BI & Data Trends 2021:

THE GREAT DIGITAL SWITCH

LEAD WITH DATA™   Qlik

In a year of crisis, we reacted too late. Again.

There were signals that a pandemic was coming, but governments and businesses ignored them.

2020 brought us a global pandemic, and some people have called it a black swan event. But not Nassim Taleb, the man who coined that term. Like Bill Gates, Laurie Garrett and others, he predicted it.[1] Still, among many governments and businesses, there was little preparedness. And when the virus did emerge, response was slow.

Inertia, together with a lack of foresight, is all too familiar from previous crises. What is different this time is that the legacy companies are struggling the most. Younger, more digital businesses are rising to the challenge. The fitness phenomenon Zumba, for example, went from 100% in-person training to a community of online classes in just six weeks, standing up an entirely new virtual platform.[2]

No matter how you describe it, in an interconnected world, the frequency and impact of major events that disrupt markets will likely increase. And while you can't predict when a transformative event will happen next, you can be prepared, even thriving on anomalies in a way that the competition can't.

What used to be thought of as a gradual evolution now needs to happen immediately. What's the route to getting there? You have to make The Great Digital Switch – and you need data and analytics to do it.

To adapt in a volatile world, two switches are necessary.

You have to be able to react and pre-act.
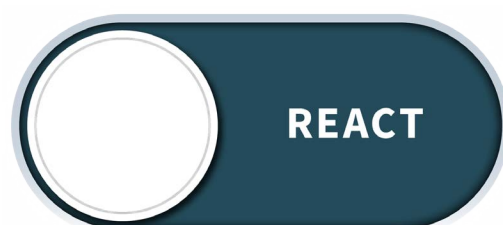
Switch 1: React. The evolution of digital transformation within an organization used to be linear. But now, digital needs to be switched on immediately. For that, you have to modernize your information flows, infrastructure and applications. Up-to-date, accessible and accurate data is mission-critical.

Switch 2: Pre-act. What about the next disruption: How can you see the signals earlier and react faster? To tackle future anomalies, you have to move from being only reactive to being "pre-active" – that is, to both prepare and act. This means preparing scenarios and options and not only having up-to-date data with triggers acting at the speed of business.

Data is at the heart of both switches, so you need to up-level analytic approaches across the board. Here, synthesis needs to complement analysis in a systems-thinking approach; you need to build a mosaic from distributed data and signals and set your course accordingly. That was our theme in last year's trends, and it's even more relevant today. Unfortunately, for many businesses, that relevance is becoming apparent only now. Too many organizations were analyzing their silos of outdated data, failing to see the bigger picture.

It's been a turbulent year, with many lessons. What are the immediate pivots we've seen in data and analytics? And how will they affect things down the road, towards a new normal? If we get this right – and act accordingly – we'll be much better prepared for the next disruption.

Making The Great Digital Switch:

10 data trends that support the new digital imperatives.

1 SaaS is everyone's new best friend.

2 Self-service has evolved to self-sufficiency.

3 Shared data, visualizations and storytelling are consumed by the masses.

4 Up-to-date and business-ready data are more important than ever.

5 Advanced analytics need to look different.

6 It's essential to capture and synthesize "alternative" data.

7 Business process reengineering takes center stage.

8 The compass for competition, surveillance and security has been recalibrated.

**9** Collaboration has to coalesce earlier in the chain.

10 The Great Digital Switch may force a generational shift in analytics.

1 SaaS is everyone's new best friend.

For many businesses in 2020, the increased use of cloud providers and online services has been essential to keeping the lights on in virtual environments. This has prompted companies to overcome the inertia and red tape surrounding SaaS, PaaS and other "aaS" products. Organizations that once claimed they would never look to SaaS have suddenly embraced it. These changes have had some beneficial side effects, like adding scale and elasticity. Additionally, the pace of innovation in data and analytics is swift, and SaaS provides immediate access to new technologies like augmented analytics, facilitating transformation.

