

Accenture Technology Vision 2021

The Analytics Angle with SAS

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Advantage: You

What is SAS?

SAS is the world leader in analytics. We turn huge amounts of complex data into knowledge you can use. And for more than four decades, we've been doing it better than anyone. Analysts routinely rank SAS as a leader in everything from analytics and big data to machine learning, data science platforms and more. With SAS, you can apply the most advanced analytics, business intelligence, data management and AI solutions to your toughest business problems in nearly every industry. For more information, visit www.sas.com

Introduction

A Moment Full of Potential and Promise, Enabled by Analytics

The disruption of 2020 fueled an eye-opening acceleration of analytics advances and adoption, with many observers suggesting that the worlds of IT and business alike packed years' worth of planned strategies into a matter of months. While it will take time to understand the full impact of this accelerated evolution, it is almost certain to speed the progress of trends that are just now emerging.

For all these reasons, this year's edition of Accenture's annual Technology Vision report is particularly exciting. Together, these trends are poised to take hold quickly, leaving real digital transformation in their wake. Data—lots of it—plays

a huge role in each one. Advanced analytics and AI tools are among the most important assets an organization can have in place to understand the scale of all this data and put it to work in ways that create real, measurable value. Imagine any or all of the four trends below at work, at scale, in your organization, and their cumulative impact comes into focus.

Stack Strategically: Becoming a master of change begins with recognizing that business and technology strategies are increasingly indistinguishable. Architecture has never mattered more, as the technology choices businesses make



today will determine what they can or cannot do long into the future. Competition is becoming a battle of technology stacks—and one size fits none.

Mirrored World: As leaders thread technology through all aspects of the business, the valuable troves of generated data are being used to build massive networks of intelligent digital twins. The mirrored world created by these next-generation twins is fueling change by unlocking the currently trapped value of data and allowing enterprises to simulate, predict, and automate by seamlessly bridging the divide between digital and physical.

I, Technologist: Enterprises must also ensure their people are empowered to become drivers of change. This outcome is achievable through technology democratization, which is making powerful technology capabilities accessible without the need for specialized skills. Enterprises can ignite grassroots

innovation by equipping every employee with the tools and skills to build technology solutions at the point of need.

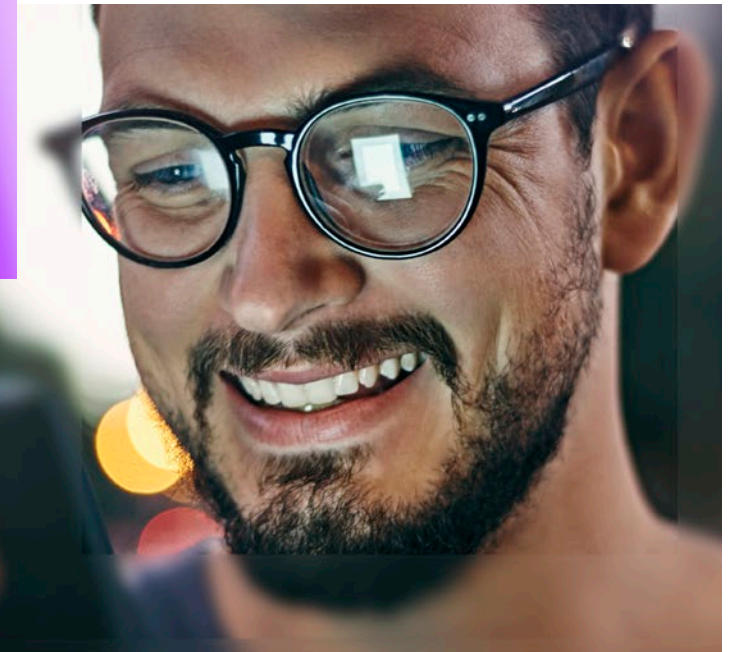
From Me to We: Finally, the challenges and opportunities ahead are vast, and businesses will not be able to tackle them alone. Multiparty systems will help businesses lead by changing the way they partner. From supply chains to digital ecosystems, the pandemic showed just how brittle globe-spanning relationships can be. By rebuilding these partnerships with technology at the center, enterprises are finding ways to adapt together.

Given how quickly these trends can gain traction, plus the speed with which they will begin generating data at massive scale, now is the time to begin considering the analytics infrastructures that should be in place to derive value from them—right from the first moment of impact.

Whether these trends are within reach for your organization today or are still several years out, analytics-focused strategy, planning and implementation should be underway today. This is an exciting moment full of potential and promise. Let's use analytics to make the most of this opportunity.

Shane Groeger

Global Managing Director and Sponsor for SAS and European Applied Intelligence Lead, Azure Data & AI Accenture



A man in a teal shirt is looking at a tablet. The background is dark with blurred city lights. The text 'Stack Strategically:' is in large purple font, and 'Architecting a Better Future' is in smaller white font below it.

Stack Strategically:

Architecting a Better Future

Enterprise architects tend to maintain a **defensive posture** out of sheer necessity.

Many view themselves as defenders of their organization's IT vision, which can be at risk due to opportunistic, short-sighted technology adoptions, "rogue" business units that implement their own solutions, and leadership changes that threaten to disrupt carefully conceived IT strategies.

