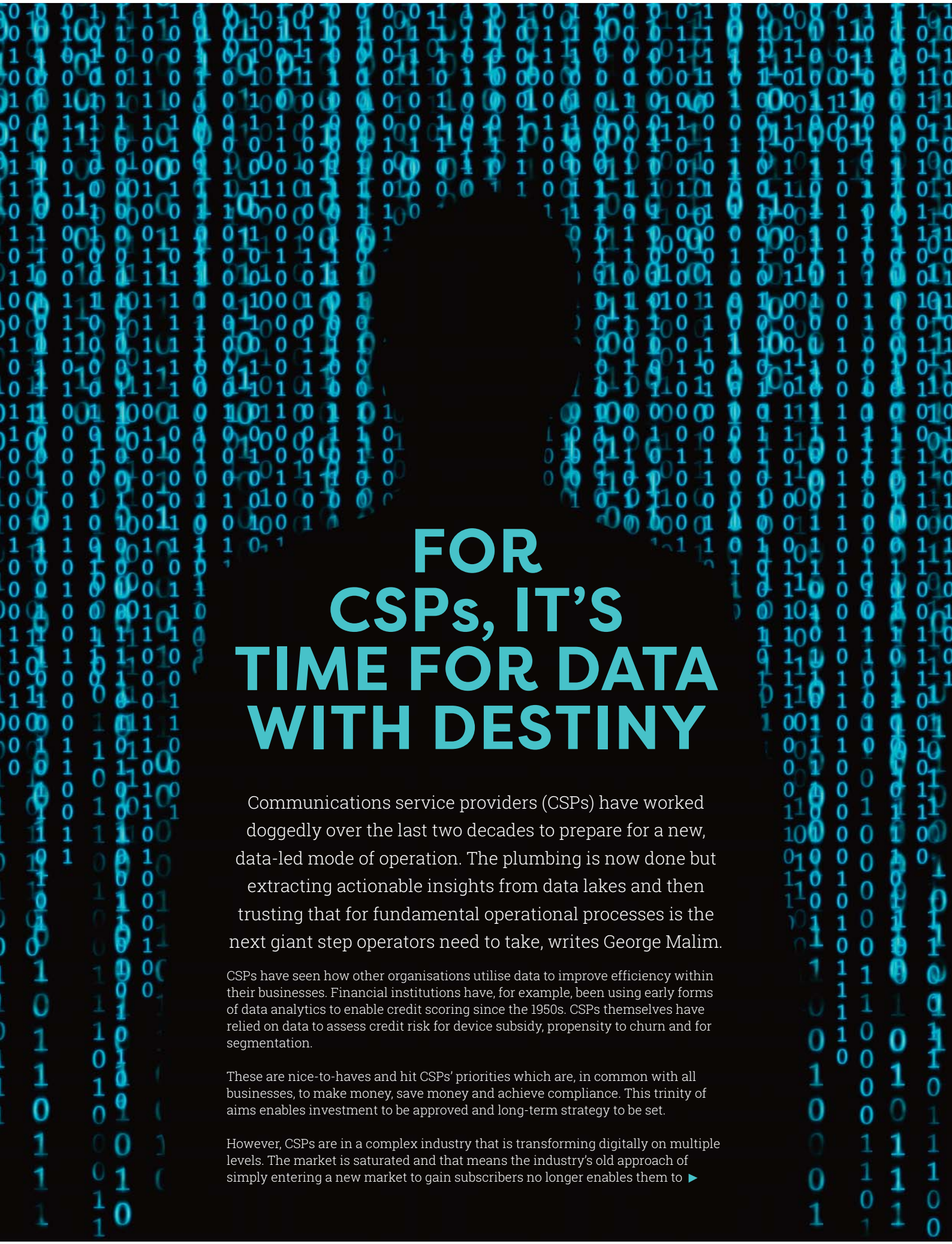
Published by:
WeKnow Media Ltd.
Suite 138, 80 Churchill Square,
Kings Hill, West Malling, Kent
ME19 4YU, UK
Tel: +44 (0) 1732 807410



FOR CSPs, IT'S TIME FOR DATA WITH DESTINY

Communications service providers (CSPs) have worked doggedly over the last two decades to prepare for a new, data-led mode of operation. The plumbing is now done but extracting actionable insights from data lakes and then trusting that for fundamental operational processes is the next giant step operators need to take, writes George Malim.

CSPs have seen how other organisations utilise data to improve efficiency within their businesses. Financial institutions have, for example, been using early forms of data analytics to enable credit scoring since the 1950s. CSPs themselves have relied on data to assess credit risk for device subsidy, propensity to churn and for segmentation.

These are nice-to-haves and hit CSPs' priorities which are, in common with all businesses, to make money, save money and achieve compliance. This trinity of aims enables investment to be approved and long-term strategy to be set.

However, CSPs are in a complex industry that is transforming digitally on multiple levels. The market is saturated and that means the industry's old approach of simply entering a new market to gain subscribers no longer enables them to ►

George Malim
Tech Trends

access new revenues. Instead, to win a customer they have to demonstrate they offer a better experience than a rival. Price can't be a differentiator because CSPs have raced to the bottom and communications services have commoditised.

It's not all doom and gloom, though. CSPs have fabulous network infrastructure and with the arrival of 5G and ultra-fast fibre many exciting new services and experiences are coming to market. CSPs are keen to harness these to move beyond simply providing the basic connection and see opportunities in mobile edge computing, IoT, high-speed gaming and a raft of other applications and services that require specific network and adjacent capabilities.

The common thread with these is far greater segmentation of the customer base is required to target users accurately and effectively. The market of one might seem a distant prospect and it will require enormous automation to enable across a subscriber base of millions. However, if operators can analyse their data and make timely, relevant and attractive offerings automatically and then also dimension the network, prioritise high value traffic and charge for it in automated ways, they will both move up the value chain to higher average revenue per user and achieve operational efficiency. The cherry on top is that a data-led mode of operation can also ensure compliance with telecoms regulation and data regulations.

The carrier barriers

Although CSPs are highly technical organisations with strong familiarity with data management, they have so far not reached the scenario outlined above. There are many obstacles in their paths, ranging from legacy to culture to competence.

CSPs' legacy IT often extends back to the mainframe era when it was deployed to manage a basic communications service. These environments don't have the flexibility to react rapidly to changing market conditions nor the ability to integrate easily with newer systems. Fortunately, many of these systems have been retired and the upgrade path is set to move to more flexible and cloud-based IT. Compounding this challenge is that most CSPs' IT is composed of a web of systems that don't necessarily interconnect. This is because of the industry's heritage of mergers and acquisitions that has seen CSPs bought and sold and become part of large carrier groups. Although outwardly integrations appear complete, this is often not the case and it's common to see mobile operations running on separate systems to cable or fibre offerings.

To provide the holistic, responsive experience that customer want, CSPs have to overcome these traditional demarcations and consolidate data from across all these systems.