So while bigger projects have been put on hold in the short term, the immediate switch to SaaS will be a trigger for a greater migration of databases and applications. Technologies that can access, move and harmonize data from multiple places will follow. Containers and serverless infrastructure hold great potential for running applications in the cloud, but using them at scale requires organizational maturity and significant know-how. The ability to manage hybrid deployment across multiple clouds will continue to be key to avoid vendor lock-in.
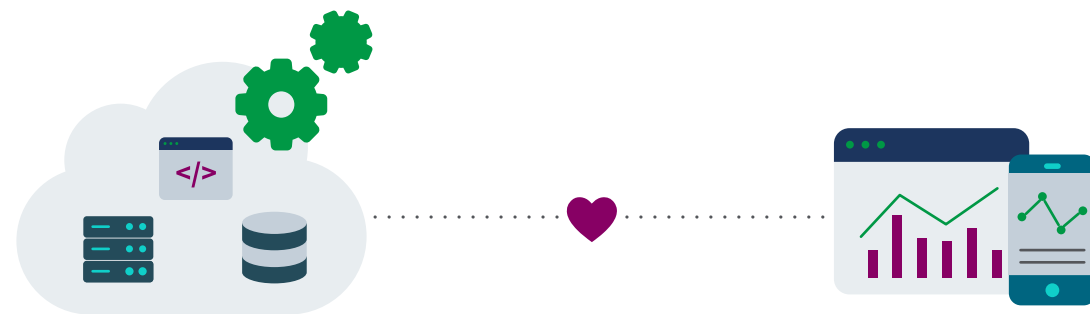
IN THE SHORT TERM

The immediate switch to more SaaS solutions.

IN THE MIDTERM

Mission-critical systems of record will be migrated to the cloud, followed by applications.

ANALYST PREDICTION

By 2022, public cloud services will be essential for 90% of data and analytics innovation.

Gartner[3]

IN THE SHORT TERM

The most intuitive software wins.

IN THE MIDTERM

Self-sufficiency to access and receive data and insights earlier will be embedded in software design.

ANALYST PREDICTION

A recent Gartner poll showed that 48% of employees will likely work remotely at least part of the time after COVID-19 versus 30% before the pandemic.

Gartner[4]

2 Self-service has evolved to self-sufficiency.

In a virtual world, self-service needs to evolve. When there are no instruction manuals and no one there to hold a user's hand, a fast, intuitive ramp-up becomes a hygiene factor for adoption, and compelling user interfaces will no longer be a nice-to-have. But we've also seen that users often don't want to self-serve; they increasingly expect insights to come to them. As a result, we'll see more micro-insights and stories for the augmented consumer. In addition, data is too often overlooked. Empowering users to access data, insights and business logic earlier and more intuitively will enable the move from visualization self-service to data self-sufficiency.

AI will play a major role here, surfacing micro-insights and helping us move from scripted and people-oriented processes to more automated, low-code and no-code data preparation and analytics. If more people can be self-sufficient with data earlier in the value chain, anomalies can be detected earlier and problems solved sooner.

3 Shared data, visualizations and storytelling are consumed by the masses.

In 2020, data and data visualizations exploded in mainstream news. General audiences pored over data in sources like ECDC, Financial Times and Our World in Data. Now more than ever, we've seen the importance of delivering the last mile in data storytelling and infographics. There has been a massive up-leveling in the conversation about data, where armchair epidemiologists are able to say things like, "That's a logarithmic scale," and "Here's the problem with comparing per capita."

This development will bring in millions more on the journey toward data literacy. But data is too often becoming politically fraught. How do we double-click beyond the picture? Get to the point behind the data point? Surface lineage and easily bring in new data sets? Technically, an expansion of context will be supported by more common data models and more business logic, accessible in catalogues and data marketplaces. This will help synthesis and more productive discussion. But we'll also need to start building ways of agreeing on the common ground – and work on an etiquette for intellectual honesty in debating data.

IN THE SHORT TERM

A step change in consumption of visualizations and data storytelling …

IN THE MIDTERM

… will need to be followed by increased data literacy and data etiquette.

ANALYST PREDICTION

By 2022, a third of G2000 companies will have formal data literacy improvement initiatives in place to drive insights at scale, create sustainable trusted relationships, and counter misinformation.

IDC[5]

IN THE SHORT TERM

The need to capture changes to data more quickly is more mission-critical.

IN THE MIDTERM

Triggering actions on that data at the speed of business will be key to move from reactive to pre-active.

ANALYST PREDICTION

By the end of 2024, 75% of enterprises will shift from piloting to operationalizing AI, driving a 5X increase in streaming data and analytics infrastructures.