But when real disruption rattles the foundation of the organization, its industry or the market context in which it operates, architects are uniquely positioned to direct the changes that the moment demands—and set the stage for future success. That is one of the most significant implications underlying Accenture's insights on the renewed importance of IT architecture in the Technology Vision 2021 report. In the report, Accenture details how a host of new technologies and major advances in existing technologies have expanded possibilities and made architecture more important than ever

as a core aspect of business strategy. Business strategy and technology strategy are increasingly indistinguishable.

In this context, businesses cannot afford for their enterprise architects to merely be the gatekeepers of IT strategy. This is their opportunity to serve as proactive partners to the business, working to understand shifting business strategies and finding new ways to enable that strategy through the IT architecture and the data it generates. How can they make this shift? At a very high level, it means setting guardrails for the organization, allowing innovation and freedom of movement within their boundaries, and somewhat loosening the requirement for enterprise architects to be involved in every decision. By extension, this requires greater flexibility and modularity from the tools and solutions in place as part of the architecture, combined with greater rigor

and discipline in managing and analyzing the data generated by all these component pieces.

For example, cloud capabilities and artificial intelligence (AI) are both widely acknowledged to be critical enablers of analytics strategy in the face of the massive volumes of data that systems are churning out today. Without the support of an architecture-level strategy, this data rapidly becomes a burden rather than a competitive asset. Architects need to respond to constant, fast-moving changes in technologies like these in order to meet organizational needs that are morphing just as quickly—all while preserving a steady foundation of data to deliver uninterrupted insights to the business without disruption.

Business and technology leaders alike share a belief that data and analytics will play an essential role in

enabling future architectures. But what does that role look like in practice? What are the implications for other critical aspects of these architectures? And perhaps most important: How can enterprise architects get from here to there in the most effective and efficient manner? That's where things get interesting.

Don't repeat—rethink.

The ongoing movement of analytics capabilities to the cloud, along with large volumes of accompanying data, presents one of the clearest and most pressing cases for active engagement—and change—on the part of enterprise architects. In many organizations, the default approach to this movement is “lift and shift”—taking existing data, tools, processes and capabilities that reside on premise and selectively moving them to a cloud environment. This can lead to a number of problems and shortcomings, the full range of which are outside the scope of this report. For enterprise architects, one of the most alarming results of this approach is the emergence of massive, unwieldy silos of datasets cobbled

together to expediate the shift to the cloud. This is not so surprising when you consider that many of the IT leaders involved in this shift have deep expertise in creating data warehouses but have far less experience building the data storage mechanisms required to enable analytics communities. This exacerbates problems that were already present in a traditional on-premise environment. “Moving to the cloud is a time for systems architects to refactor how things are done,” says Adrian Jones, Director of SAS Global Technology Practice. “The world we're operating in now is quite different from the one we faced when these processes were originally established, so this is an important opportunity that systems architects can't afford to overlook.”

A lift-and-shift approach worked well enough when there were fewer unknowns regarding the overall IT infrastructure and the business context in which it was expected to operate, according to Shiva Kommareddi, CEO of Core Compete, a cloud analytics service provider that is part of Accenture Applied Intelligence. “When workloads were known and predictable and the tech stack was relatively

“Moving to the cloud is a time for systems architects to refactor how things are done.”

Adrian Jones, Director of SAS Global Technology Practice

stable, that's when it was less risky to essentially replicate workloads in the cloud," says Kommareddi. "But today, many organizations are working with a tech stack that was assembled for an on-premises world, using conservative predictions for the growth of data volumes year over year. We don't live in that world anymore, so a lift-and-shift strategy is less viable with each passing day."

Enforce and engage.

For enterprise architects, this approach is clearly out of governance. Their first instinct is likely to enforce compliance after the fact. But it also presents a powerful opportunity for constructive engagement. Rather than merely requiring IT and business leaders to fix these data problems on their own, enterprise architects, in consultation with these leaders, are uniquely positioned to modify the underlying processes, storage tools and delivery mechanisms driving a cloud-based data strategy. This is a critical

moment for rearchitecting IT infrastructure to better serve the business, cultivating new levels of efficiency and performance as part of a larger shift (to the cloud) that most would consider inevitable. It's not whether organizations make the move, it's how they do it that makes all the difference. And that is a direct reflection of the enterprise architect's involvement.

Visibility: From behind the scenes to out front.

This is an equally important moment for enterprise architects to perform another critical leadership role: communicating and explaining. Analytics remains a "black box" in many organizations, even in those that have widely implemented analytics capabilities. The people who operate and use these systems are often unaware of key details about how they work best, and which underlying processes and data strategies can be used to drive more value from these investments. Similarly, more expert users of analytics

in the organization may not be aware of cloud-related improvements in data management that have been ushered in by enterprise architects. This requires enterprise architects to take a more visible, "out front" position in the organization than they might normally adopt, proactively communicating with key constituencies to keep them abreast of changes as they are being implemented: *Here are the components of our analytics infrastructure that we've moved to the cloud, here's why we did it, and this is what it means to you today.* Greater visibility is required of enterprise architects in the face of today's massive change in analytics, as well as the significant shifts throughout IT and the business.

This requires enterprise architects who are "bilingual," able to speak the language of both business and IT. The need to retire elements of the IT infrastructure as part of a larger system architecture strategy to support business goals offers a useful example of the importance of this capability. As new architectural elements are added, it becomes more important to retire some outdated technologies. In the past,

the decision to retire individual technologies often resided solely with IT leadership. That is still the case with many aspects of system architecture, where business leaders have little need or desire to weigh in on plumbing-level decisions. But analytics infrastructure is different. Changes in this area often directly affect business processes, in everything from data collection and analysis to cross-enterprise data sharing, regulatory compliance reporting and more. When making architecture-level changes to analytics infrastructure, systems architects need to consult directly and frequently with their peers in the business.