Another significant challenge is the culture of the CSP. The traditional view is that network engineering is the heart of the business. The network is the prized asset and telco-grade engineering is the key attribute of the CSP. This means that CSP employees are composed of skilled workers that operate to high-level network engineering practices. They see the network via engineering metrics such as availability and throughput rather than consumer metrics such as video buffering or jitter during gaming.

Suggesting to a network engineer that a software-controlled network will reconfigure itself to support content uploads at a sports event or the peak loads of ultra-low latency gaming is almost an affront to their engineering heritage. The industry is moving in this direction but there is a culture shock that CSP organisations will have to overcome.

Finally, there is also a skills gap. Network engineers, marketers and customer service representatives are experts for a previous connectivity generation. The new environment is software-controlled and fueled by data insights in order to feed network automation. In mobile, network slices will be spun up and down to support specific apps, consumption and services and this will happen so frequently and at such enormous volume that automation is the only option.

CSPs are starting to embrace this. They've invested in the data infrastructure and analytics so the next step is to move to data-led operations. At the moment there's a disconnect. The data is gathered, stored and analysed but the insight created is then acted upon with human involvement. This slows the process and increases cost.

Ultimately, it's a question of trust and CSPs aren't quite there yet. They simply aren't ready to let their data feed automated systems that control their networks, serve their customers and feed their business support systems. Surely these business-critical activities are too sensitive to entrust to a machine?

Therefore there is a transitional stage for CSPs to go through in which they familiarise themselves with the power of their data and understand more about what they can do with it. At the same time they'll learn more about new techniques such as networking virtualisation and network slicing and know much more about what they can do with their software-controlled network.

This period, which has already started at pioneering CSPs, will see them learn the most important thing of all: to trust their data. Once trust in data is established, it will be used to drive CSPs' decision making and from there it's only a further, yet still significant, step on to data-enabled automated operations.

Robin Duke-Woolley
CEO, **Beecham Research**

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tech trends REPORT

WHY DATA-DRIVEN DECISION MANAGEMENT IS THE DIFFERENTIATOR CSPS HAVE BEEN DEMANDING

Communications service providers (CSP) are surrounded by challenges from all directions, writes Robin Duke-Woolley, the chief executive of Beecham Research. Their central service offering has commoditised, growth is constrained by market saturation and they have no option but to invest billions in capex in the next generation of mobile technology. Against this unappealing background, they have to deliver great experiences or customers will walk.

With the COVID-19 pandemic putting connectivity even more at the centre of peoples' lives, CSPs are under intense pressure to operate more efficiently while addressing the shift in network usage from centralised offices to more geographically distributed home-workers. This opens up a vast arena in which much can go wrong. Wrongly configured home Wi-Fi, congestion caused by the voracious bandwidth consumption of locked down children and device and software issues can all look to customers as if they're the networks' fault. CSPs have to turn this losing game into a winning situation but efforts so far to utilise their data to transform their operations and customer satisfaction have not delivered the results they need. ▸

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CSPs have focused on their data but data alone isn't the answer. It's what is done with the data and how the insights within it are acted upon that has the power to transform the telecoms industry. CSPs have invested heavily in data infrastructure but have not closed the loop by completing their data strategies to encompass analytics, automation and the decision-making capabilities needed to provide services that increase customer satisfaction.

Increased customer satisfaction is the means by which they will compete with new market entrants, retain existing customers and carve out a larger share of the digital value chain. Research from analyst firm Analysys Mason has uncovered that for every 1% increase in net promoter score (NPS) there is a corresponding decrease in churn of 4%. Similar research from AT&T has shown that customers that have a customer satisfaction score of 90% or more typically spend US$10 more each month and remain as customers for longer than those with a score of 75%.

This sort of results rely on the cohesive utilisation of CSP data, as shown in **Figure 1**, to drive satisfaction and those that are successfully meeting customer expectations know in much greater depth the people who buy and use their products and services. This goes beyond standard segmentation criteria such as age, gender and income and brings together insights such as: What do they do with their time? What sort of places do they like to frequent? What do they think of other brands? What do they think of your brand?

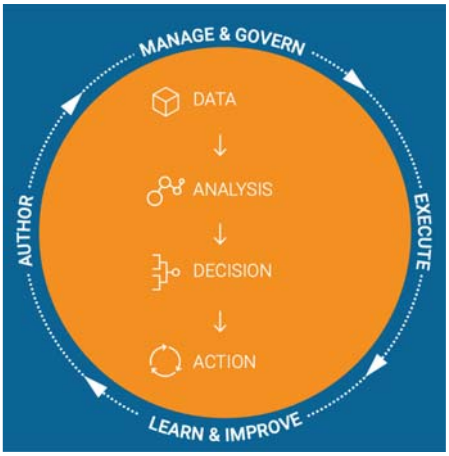

Figure 1: The cohesive utilisation of CSP data

Telecoms needs visibility

These insights are foundational business indicators in many market sectors but the telecoms industry, because of the intensity of the challenges it faces, needs this visibility even more than others. Tier 1 CSPs are now facing many challenges as their markets change and become ever-more disrupted by new entrants. Here are just a few of them:

While CSPs have a strategic aspiration to be customer-centric the reality is that they are bogged down with legacy systems and constraints

a) Driving profitable growth in a saturated marketplace. Where are the growth opportunities? How to add new value?
b) Identifying and retaining valuable customers at risk. Who are they? What will attract them? What are the risks?
c) Managing the complexity of devices and equipment. How to keep up with rapid changes in new technologies to provide the support customers need?
d) Improving customer experience and satisfaction. How to plan for excellent customer experiences? What are they looking for?
e) Anticipating disruptive initiatives from new market entrants. How to be flexible and respond quickly to new market challenges?

Faced with these and many other challenges, CSPs are having to ask themselves how vulnerable they are to disruption and whether they are doing enough to stay ahead of competitive and market threats through reinvention and innovation. The answer to those questions is 'no' and they have been and continue to be overtaken by new entrants from other sectors.

Many Tier 1 CSPs have invested in developing data lakes and in software to enable sophisticated analytics. However, this is a challenging area. According to a recent TM Forum survey, while more than half of CSP/Tier 1 respondents said they believe data lakes are a good approach to storing data, about a third said that it was difficult to extract useful insights in an appropriate format and in a timely way. Faced with this, many CSPs are struggling to become customer-centric across the entire customer lifecycle, due to operations that are rigidly structured around siloed, on-premises systems, data and processes.

Uncoordinated data

For example, billing information often does not extend beyond the billing function of a CSP, network fault reporting does not extend beyond the CSP's network services organisation, and information on the range of services sold to the customer stays in the sales department. Each of these interactions with the customer is most often completely disconnected, and the CSP then holds only fragmented views of its customers through uncoordinated data silos.

The cohesive, interconnected and integrated approach to customer experience is often called Customer 360, which describes how a 360-degree view of the customer is created and maintained. However, this concept is often aimed for but seldom accomplished.

While CSPs have a strategic aspiration to be 'customer-centric' the reality is that they are bogged down with legacy systems and constraints. It is seemingly impossible for them to really put the customer at the centre of everything and design processes and journeys around the customer because they have to compromise and fit into what the legacy systems allow them to practically do. Digital transformation for many CSPs really means recreating inefficient processes and journeys in a digital but still fragmented way, rather than actually transforming how they do business.

The concept of a customer-level 360 view is, again, aspirational. However, joining the dots between the different stacks is extremely difficult when businesses have grown by M&A over a number of years. This is especially true in multi-play CSPs and some leading CSPs can have more than 40 billing systems alone. The challenge here lies in how to tie all of that together to enable a 360-degree view of the customer?

Consumers do not want disjointed experiences across their fixed/mobile phone, broadband, cloud storage, email and streamed services. Customer-centric businesses will win because they can interact with consumers in a mirror image of how consumers interact with them - holistically, building the relationship over an extended period. As customers have begun experiencing more consistent, personalised treatment from providers in other industries, it is natural for them to expect - and demand - the same from their CSP.
As part of this, it is essential to understand customers well enough to provide them with precisely what they need, when they need it. The best firms can then rise a level beyond that by anticipating what their customers will need in the future and taking pre-emptive action to provide that.

A decision-first approach

While it is all very well to have vast amounts of customer data available, it is by no means a panacea. In a so-called data-first approach, the focus is on collecting, managing and analysing data, then mining that data to find real business value. Yet finding that business value needle in the haystack of data ▶

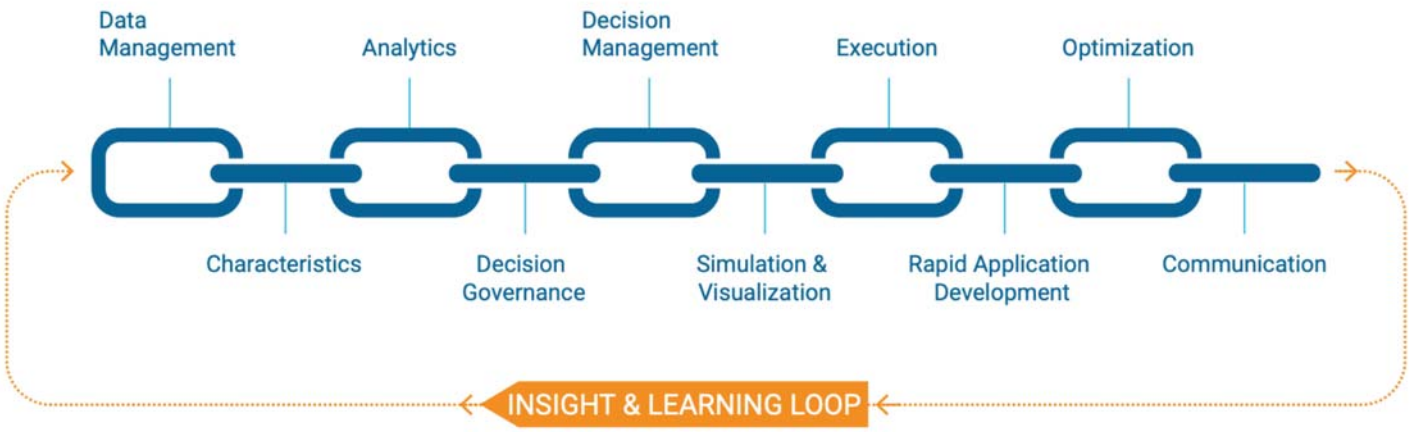

Figure 2: How data fuels the insight and learning loop

demands more than simply harvesting and processing more data . That alone will not improve performance. A customer engagement that starts with the data itself will constrain results by first asking "what customer data do we have?". It may be that the really valuable initiative requires data that is either not currently being collected or is being collected in a form that currently makes it difficult to extract or even unusable.

In contrast, a decision-first approach focuses on the business outcomes required and the value that provides for the customer and the company. It is aimed at improving organisational decision-making and goes far beyond business rules to model the structure of the decision-making process. The advantage of a decision-first approach can be viewed in terms of customer engagement: it is the decision not the data that is closest to the customer and what they understand. Once the challenges that need to be solved and the objectives that need to be reached have been decided, a Decision Management suite such as that offered by FICO can then define what is needed to get there.

There is enormous opportunity for Tier 1 CSP innovation in this area. How often does a CSP manage to combine its network data with its CRM data to gain a more holistic view of its customers? What could it do with that if it had it? Network data can provide information on where you are. Could that be combined with CRM data to get an idea of what you like or what you are doing – with privacy issues respected? Could CSP and perhaps fintech or retail data be used together to proactively offer new services that are relevant to location and personalised, in a way that individual customers will value?

Taking the use case of onboarding a new customer, for a CSP this often requires a form of credit assessment. But what if the assessment shows that there is too much risk in providing the customer with what they are asking for? Turning away a potential customer is an expensive decision because of the marketing budget that has already been spent in getting them to apply.

What if they could instead be offered something close to what they want in the form of an alternative package that better fits their risk profile, thereby achieving a less risky sale for the CSP and a more affordable price for the customer?

An additional benefit to CSPs here is that the origination conversation and data gathering can be combined with fraud detection. There are distinct things you learn and discover about a customer in real-time through the onboarding process that could be used and honed to make sure the customer - and business - is better protected from fraud throughout their buyer's journey. Further parameters could be proactively gathered and matured through the fraud protection journey as well.

Decision management is designed to support such decisions made while in discussion in real-time with the customer. It may involve choosing between hundreds or even thousands of alternative packages for that one individual customer. How easy is it to make such credit decisions quickly to suit the customer while also complying with the risk appetite of the CSP?

A CSP knows intimately where you are all day long and, in many ways, could probably work out what you are doing, so there is an opportunity to use this real-time data

In another situation, the use case might be associated with in-life customer management or customer retention. A CSP knows intimately where you are all day long and, in many ways, could probably work out what you're doing, so there is an opportunity to use this real-time data. Very few CSPs are really using streaming data generated from how their customers use services to understand context and determine actions based on that. For example, can streaming data be analysed so we can make an educated guess that someone has just moved address based on their location at specific times of day, and can we then recommend broadband, fixed line and TV services?

Another example would be to assess whether a customer might exceed their data allowance from their current usage and automatically switch them to a more appropriate plan that reduces the overage charges in a way that keeps customer satisfaction high and doesn't cannibalise revenue.

CSPs can use streaming data to identify what can be learned from a customer's behaviour that may help predict potential payment difficulties in the future and feed the insight and learning loop detailed in **Figure 2**. Should such a situation arise, the CSP can identify what could then be offered to address that. There may be, for example, an opportunity to cross sell, up sell or even down sell if that makes it possible to keep a valuable customer.