Systems architects: Uniquely suited to this moment.

Given the need to transcend the lift-and-shift approach in order to modernize systems architecture, it can be tempting to simply populate a new

architecture with entirely new analytics tools. Open-source tools, newer commercial analytics solutions and other similar capabilities certainly have their place in a modernized system architecture. But existing investments in analytics platforms and more sophisticated analytics solutions tend to be brimming with years' worth of institutional knowledge— incredibly valuable processes, insights and practical assumptions that can gain new power in future architectures.

It's not just about the technology. It's about technology in the full context of business needs and strategies. Few are better positioned to generate more value for their organizations, using big-picture business insights and practical technology strategy, than systems architects.



Mirrored World:

The Power of Massive,
Intelligent Digital Twins



How do you **enable automation successfully** in a digital twins strategy?

That question lurks just under the surface of the Accenture Technology Vision 2021 report on digital twins. And the answer holds huge implications for any company's ability to maximize the reach and impact of these digital re-creations of real-world objects, machines and processes.

This is not a philosophical question about some far-off future. For the manufacturing industry in particular, a few early adopters have begun activating digital twin strategies, and soon they will be looking to build on early successes by scaling these strategies across factories all over the world. In fact, according to Accenture research, 56% of those surveyed report “moderate” use of digital twins for lower-level tasks such as simulation and testing. The elements they need are all within reach. They have the data they need to drive digital twin models, and, with cloud capabilities, they can

worry less about where and how to store all that data. Analytics capabilities can help them make sense of it all.

Among the many potential benefits of these networks of analytics-enabled, intelligent digital twins—the “mirrored world”—the ability to dynamically adjust designs and models “in flight” is perhaps the most compelling. It's one thing to stand up a digital twin model to better understand the potential and pitfalls of a strategy before putting it in motion, whether to improve product quality, create a safer work environment or drive greater efficiency on the production line. This type of initiative can take weeks or even months. But when these models are driven by automation in tandem with analytics, it's possible to adjust, update and tweak digital twins in real time, immediately observing the impact of these changing inputs and using the results just as

quickly to guide operational decision making. This can change business outcomes—not in weeks, but in days or hours.

Yes, this requires massive computing power and data storage capabilities. But drawing from advances in the cloud, analytics and data management, digital twins are now within reach, along with the requisite computing power and storage. Here are some of the key underpinnings of a successful automation strategy to support more dynamic, outcome-oriented, scalable digital twins.

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of those surveyed report **“moderate” use of digital twins for lower-level tasks such as simulation and testing.**

Data—lots of it—is the linchpin.

Data is an obvious place to start, as with any AI or analytics strategy. Digital twins raise the bar for data generation and management because their existence hinges on the ability to create a fully outfitted digital clone of existing processes. They are transcriptions of the physical universe. Everything that reasonably can be measured should be fed into the twin model, including environmental factors, the condition and performance of physical assets, machines used in those processes, and the product itself.

It's difficult to overstate the potential of this opportunity. Individual assets—not just physical items such as products and equipment, but even digital entities—can be tracked from “cradle to grave,” imbued with their own metadata. As a result, we can attach meaning to them. And in a digital twins context, we can manipulate them in ways that allow

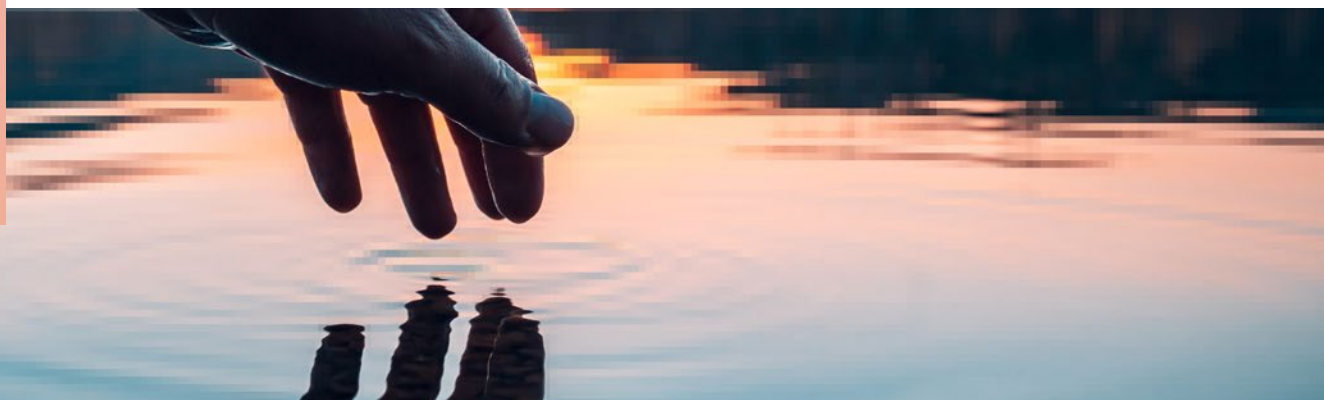
us to not only guard against unwanted outcomes (such as product failures), but also to identify new possibilities (ways to improve products and processes, entirely new applications for them and more), all at the level of the individual asset.

Recent advances enable twin-ready data.

New ways of approaching data monitoring, storage and usage are required, given the amount of data being generated and tracked by digital twins.