Then again, a further required decision might be around the question "which customers should I invest in to minimise the chances of them going to a competitor," as referred to earlier in point (b) above. Once the decision required is recognised, it unlocks the potential for working back from that to understand the tools, analytical methods and data sources appropriate to tackle it from within the decision process. ▶

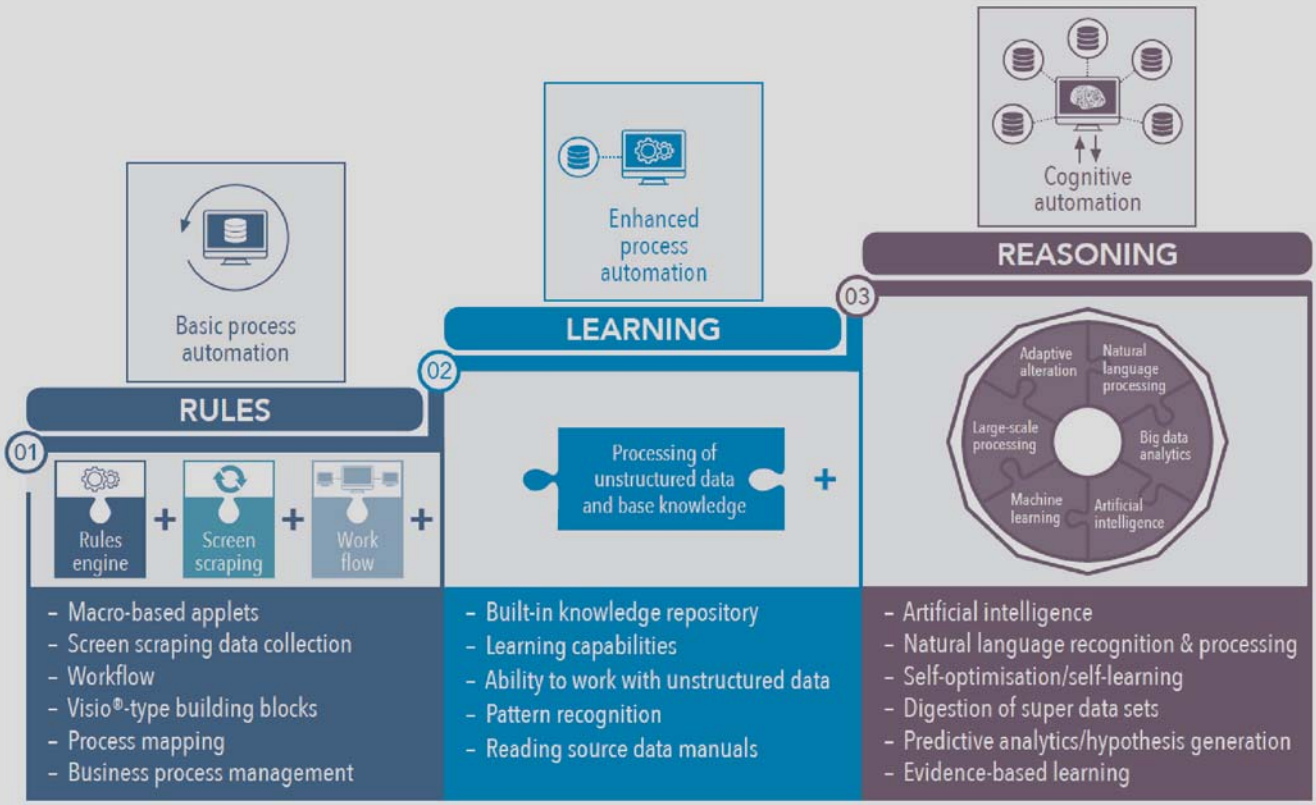

Figure 3: Elements of a digital decision platform

Source: Tech Innovation to Reinvent the CFO Suite, KPMG LLP

Delivering the value: digital decision platforms

Enterprises everywhere are investing in machine learning and other AI capabilities, spurred on by the need to fend off disruptors or, better yet, outmanoeuvre them through self-disrupting innovation. Another motivator is the hope that artificial intelligence (AI) will increase return on investments previously made in big data infrastructures and data science. But while machine learning can discover many new insights from the interplay of different kinds of data, it cannot convert them into actions that create business value. For that, a digital decision platform is needed. This is a proven platform technology and processes with roots in robotic process automation (RPA) in the industrial sector, also referred to as cognitive automation by KPMG in the financial sector, or more generally decision automation.

Figure 3 outlines the combination of technologies that are increasingly being used to automate these business processes, operations and analysis. This ranges from robotics on rules-based processes, including basic optical character recognition (OCR) and screen scraping, through to the application of sophisticated, intelligent automation involving cognitive machine processing and elements of AI. These technologies sit on top of existing IT architecture components and in their most advanced form can interpret data from multiple sources to make decisions.

Digital decisioning platforms are a new segment that brings together four existing capabilities, often with optimisation capability:

- Business process automation
- Business rules management
- Predictive analytics
- Application development

For platform developers, digital decisioning is a new way to slice the market. While for users, one benefit is that it eases integration of predictive models into the production environment. Platforms offer a way to re-use common software elements across different activities and use cases and are therefore a rapid and lower cost route to implementation compared with a customised approach. In this way, they can quickly provide an overlay to existing systems that is both scalable and able to ingest multiple new data sources with minimum reliance on internal IT or a vendor.

According to Forrester Research, "a key challenge of digital business is deciding what to do in the customer's moment of need – and then doing it. Digital Decisioning software capitalises on analytical insights and machine learning models about customers and business operations to automate actions... for individual customers through the right channel."

Organisations using data analytics to constantly reconsider their options and decision management to operationalise new strategies are now achieving very large gains. The following results from across industries are typical examples:

- 30% increase in new customer bookings in one year
- 40% increase in sales with 35% increase in profitability per account
- 15% increase in on-time flight performance along with $39 million reduction in operating costs
- 4-second response time, down from 20 minutes
- 50% policy contract automation, up from 5% ▶

The age of the customer

Customers are beginning to feel the difference. While becoming customer-centric has been a goal of businesses for years, only recently, with increasing adoption of decision management platforms, are a significant number of companies actually doing it. It is the difference between a 360-degree view as a concept and actually acting like you know who the customer is and what they are trying to accomplish, no matter which interaction channel they are using.

Another way customers are experiencing the difference is better choices. In this era Forrester has dubbed the 'Age of the Customer,' product stock keeping units (SKUs) are exploding in numbers as businesses rush to meet customer demand for choice. Buying a mobile phone has, for instance, become increasingly complicated, with a plethora of decisions customers need to make about devices, options, accessories, service plans, support and financing. Piling more and more onto the menu can add to confusion rather than a better customer experience or higher satisfaction with the choices made. It can lead to decision fatigue, poor choices and discomfort with the whole experience. The truth is, as consumers, we do not want to work hard to find what we want. Though largely unaware of this preference, most of us want the work done for us. In that case, decision management helps, with streamlined ways to bring an individual's attention to the best choices specifically for them. This in itself is more likely to lead to greater trust in the brand that delivers this.

Figure 4: Achievable benefits with the FICO Decision Management Suite

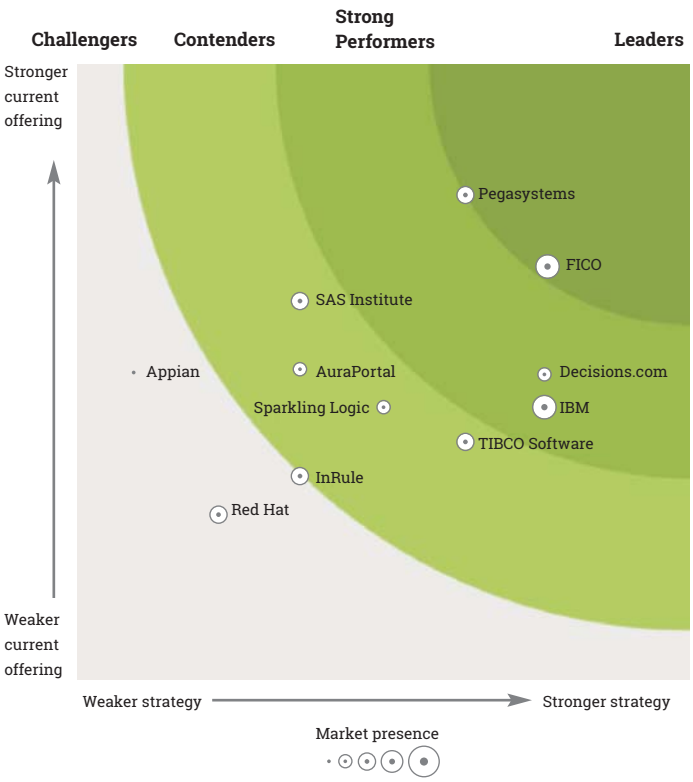

Figure 5: Forrester Research New Wave Digital Decisioning Platforms

FICO Decision Management

FICO has been helping businesses make smarter decisions for decades. The company pioneered AI- and machine learning (ML)-powered technologies and the decision management technologies to deploy these. FICO works with the world's largest businesses, across telecoms, financial services, insurance, retail, government, energy sectors and more. It has deep expertise in delivering these platforms and helping transform business operations across all parts of the customer lifecycle, including customer onboarding, customer management, loyalty and retention.

Available in the cloud or on-premises, the FICO Decision Management Platform connects data, advanced analytics, strategies and other decision components within one high-performance, scalable management and execution environment to deliver the achievable benefits shown in **Figure 4**. It provides the means to share decision assets across the enterprise, rapidly consume, develop and operationalise advanced analytics, and continuously track and improve operational results. It has been deployed in a wide range of industries, including Tier 1 network CSPs.

As part of its 'New Wave' assessment of Digital Decision Platforms, Forrester identified and reviewed 11 vendors including FICO, as shown in **Figure 5**.

Forrester measured 10 key decisioning platform attributes, with FICO receiving the highest ranking in 6 of these – Develop experience, Decision management features, Analytics features, Business results correlation, Vision and Market approach. According to Forrester "FICO leads with world-class decision management and analytics" and "FICO is best for companies automating consequential business decisions". ►

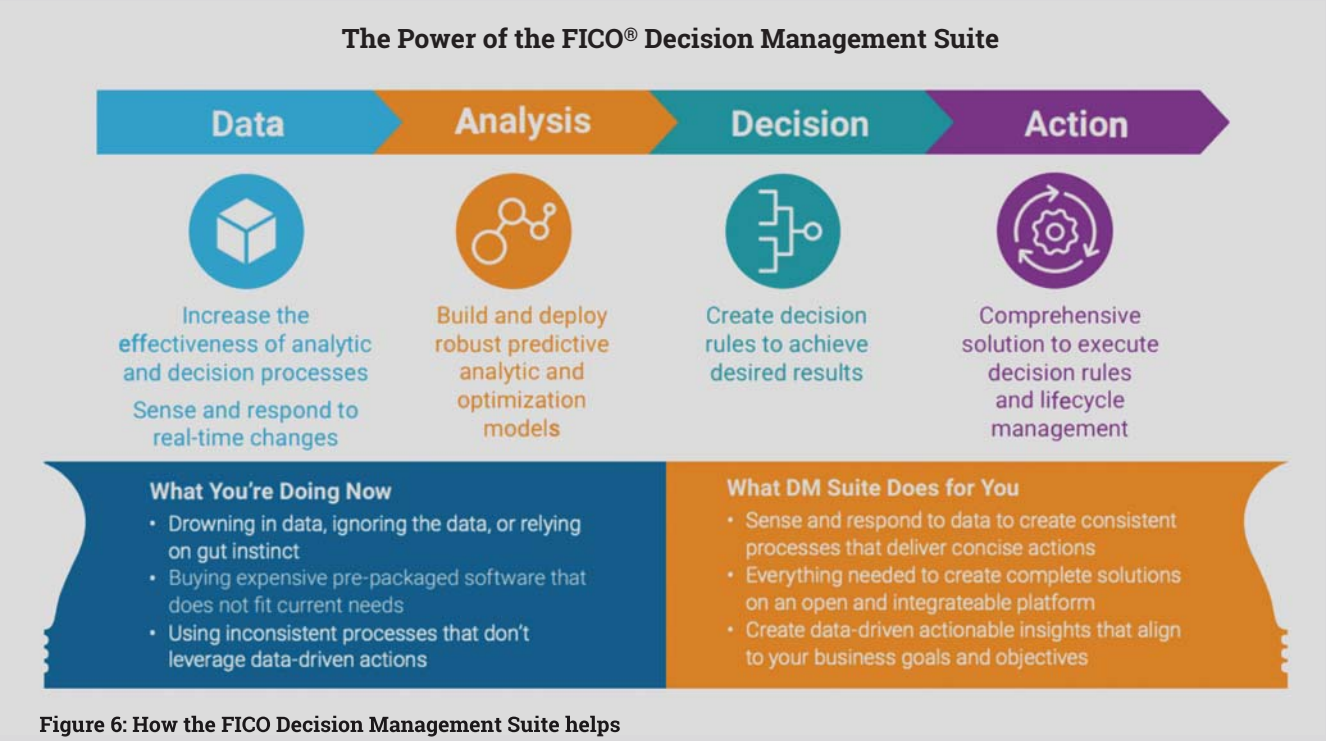

Figure 6: How the FICO Decision Management Suite helps

FICO's Telecommunications Expertise

FICO has been working with CSPs across the globe to help them apply their data to achieve business goals. Examples include FICO providing marketing pre-screening services for one of North America's leading wireless providers. This pre-screen is tied to the CSP's credit originations system and ensures that new customers receive credit-appropriate offers. It is a unique solution within the US telecoms industry where more than 300 million potential customer records – the entire United States population – are assessed. Thus, whenever a prospective customer presents themselves to the carrier online or in-store, the carrier has a ready set of offers and services that they know the credit check will be approved for.