This is not a reason for inaction. IoT-enabled sensors and other simple, effective monitoring devices are relatively easy to implement and operate, providing a constant stream of data to build digital twins. Plus, many machines, devices and even individual parts now come embedded with digital reporting capabilities. When activated alongside sensor data and existing data streams, as well as the strength of 5G networks, these capabilities can create a vivid, accurate reflection of real-time processes as they occur.

And, with advanced analytics capabilities in place, the signal-to-noise ratio of these vast data sets is increased.



“It’s now possible to gather and track enough data to determine the history of an object and what it’s meant for,” says Edwin Van der Ouderaa, Senior Managing Director of Customer, Sales and Service and Digital and Analytics at Accenture. “Combine that with information on all its properties—its shape, chemical composition, you name it—and it really opens the door to augmented reality. That’s where digital twin applications are heading. And when you consider pairing that type of detailed twin with automation capabilities—bots that are programmed to know exactly what to do with these assets, using machine learning to adjust as they go—you start to get a sense of the real potential of this development.”

Mirror, model and manipulate.

Once all the data pieces are in place, it’s time to “stand up” the twin and examine its viability. Does it match the reality of real-life processes underway today? What’s missing? Does it operate in real time, or is there a lag? Once you’ve answered questions

like these and adjusted the model to make go-live improvements, there are two primary paths to realizing business-changing value from the models: (1) identifying new ways to optimize processes and (2) “in-line” monitoring of existing processes to identify flaws, performance problems and other shortcomings as they occur. Both rely on the layer of AI, automation and analytics surrounding the data that populates these models.

Analytics and AI can be used to manipulate variables in the virtual model and determine how changes in the real-world operating model might lead to stronger outcomes. But given the wide range of variables that could be manipulated, it is critical to start with a clear, shared understanding of the most important targets for improvement.

For example, a large Asian high-tech manufacturer is known within the industry for its near-obsessive focus on quality and waste reduction. As a pioneer in digital twin strategies, this company has mastered the process of using offline analysis to make constant adjustments to the manufacturing process. The result is industry-leading manufacturing efficiency and quality in line with its organizational goals. Of course, quality and waste reduction are goals shared across high-tech manufacturing, so the same digital twin strategies this manufacturer is using should be replicated across the industry. “In manufacturing, analysis is quickly moving from being an offline activity, where all of the relevant analysis happened after the product was made, to an inline activity, where you can conduct all that analysis as the product is manufactured,” says Deepak Ramanathan,

“And when you consider pairing that type of detailed twin with automation capabilities...you start to get a sense of the real potential of this development.”

Edwin Van der Ouderaa, Senior Managing Director of Customer, Sales and Service and Digital and Analytics at Accenture

Vice President, Global Technology Practice at SAS. “They’re using digital twins to conduct all this analysis in parallel, improving outcomes in important, incremental ways as they go.”

Meanwhile, the digital twin can also be used to make scores of automatic ongoing adjustments to the processes it mirrors, a process made possible by automation-enabled decisioning set in motion by human insight and guidance. The benefits of these capabilities are particularly evident in a “lights off” manufacturing environment, in which factories operate with a bare minimum of human intervention. Imagine a scenario in which a one-degree shift in temperature has an unexpected adverse effect on product quality. In a traditional lights-off environment, poor product quality may be detected hours or even days after the factory has been churning them out. But with a digital twin powered with automated decisioning, prepared to make thousands of decisions a second, an adjustment to the temperature can be made in real time with zero or minimal human intervention, avoiding the losses associated with hundreds or thousands of flawed products.

These are the types of everyday in-line performance and quality-focused adjustments that are enabled by automated decisioning in a digital twins environment. The scope and speed of these types of improvements cannot be matched by human decision making. There aren’t enough people, nor is there enough time in the day, for humans to make ongoing process improvements at this level. Digital twins fundamentally change this equation.

Imagine the possibilities.

Perhaps the greatest challenge presented by digital twins is the challenge of imagination. It may be easy enough to consider how digital twins could help improve existing strategies, processes and products, but it’s the unexpected, unanticipated benefits ushered in by such an entirely new capability that may be more valuable in the end. A useful parallel may be something that feels foundational (and even boring) today, hardly bold and innovative: ERP systems. Right now, the idea of having a single system through which so much of an organization’s

data flows is not controversial—it’s necessary and expected. But pre-ERP, it was difficult to imagine making it happen in light of technological constraints, and perhaps even more difficult to envision what the organization would be able to do once such capabilities were in place. Ultimately, the large-scale rollout of ERP capabilities proved to be revolutionary in the business world.

Similarly, at some point in the future, leaders across organizations will wonder out loud, “How did we even do this type of thing before digital twins?” To get there, leaders will recognize that the technical capabilities behind a successful digital twins strategy are available today. There are ample tools for reporting data on virtually anything. Moreover, data management and processing capabilities can handle the immense amounts of data required to create the digital twin of virtually any process and all its component parts. Finally, advanced analytics tools can help make sense of all that data. The next step is now to align these powerful capabilities behind a vision for what’s next—and put them to work.

I, Technologist:

The Democratization of Technology

This year's Accenture Technology Vision 2021 report spotlights the trend of democratizing technology and includes a number of compelling examples of companies finding innovative, intuitive ways to put technology in the hands of everyday users.

These aren't software developers. They're salespeople, customer service leaders, supply chain managers...the types of employees who, until recently, would have passed along their ideas to IT leaders in the hopes that they could bring them to life in code. As powerful technology capabilities become easier to use by those without highly specialized skills, their promise and potential are becoming more apparent too.

For many IT and business leaders who have been hungry for opportunities to deliver analytics insights throughout the business, this feels like a momentous opening. When users can draw from enterprise data to shape custom analytics capabilities, it opens the door to insight and innovation at scale, not to mention reducing

the burden on data scientists and developers, allowing them to focus on bigger-picture issues. That's why many of these leaders are planning new ways to push more flexible, modular analytics capabilities out to business users.

A conversation, not a speech.

While the instinct to push analytics tools into the hands of everyday users is admirable, IT leaders should approach this opportunity from a different perspective. This isn't about pushing analytics tools to users. It's about first understanding what they need, identifying which tools they already prefer to use, then presenting them with options for analytical tools that dovetail with their needs,

skills and existing tools, so that they can do their jobs even better. After all, democracy is an ongoing back-and-forth—a conversation—between citizens and government officials, in which citizens have multiple avenues for registering their needs and preferences with those who serve them. IT works best when it's not run as a dictatorship, especially in today's environment where a wide variety of users with varying ranges of expertise are empowered to make their own technology decisions. Behind the scenes, IT leaders will also need to organize IT architectures that can enable the various tools and capabilities needed to serve all these "citizen users" of analytics—and expand them as the needs grow.

Analytics tools should meet users where they are.

There is a simple test for determining how successfully analytics technology has been deployed to business users: Do users have to go to the analytics technology to use it, or do the insights and technologies come to them? When the tools are fully integrated and readily available at every turn of the business user's experience, they are more likely to be adopted and used.

The evolution of QR codes in consumer applications offers a practical comparison. With earlier smartphones, users could download free, dedicated apps for scanning and reading QR codes. This was a simple enough approach, but one that required the consumer to proactively take several steps. As a result, adoption was limited. But as smartphone technologies advanced and developers better understood consumer needs, QR scanning capabilities were simply built into smartphone camera technologies. Just point your smartphone's

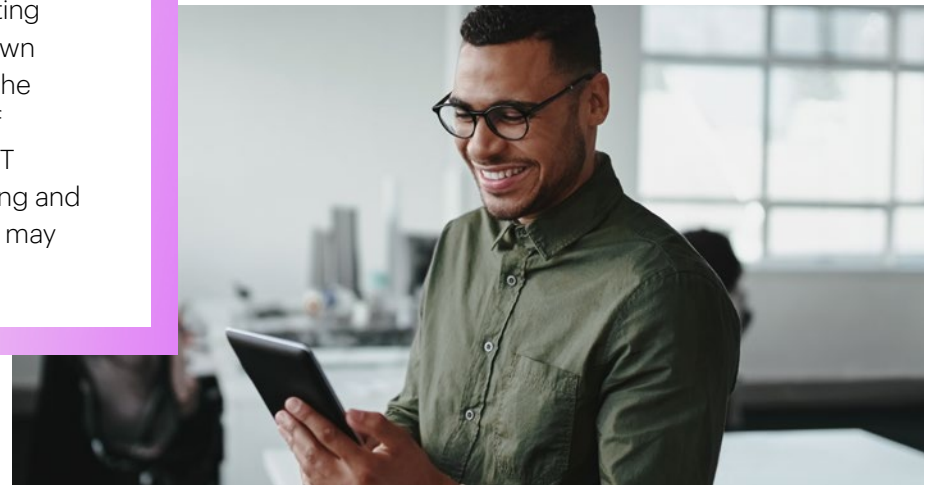
camera at a QR code today, and it produces a link associated with the code. No special, dedicated app is needed. Nor is any special training or education required. Many users simply stumble into the capability without even seeking it.

Ambient and atomized.

Can analytics capabilities reach a similar level of ambient, intuitive availability? In a growing number of organizations, they already are, although this level of accessibility takes a slightly different form in a business software environment. For example, in some organizations today, everyday users of common spreadsheet or word processing applications are benefiting from new analytics options in their drop-down menus. These extensions are not native to the software. They've been added as a result of behind-the-scenes collaboration between IT leaders and software providers. While training and education regarding these new capabilities may

be preferable, they are also not required. Most users encounter the capabilities in the course of their regular usage of the software, reflecting a clear understanding of usage habits on the part of a forward-thinking, user-centric IT team.

In practice, this approach often works best as atomized analytics: bite-sized insights and tools delivered to users in their natural working environment when and where they want them. This is not a dashboard that lives in an analytics solution, for instance, but a single useful metric or alert that shows up in another standard, everyday work tool.



Insights—not tools—are the goal.

What is the most direct path for getting insights to business users? When analytics tools first became more intuitive and user-friendly—more suitable for everyday users rather than solely data scientists—IT leaders looked for ways to put these tools into more hands across the organization. This often meant adding another solution to the user’s mobile or desktop environment, training them on how to use it, and hoping they would adopt it: *We built this new dashboard for you. Here’s how it works, here’s where you find it, and here’s how you log in.* In some cases, it even meant giving users access to data warehouses and even to sophisticated modeling tools that allow users to apply advanced algorithms through simple point-and-click, no-code programming.

This was a well-intentioned first step but one that reflects an incomplete vision today. In that approach, the goal is making sure a wider range

of users have access to more analytics tools and solutions. Instead, the priority should be to find ways to get insights to users. Analytics democratization acknowledges that there are many paths to reaching an insight, rather than a one-size-fits-all approach. Sometimes that will require putting new tools in their hands, such as low- or no-code applications. But in many cases, users do not need to learn to use a new analytics tool. IT leaders can bypass that step in favor of simply delivering insights to their work environment based on what they’ve learned about users’ practical business needs.