In Europe, a tier 1 UK mobile provider uses FICO's decision platform to manage the credit risk of their existing customer portfolio, to make ongoing re-assessments of changes in their customers' financial circumstances. This brings together customer records across multiple brands and legacy technology stacks, creating a single, consolidated decisioning platform. It enables the credit risk and sales and marketing teams to choose better-informed customer level strategies in selecting candidates for cross-sell and up-sell offers. Furthermore, being able to identify changing financial circumstances facilitates a proactive approach to debt management, reducing payment delinquencies, account suspension and churn.

Finally, FICO's optimisation solution is being used to streamline customer acquisition at a major North American CSP. This project involves a CSP with more than 50 million subscribers and is detailed in full in the case study on page 16 of this issue of Tech Trends.

Summary

CSPs face considerable market challenges that can be addressed by a more personalised approach to their customers. There are many opportunities to innovate in this area, to introduce new services that customers will find valuable, increase the opportunity for direct contact to learn more about individual customer needs and to build trust in the CSP brand. Digital Decision Platforms provide a means for achieving this quickly and accurately without the need to build custom solutions from scratch. FICO has been recognised by Forrester Research as a world leader in this area.

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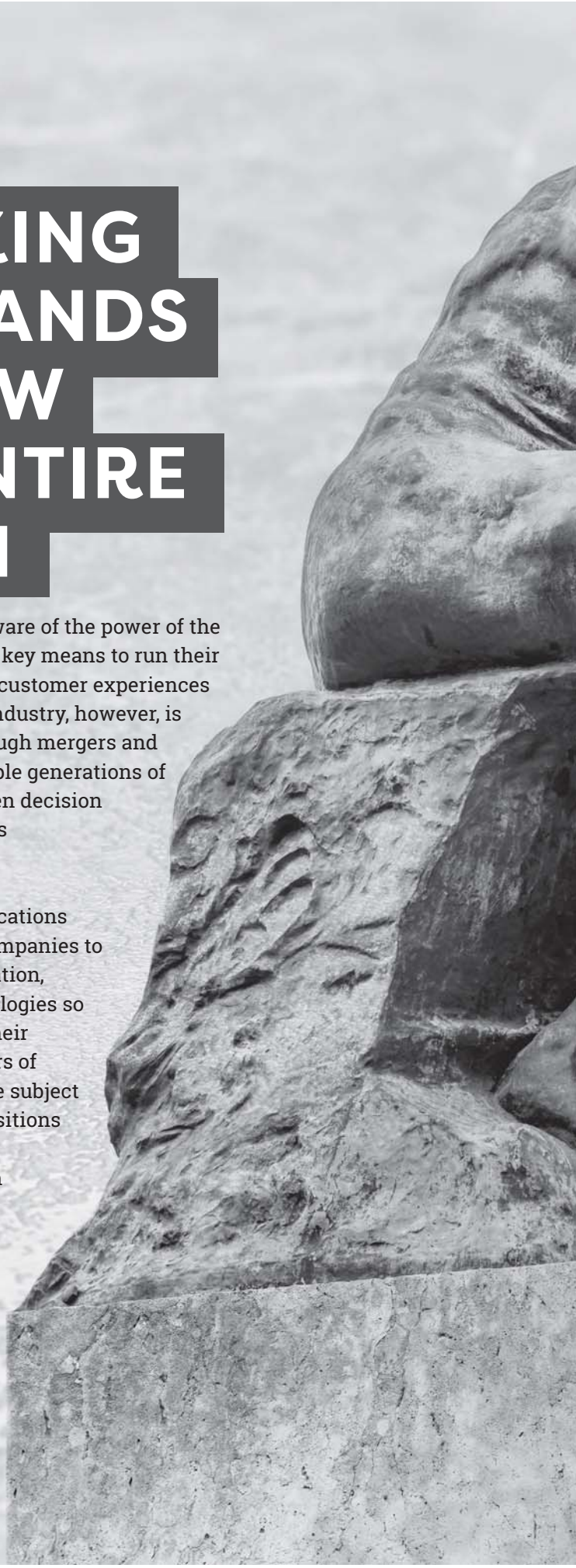
DATA-DRIVEN DECISION-MAKING FOR CSPs DEMANDS A HOLISTIC VIEW ACROSS THE ENTIRE ORGANISATION



Communications service providers (CSPs) are now well aware of the power of the data they collect regarding their customers and see it as a key means to run their operations more efficiently, achieve compliance, improve customer experiences and ultimately enhance their profitability. The telecoms industry, however, is composed of a complex web of organisations created through mergers and acquisitions (M&A) and infrastructure that involves multiple generations of technology. This makes the process of enabling data-driven decision making multi-layered and encompasses cultural as well as technological challenges.

Mel Prescott is a principal consultant in the telecommunications practice at FICO, the data analytics specialist. He helps companies to use the most advanced analytics, decision rules, orchestration, mathematical optimisation and other systems and technologies so they can achieve the potential to optimise all aspects of their operations that lies in their data. He has more than 15 years of experience working in analytical telecoms roles to provide subject matter expertise and has held credit risk management positions at EE, Orange and Bank of America. He holds an MSc in Analytical Credit Risk Management from Sheffield Hallam University in the UK.

Here he tells George Malim how FICO is helping its CSP customers through the use of big data and mathematical algorithms to predict consumer behaviour. The company focuses on enabling CSPs with tools and software that allow them to optimise operations through fighting fraud and managing risk more effectively, complying with government regulations and creating more profitable customer relationships. ▶

Mel Prescott
FICO

George Malim: What are the challenges communications service providers (CSPs) face in making effective use of data to drive their decision making?

Mel Prescott: We've been talking about use of data and ability to create new solutions by exploiting data for a long time but the reality on the ground is that a lot of CSPs are hamstrung by operational silos. They are still having to process data in large batches rather than in near real-time.

The data is sometimes inconsistent and different departments have different data warehouses. They are sometimes protective of these and suspicious of other business functions using that data. This means there isn't the holistic view of the customer that is needed to make effective data-driven decisions.

For example, CSPs often take only isolated approaches to different systems' data, keeping network data seperate from customer data. There's no real two-way flow of data taking place and they are not really stepping in any customer-side data which means they can't prioritise access to the consistently most valuable customers or those who are most active on social media.

I don't think there's any real use of holistic data to the greater good within many CSPs and they are further hampered by their heritage of growth by M&A, which means there hasn't been the ability to bring the different departments together.

For example, when I worked at EE in the UK, we started as Orange, then merged with T-Mobile. We had no way to link a broadband customer with a mobile customer, or an Orange mobile customer that also had a T-Mobile mobile subscription, or to provide seamless experiences.

There's an old Indian parable about blind people in a village being asked to identify an animal by touch. The animal's an elephant but because the people all operate in isolation they can't provide a coherent description of the animal. CSPs' fragmented structures and the barriers between departments result in the same incapacity.

GM: How does the process of collecting and analysing the data to inform the outcome work in practice?

MP: There isn't one single answer that brings all the data from disparate systems together. Some CSPs, like Telefonica, are further along the path of platform reinvention than others. ▶

They're going down the path addressing one use case at a time and as each new one comes up they can decide whether to ingest it into the platform.