“In an analytics context, ‘self-service’ can’t be a one-size-fits-all endeavor,” says Kimberly Nevala, AI Strategic Advisor at SAS. “You can’t expect people to serve themselves. Instead, you have to find ways to deliver the insights they need as individuals in the context of their day-to-day working environments.” After all, analytics is not part of most business users’ day jobs—and maybe it shouldn’t be.

A subscription model could allow a wide range of users to select the data or insights they need to make more informed decisions, all drawing from the same source in different ways. A data scientist may subscribe to complex data flows that she can combine on her own to generate insights separately. Meanwhile, a manager on the factory floor may need a handful of insights each day on machine performance, delivered as part of his regular workflow. Both types of insights, used for different purposes by people with vastly different skills, are the result of democratized analytics.

Democratized analytics, enabled by analytics.

In their efforts to democratize analytics insights, many leaders are turning to analytics and AI capabilities. Today, users can engage with analytics systems in intuitive, distinctly

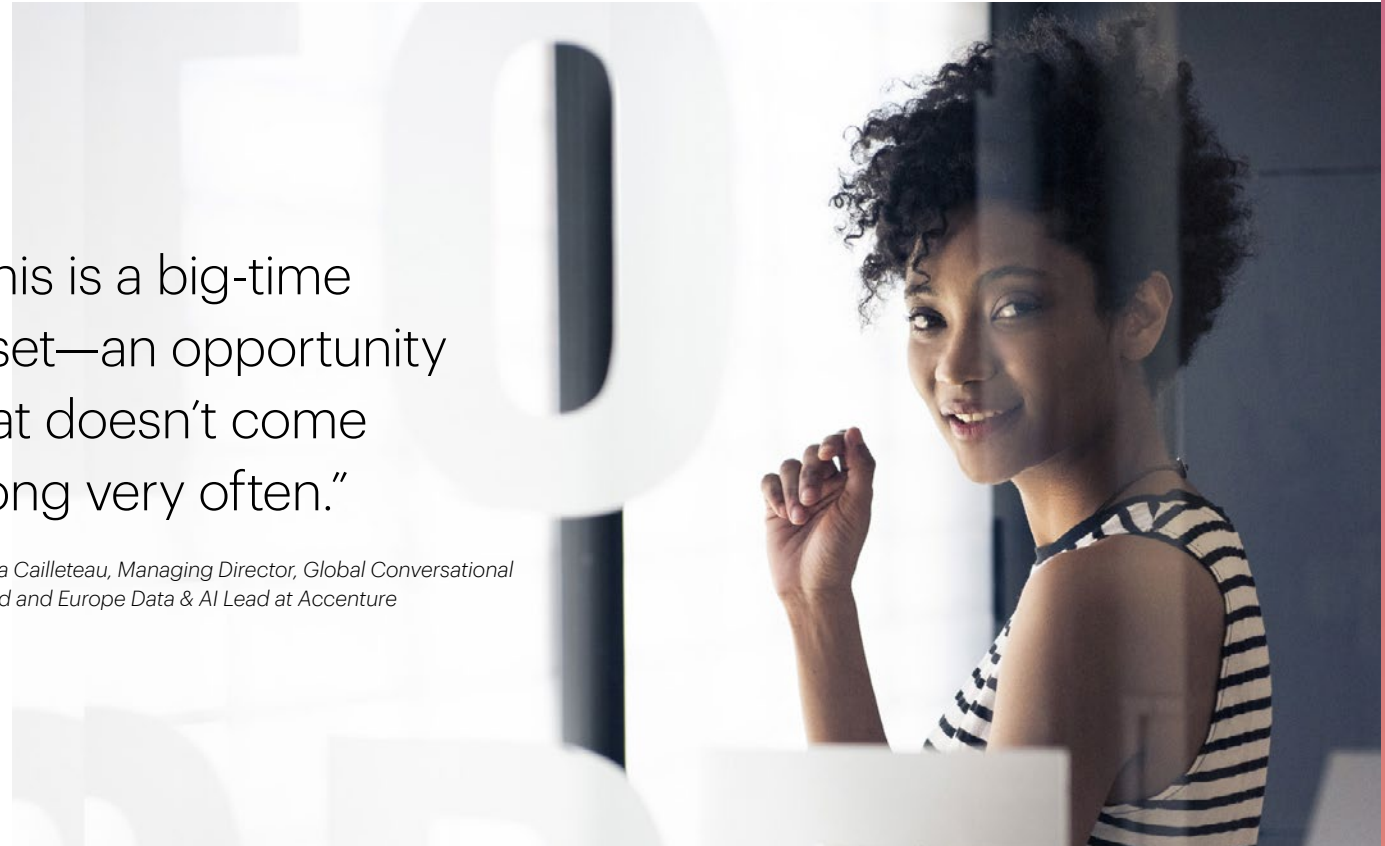
non-technical ways, benefiting from capabilities such as natural language processing and generation support voice-based querying.

“Given the advancement of cloud capabilities and a host of technologies in areas ranging from data to AI and analytics, all in a relatively short period of time, we’re able to do things that simply weren’t possible before,” says Laetitia Cailleteau, Managing Director, Global Conversational AI Lead and Europe Data & AI Lead at Accenture. “This is a big-time reset—an opportunity that doesn’t come along very often.”

Want to know today’s sales data? Just ask. Interested in emerging consumption trends or other business patterns? The system will tell you. These capabilities become even more powerful when coupled with advances in areas such as augmented or virtual reality. Ultimately, these capabilities make it easier for users to engage with analytics insights as a natural extension of their working environments.

“This is a big-time reset—an opportunity that doesn’t come along very often.”

Laetitia Cailleteau, Managing Director, Global Conversational AI Lead and Europe Data & AI Lead at Accenture





From Me to We:

A Multiparty System's Path
Through Chaos

This year's Accenture Technology Vision report includes important new insights on multiparty systems, in which organizations **engage with one another through shared data infrastructures.**

Effective tools being used include highly collaborative technologies such as blockchain, distributed ledger, distributed database and tokenization. The events of 2020 highlighted the importance of these types of systems, as organizations sought new ways to collaborate and innovate to respond to acute, largely unforeseen disruptions. As noted in the 2021 report, for example, Singapore's "Digital Health Passport," which enables citizens to store medical documents in a secure digital wallet, was an essential feature of the government's effort to track COVID-19 infections while maintaining individual privacy. And it relied heavily on multiparty systems—especially blockchain—to deliver both innovation and security.

The data sharing dilemma: mounting implications from a familiar challenge.

While multiparty systems are not entirely new, a number of familiar practical hurdles have stood in the way of their widespread adoption, starting with one that is primarily psychological. After years of guarding their data as the precious, valuable resource it is, business and IT leaders have been understandably reluctant to simply switch gears in favor of sharing that data (any of it) through multiparty systems. After all, the competitive advantage inherent in proprietary data would appear to be diluted the moment it is shared with others.

However, organizations with a strong analytics culture already recognize the additive—rather than reductive—value of this type of data collaboration. Analytics leaders know that on its own, data can have significant value, but when combined with other data this value can grow exponentially—if you know what to do with it. Ongoing advances in multiparty systems and the technologies that enable them are making it easier for organizations to seize this value, using advanced analytics tools to wring new insight out of a richer foundation of data. Things get even more interesting when these organizations introduce third-party data to this potent mix, generating entirely new layers of insight.

Innovation target: multiparty model exchanges and collaboration.

When it comes to fulfilling the true promise of multiparty systems, data is only the start. Analytics models can amplify the potential of these systems—not just the “out of the box” models that are included in advanced commercial analytics packages, but models that are designed specifically for ongoing collaboration between different parties in multiparty systems. Imagine one organization developing a model that can process and use its own data, while at the same time another organization in the multiparty system uses the same model for its own purposes. When the two organizations collaborate to improve the model, or share the resulting insights, they both benefit. When several of these models are injected into the multiparty system, the value of data coursing through the system increases exponentially.

These types of models also provide a high level of flexibility for security purposes. When an organization shares a model, they don’t have to share code-level details of the model, which can remain proprietary, encrypted and protected. Instead, those outside the organization can benefit from the models and contribute to the collective value of the overall system without having access to the underlying intellectual property (IP) that guides the models.

Inter-system model collaboration can also be instrumental in handling the considerable volume of data generated by, and contained in, multiparty systems. Without a cohesive, clearly communicated strategy for managing and analyzing data, the movement of data through the system tends to be redundant and slow. Different organizations may be wrestling with the same issues in isolation, using similar models to generate similar insights and potentially



squandering some of the core benefits of collaboration. “You want to make sure you’re not churning through all available data to achieve an outcome,” says Matthew Arellano, Managing Director, Global Data & AI Ecosystems Lead at Accenture. “And if everyone engaged in a multiparty system is processing all that data, all the time, it adds up to a massive use of computing power.”

When participants in the system collaborate on the data-model level, they require less time to determine how best to use the data (through model design and execution) and more time putting the resulting insights to work. Just as important in this more deeply collaborative approach, organizations can evolve their models more quickly based on the input and insights of a range of peers who bring different needs and levels of experience to the table. Smarter, more focused models that are less data hungry become even more important as data volumes increase. They are also more responsible. The

more efficiently data is stored and the less computing power is required to analyze it, the better the results for the environment.

Develop a collaboration culture.

Moving to a more collaborative model in a multiparty systems environment requires taking some steps that will be familiar to anyone who has been involved in launching a new business and IT strategy. Start with the business need. Understand the data that is available and what data your organization will need. Identify the models that will be required for analysis. Evaluate analytics tools and their fit with the business, as well as with its legal and regulatory environment. Pilot. Adjust. Operationalize and expand.

There is an additional step, however, that is not always required by similar IT strategies. Multiparty systems require a level of cooperation that is

unfamiliar to many. While data and analytics leaders who have experience with the benefits of collaboration may be comfortable with the requirements of multiparty systems, many others in the organization are accustomed to intently guarding their data.

If this level of coordination seems out of reach, consider the deep collaboration, enabled by multiparty systems, exhibited by pharmaceutical firms racing to develop, manufacture and distribute COVID-19 vaccines. In an industry famous for defending innovations and trade secrets, a disruptive event led these companies to find new ways to share data and models, with unprecedented results.