CSPs have been investing in data lakes and big data infrastructure for several years now but once you have the data, what does it mean? Just having the data is one step but then you need to transform it into something useful – the information. This is where the power of analytics comes in.

What is useful, what analytics can be applied and then how to operationalise the insight created is enabled by decision management platforms. These help you to make use of your data.

GM: Is it too soon to envisage automated decision making enabled by data analytics allowing CSPs to transform their personalisation and marketing capabilities?

MP: The vision is heading towards automated decision making but there is definitely a nervousness about letting machines run the network. To let a virtual function take over without a human touch is daunting and one reason for that is that there are numerous examples of bias creeping into machine learning models if they have not been trained properly or have issues with data selection.

Last year, we saw controversy when a credit card provider was accused of gender bias when users noticed it offered smaller lines of credit to women than men. Higher credit lines were given to men because historical data introduced that bias into the business model and kept on perpetuating it.

In future, without doubt, regulation will come in to ensure models have to be explainable and in FICO we're at the forefront of that effort but it is difficult because the more predictive the algorithms the more difficult they are to explain. This is an emerging area of data science, but it is necessary and FICO has been innovating in this area for some time. FICO has dedicated resources to the refinement of Explainable AI – new types of AI and machine learning models that make it easier for business generalists to understand what is going on inside the black box, and to satisfy regulators that decisions are made ethically through these models.

GM: What do you see as FICO's role here?

MP: We're a well-established company. We've been operating since the 1950s having been founded by a mathematician and an engineer who figured out they could use maths and science to predict outcomes. They built a credit score based on this which was pioneered across the US and is ubiquitous now. ▶

> **CSPs have been investing in data lakes and big data infrastructure for several years now but once you have the data, what does it mean?**

We have a heritage in pioneering advanced analytics which underpin our Falcon fraud solutions. Two-third of credit transactions worldwide pass through Falcon. It uses artificial intelligence (AI) and neural networks as well as other technologies to spot anomalous behaviour. We will flag this up to the credit card issuer and they can make a decision on what action to take. Falcon utilizes global consortium data which allows the models to learn patterns of behaviour from all of the Falcon users and makes the overall data pool much broader. This is a huge advantage when trying to find fraud.

GM: Is the real meaning of AI getting diluted by the hype?

MP: There has been a lot of talk in the last two or three years about the adoption of AI and machine learning but these aren't that new and we've been doing both for more than 20 years. AI from some of the newer companies gets badged as AI when it's just data analytics. This makes it difficult to cut through the noise.

The revitalised market for AI and machine learning has spawned hundreds of new venture capital backed start-up companies. But we're one of AI's most innovative players and invented many of the tools and methods that make AI effective.

FICO's core business is in helping businesses make decisions by assessing risk. AI was a natural place for FICO to invest, and has grown into a core competency. The company has a large and growing patent portfolio in AI and machine learning, and a long history of operationalising AI. The technology is taking FICO and its clients beyond its base in risk-focused applications. We're good at this and proud of our capabilities. The combination of AI and machine learning with a decision management suite enables a modular approach that can be deployed across the entire CSP. This means you can operationalise the decisions and outcomes at scale. That could be in the call centre to help customers to get to the answer they're looking for in just a few steps or it could be for credit management, loyalty and retention teams, collections and recovery, network operations and supply chain. The list goes on.

GM: Where does this end up? Can you see data being applied across multi-party business models to enable far more granular, automated decision making even between the different enterprises in a business chain?

MP: There's no doubt that this kind of ecosystem is becoming more and more complex. CSP business models are evolving and opening up of application programme interfaces is happening. Huge amounts of data are being transferred at any one time which makes it difficult from an infrastructure point of view.

The really advanced companies are therefore looking at streaming data in real-time. This takes enormous processing power but, if you're able to look at data as it passes through systems you can do a huge amount with it.

For example, being able to target a customer with the right message, at the right time and in the correct context means you are far more likely to have a successful outcome – whether that's an upsell or an enhanced experience. However, that's only possible if you're able to stream and process large amounts of data and deliver insight back to the customers or service providers in the ecosystem at high speed.

We are working with a major mobile money provider in sub-Saharan Africa to develop credit scores for the unbanked population. This enables huge volumes of GSM data to be analysed, alongside the transactional data that comes through the mobile money service, in order to create predictive models to be able to offer micro loans to customers. Given the huge volume of unbanked people in these countries, this will open up access to credit for people previously excluded from this system.

Another current example is national authorities working with CSPs to analyse location data. This is anonymised and aggregated, but it enables authorities to monitor and track population flows in times of natural disaster, pandemics or other forms of crisis. Having access to multiple CSP data sets, potentially across national borders, has its own challenges in terms of data structure normalisation, access and ability to process in near real-time. However, it can be a very powerful asset to enable governmental decisions and inform strategy.

We also work with a European CSP that provides wireless internet to large rural areas where it is cost-prohibitive to implement cable or fibre. This CSP uses FICO optimisation solvers to route wireless traffic through the best possible pathways so it can meet the bandwidth needs of customers. It is able to engineer the traffic flowing through the network and, taking into account different weather conditions and daily variations in consumer traffic, the CSP can predict and react to demand and redirect bandwidth accordingly. This ensures a smooth user experience and optimises the way the network routes traffic.

Having the ability to connect the different decisions that different parts of the business are making is the key to this improved ability to drive further data-driven decision making across first a single business and later those involved in an ecosystem or business chain. However, there is some distance to go before the concepts involved in this are fully mature.

There is very little understanding right now that if I make a decision based on data within the loyalty and retention department there will be a knock-on effect in other parts of the business. Understanding how decisions impact across the entire business is a vital next step in educating organisations and users.

FICO OPTIMISATION SOLUTION STREAMLINES CUSTOMER ACQUISITION FOR CSPs

A large communications service provider (CSP) that serves more than 50 million individual, business and government subscribers was faced with the challenge of optimising its customer acquisition policies by offering new customers equipment and service packages tailored to each individual's credit risk. This is a critical new battleground for telecoms operators as markets exceed saturation and the fight to attract new customers centres on making attractive, tailored propositions.

The days of build it and they will come are long gone in many industries and telecoms is no exception to this new reality. Providing customers with consistently excellent service in a highly saturated and competitive market requires continual and expensive improvements. Successfully operationalising the process starts with giving business experts the means to quickly develop, test, scale and improve analytically driven automated strategies.

The key driver for business profitability is effective cost management in acquiring and retaining customers. The acquisition cost for customers in the telecoms industry is very high, with customers familiar with and expecting device subsidy accompanied by attractive content deals. However, there is a danger that these become little more than sideshows in a race to the bottom on price. This season's winning offer is next month's table stakes.

Strategies that balance the complexities of this process to ensure customers are attracted to the telecoms provider but in a sustainable way are therefore a significant operator requirement. In addition, it's vital that these processes can adapt as customer needs change over time, enabling the operator to combine a range of factors and capabilities that add up to true competitive advantage.