The success of this type of strategy relies on a wide range of organizational leaders willing to share their data, which requires education and cultural change efforts specifically designed to help these leaders understand and support the strategy. “There is a fascinating psychological

aspect to this,” says Patrick Dittli, Global Director, Business Development and Partner Enablement for Retail & Consumer Goods at SAS. “Over the years, with good reason, organizations have cultivated a strong sense of the importance of protecting data—it’s become part of the psychology of management. Now that we’re finding secure ways to share data in smart ways, we need to shift those behaviors to align with this new environment and the new opportunities it introduces.” These audiences need to see the tangible benefits to their business units, and even to their day-to-day activities, in order to get on board. Any good strategy rooted in business needs should include ample use cases.

Changing business cases, changing technology enablers.

If multiparty systems seem well out of reach for the moment in your organization or industry,

you are in good company. With a handful of exceptions, multiparty systems have not even reached the pilot phase in most industries. Meanwhile, however, the security protocols and technologies required to make multiparty systems work are tested, ready and making big advances every day. Just as quickly as today’s business environment is shifting, the business case for multiparty systems is also changing.

Companies that may have never considered collaborating with their peers and competitors may need to reconsider their stance in light of these changes. Maybe companies haven’t collaborated more up to this point simply because there was no suitable infrastructure or model for doing so. As that changes, expect more companies to seek early-move advantage from deeper, more substantive, data-intensive collaboration in ways that may have been unthinkable before.

“Now that we’re finding secure ways to share data in smart ways, we need to shift those behaviors to align with this new environment and the new opportunities it introduces.”

Patrick Dittli, Global Director, Business Development and Partner Enablement for Retail & Consumer Goods at SAS

A close-up, low-angle shot of a person's face and hands. The person is wearing glasses and looking down at a laptop screen. Their right hand is resting on the keyboard. The lighting is dim, with a warm, reddish-pink glow emanating from the screen, creating a focused and intense atmosphere.

Advantage: You

If you're like many other leaders in IT and business, you will probably first approach these trends with a “pilot-first” mentality.

You'll look for smart ways to first test their viability through low-risk experiments before unrolling them throughout the organization at some point in the future. That's a good place to start, as long as your organization is truly poised to implement these innovations at scale the moment their broader relevance is established. Typically, however, the gap in time is too long between the moment a new advance in technology proves its relevance to the organization and the point it's implemented and activated at scale. As a result, business IT and business leaders are left wondering what advantages they could have realized in that time with more preparation.

In practical terms, this means everything from open-source capabilities to lightweight commercial offerings—the tools organizations are most likely to first rely on to enable innovative

proofs of concept—should be implemented from the very beginning with a clear plan for safe and secure extension throughout the organization in a platform context, in the cloud. Today, that's how smart experiments turn into scalable solutions that churn out real business value fast. It's also how they do so in ways that are, from the start, compliant with a web of global regulations. It takes rethinking the possibilities that are made available in a cloud-based environment, rather than simply replicating existing approaches and strategies.

Just as we have done for years, Accenture and SAS are working together closely to make sure our clients are prepared to turn these trends to their advantage. From the collaboration with Accenture to build a dedicated SAS cloud analytics capability using cloud-native SAS Viya,

to our shared innovation on AI throughout the analytics value chain, we are leading the way to operationalizing analytics at scale. And we're using powerful developments like those outlined in the Technology Vision 2021 report to inform our path, helping clients stay a step ahead of whatever's next. If you'd like to discuss how any of the trends identified in this report could be put to work by your organization, let's talk.



Points of Convergence

Accenture and SAS are actively collaborating in areas that are most important to clients, where the trends identified in the Technology Vision report are most likely to take root today and bear fruit in the not-so-distant future. Some of these points of convergence include:

Cloud

Accenture's SAS-focused cloud analytics team applies highly specialized automation tools, agile infrastructure, security capabilities and other solutions to accelerate SAS cloud migration. The result? Clients can put advanced SAS analytics capabilities to work in innovative ways even faster and are better prepared to deliver analytics insights at scale in a way that paves the way for future growth.

Customer experience

Following the dramatic acceleration of digitalization set in motion by the events of 2020, IT and business leaders are looking for ways to put more customer data to work to deliver a superior customer experience. Accenture is leading the way in helping clients add SAS capabilities to a wide range of technology assets that make up their customer experience infrastructure.

Advanced decisioning

In both private and public sector environments, organizations are turning to advanced decisioning capabilities enabled by AI and analytics to make better, faster use of the rapidly increasing volumes of data they are gathering, while also balancing the need for even greater security and compliance with stringent data privacy standards. Together, Accenture and SAS are helping clients put these strategies to work—not in years, but in months or even weeks.

About Accenture

Accenture is a global professional services company with leading capabilities in digital, cloud and security. Combining unmatched experience and specialized skills across more than 40 industries, we offer Strategy and Consulting, Interactive, Technology and Operations services—all powered by the world's largest network of Advanced Technology and Intelligent Operations centers. Our 537,000 people deliver on the promise of technology and human ingenuity every day, serving clients in more than 120 countries. We embrace the power of change to create value and shared success for our clients, people, shareholders, partners and communities. Visit us at **www.accenture.com**.

Applied Intelligence is Accenture's approach to scaling AI for clients by embedding AI-powered data, analytics and automation capabilities into business workflows, accelerating time to value with a powerful global alliance, innovation and delivery network that can deploy and scale AI within any market and industry. To learn more, visit **www.accenture.com/appliedintelligence**.

About SAS

SAS is the leader in analytics. Through innovative software and services, SAS empowers and inspires customers around the world to transform data into intelligence. SAS gives you THE POWER TO KNOW®. For more information, visit **www.sas.com**

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