How the CSP is now able to please customers and maximise profits

Hundreds of thousands of new customer applications are processed by the CSP every week. The credit analytics team is responsible for analysing these applications, determining credit risk and crafting appropriate offers based on the results.

"FICO solutions help us optimise credit policies so we can make the right offer to the right customer every time," explains the credit analytics manager at the North American CSP.

Based on customer credit score and other credit information, scenarios are generated that maximise both profitability and customer satisfaction with the offer made. Included in this list of considerations and decisions are whether a deposit is required and how large it will be, how many subscriber lines they need, how many devices are offered and whether these devices are tablets or handsets.

Prior to partnering with FICO, an optimisation application was used to help set appropriate credit policies across multiple customer acquisition channels — including the internet, retail stores and third-party vendors — but the product imposed too many constraints on reporting and optimisation techniques.

A switch was therefore made to the FICO Xpress Optimization Suite with FICO Optimization Modeler. The Xpress Optimization Suite offers best-in-class tools for solving large, complex optimisation problems, and Optimization Modeler adds the ability to rapidly deploy highly customisable optimisation models as powerful applications without the need for supplementary development efforts. ▶

SPONSORED CASE STUDY

The CSP has certainly benefited from its relationship with FICO, and the Optimization Modeler is performing as expected. The operator now generates multiple customer scenarios very quickly, limiting their exposure to high-credit-risk customers while simultaneously boosting activation rates with low-credit-risk customers. This increases profitability without increasing acquisition expense, which is a big priority for this CSP.

Driving success with a strong relationship

The CSP has been pleased with the capabilities of the FICO software, and has developed a close working relationship with FICO consultants that has helped drive a rapid development cycle and successful implementation.

A collaborative working style and deep understanding of client goals helped to keep the team aligned and on-schedule. Realising the depth of the bench that FICO offers contributed to the speed of the CSP's success.

Bringing greater analytic insight into decisions about customer acquisition helps it gain customers and build profitability over time. With a fast, accurate optimisation solution in place, it is better able to adjust credit policies quickly to respond to changing marketplace dynamics and meet the twin goals of superior customer satisfaction and corporate profitability.

Customers are at the heart of the operator's decision-making, and FICO solutions help the company optimise credit policies so the company can make the right offer to the right customer every time.

Make the right credit decisions every time

- By offering each customer a credit-appropriate package of equipment and services, this industry leader increases profitability without increasing acquisition expense
- The CSP can quickly adjust credit policies to respond to changing market dynamics
- The CSP uses FICO tools to improve customer retention and reduce churn, an essential business requirement

WHICH DATA FOR WHAT DECISIONS?

All businesses are the products of courageous decisions but decision makers at communication service providers (CSPs) are very brave indeed, writes Nick Booth.

CSPs need to analyse hundreds of moving parts and millions of fickle customers in a market where supply and demand offer little room for manoeuvre. Any gains are hard won through fine tuning an impossibly complex automaton that can only survive if granted a powerful intelligence.

So the CSP's choice of cognitive automation or digital decision making system is one they must get right.

These systems are essentially an amalgam of three well established and vital disciplines: business process automation, business rules management and advanced analytics. The data challenges identified by analysts can be described under three headings: customers, compliance and clunky systems.

The chief technical officer who makes the buying decision has to consider what information and where they get it from. The dearth of data available is a legacy of the CSP's history - a telecoms company that kept its records independently in siloes. Extracting, digesting and acting on that information is the second hardest ordeal in the career of the chief technology officer - after the choice of a digital decision system. ▶

The complexity is multiplied by the volume and variety of companies the CSP ingested to feed its growth. All those mobile operators, fixed line providers and content creators need their contents ingested, broken down and distributed across the body of the corporation. If not, the CSP will never energise its metamorphosis into an omnipotent and agile machine that can spot opportunities, use artificial intelligence (AI) to make a decision and employ robotic mobility to service it.

Analysts such as Robin Duke-Woolley, the CEO of Beecham Research, warn that survival is about 'expanding the customer relationship across the product set' and 'improving their experience' as imperatives. In short, the CSP needs to identify the good customers, find something they'll want and sell it to them at the right time. A crude example might be a system that identified the tastes of an options trader in the City of London and sends him a funny clip from The Wolf of Wall Street on his birthday.

CSPs in Europe address a market that is never going to get any bigger, so they need to service it better. That means making efficiencies in running costs and in the way they deliver the right content to the right handsets at the right time.

Once the diaspora of data sources is harvested and marshalled into some cohesive shape, the CSP has a variety of ambitions for what to do with the information. Unless these plans are all dovetailed and harmonised, the developers will pull the organisation in different directions. It's great knowing who the customers are, how many calls and texts they make, what content they watch and what devices they need for all this consumption. But there are so many different areas that need to be attacked. The right digital decision system will offer so many options and the users must learn to prioritise. Do they concentrate on keeping the valuable customers happy or keeping pace with government regulations? Should they match their service to all the devices being used or do they take a punt on being first in emerging markets such as mobile money? These and more are all options created by the digital decision making systems.

In its New Wave digital decision platform report, Forrester identifies the vendors who can address each of these needs. However, it says only two companies can address them all and FICO is the market leader.

Once you have the system it becomes a question of which data you need. Your supplier should be able to exemplify how it's helped other companies like yours.

This is vital because an avalanche of data cascades from your applications and infrastructure. A typical CSP wants to use the cloud to deliver services to customers in future, which means they have even more data available as a by-product of running the service.

At scale, this data can provide more insight into the impact that decisions make, but the applications and data themselves can run in silos. This leads to information gaps that stifle invention and demotivate decision makers, who live and die on continuous intelligence.

Closing those intelligence gaps is essential if you want to compete in the new world of digital business. This means changing the design of an app that customers use to access a service - developers need instant feedback on how well that change is meeting their objectives. If they want to make it easier for people to use a service, or to make the check-out process easier, they can see whether their changes made a difference.

There are three main groups of decision makers that need the power of a digital decision system: security, developers and operations. Security teams deal with entire networks, so insight into real threats is essential. All security teams risk suffocation from false positives but a digital decision with decision support can protect them.

Developers want instant insight into how customers choose which of their services they use. This improves app design and identifies potential problems in performance before they affect the customers.

Operations teams want to improve profitability and retain customers. They will want to scrutinise data from apps, operations and customer support at the same time, because it allows them to spot trends in how their services are being used. This uncovers both potential new service opportunities and possible customer losses.

Most CSPs are over the days of 'build it and they will come' but they haven't quite scaled the heights of digital decision making platforms. When they do, they will fly.

"Once you have the system it becomes a question of which data you need. Your supplier should be able to exemplify how it's helped other companies like yours."

ARE YOU READY TO JOIN THE DANCE WITH AI?

WE ARE.

Throughout history, businesses have been dancing with technology, creating never before imagined opportunities. Now, with big data, advanced analytics, artificial intelligence, and machine learning, this dance is more complex than ever, and businesses need an expert hand to guide them through these new advances. FICO has been taking the lead in the world of AI for decades.

So when you're ready for your business to take the next step—let's dance!

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