Gartner[6]

4 Up-to-date and business-ready data are more important than ever.

Since the pandemic arrived, we've seen a surge in the need for real-time and up-to-date data. What is usually fairly stale – quarterly business forecasts, for example – is fleeting and mutable now. Alerts, data refreshes and forecasts will need to occur more often, with the freshest variables. On a macro level, we've seen disruptions to supply chains, with hospitals scrambling to procure PPE and consumers stockpiling toilet paper. In the case of PPE, we reacted to an actual shortage too slowly; with toilet paper, consumers broke the supply chain by assuming a shortage where none existed. Surges like these are accentuated in a crisis, and we have to build preparedness for them.

As the velocity of data increases, the speed of business needs to follow. Can we make "business-ready" data – data that is not only curated for analytics consumption but which has timely business logic and context applied to it – accessible earlier? And can we automatically trigger the end points, whether that's an automated process or an action taken by a human? The infrastructure and applications are available, enabling a gradual transition to active intelligence. That will be a big factor in helping enterprises pre-act.

5 Advanced analytics need to look different.

In the wake of COVID-19, there has been a surge in interest in advanced analytics. But many methods struggle to pick up anomalies. Predictive models typically don't work well when a critical input datapoint has never occurred. Algorithms need good backward-looking data – and sometimes lots of it – to build a comprehensive model of the future. But outliers shouldn't be sorted out.

In England, where the pandemic prevented students from sitting for exams, officials used AI to "determine" scores. The algorithm combined student rank with data from each school's performance in previous years, and the outcomes cemented existing trends into place – and locked out outliers.[7]

We need to up-level analytic approaches to include a focus in on outliers. Simulations introducing unexpected inputs don't generally predict the future, but they can reveal how a system will react to the unexpected. What-if analysis presents options upon which we can build contingency plans. AI will increasingly reveal anomalies outside preconceived hypotheses, which can then be evaluated by humans. And we need to embed advanced analytics in more places for quicker impact. Overall, the governance of algorithms – and the ensuing scenario analysis to inform action when the unusual occurs – is more important than ever.

IN THE SHORT TERM

The demand for advanced analytics is surging, but we need to focus in on the outliers.

IN THE MIDTERM

Not only new analytic techniques but governance of them must be considered.

ANALYST PREDICTION

"Over the next 5 years and beyond, ERM teams will use market indicators and signals to identify, forecast, and model unknown and latent risks that won't materialize for several years (e.g., trade tensions, regional conflicts, political shifts, workforce shifts, and region-specific climate changes)."

Forrester[8]

Organizations are becoming aware of the value of alternative data.

Finding relationships in combinations of diverse data and generating derivative data will form the foundation of modern data and analytics.

By 2025, AI for video, audio, vibration, text, emotion and other content analytics will trigger major innovations and transformations in 75% of Fortune 500 global enterprises.

Gartner[13]

6

It's essential to capture and synthesize "alternative" data.

How early could we have detected COVID-19? Studies of "alternative" data – in this case, traffic data outside hospitals in Wuhan and keyword searches by Internet users in that area – indicate that the virus may have been circulating in late 2019.[9] The investment community has been a pioneer in using alternative data, including audio, aerial photos, water quality, and sentiment.[10] This is the front line for data-driven innovation, and getting an edge here can result in huge gains. But in the wake of 2020, alternative data will become mainstream, with the goal of spotting anomalies much earlier.

From that, we can get derivative data, which comes from combinations, associations and syntheses with data from systems of record. As IDC says: "As more data gets captured and becomes available from external sources, the ability to use more of it becomes a differentiating factor. That includes taking lessons from industries other than your own." [11] This trend, similar to what Gartner calls "X analytics," [12] isn't new but is finally becoming an important foundation of modern data and analytics, thanks to cheaper processing and more mature AI techniques – including knowledge graphs, data fabrics, natural language processing (NLP), explainable AI and analytics on all types of content. This trend is completely dependent on ML and AI, as the human eye can't catch it all.

7 Business process reengineering takes center stage.

A recent joint IDC/Qlik survey revealed that the most common outcome of successful enterprise data and analytics projects is improved operational efficiency.[14]

In the coronavirus crisis, we've seen a lot of change. Reacting fast has become critical, and business processes are at the center. Business process management has been around for decades. What's new is that we can now not only model it but also mine, automate and optimize a process via technologies like robotic process automation, process mining, alerting and embedded analytics. As leaders look to reengineer the way things get done, the efficiency metric will only grow in importance and priority.

The shift from passive to active intelligence – embedded into moments, processes and applications – will lead to a new normal where analytics drive the process rather than vice versa.
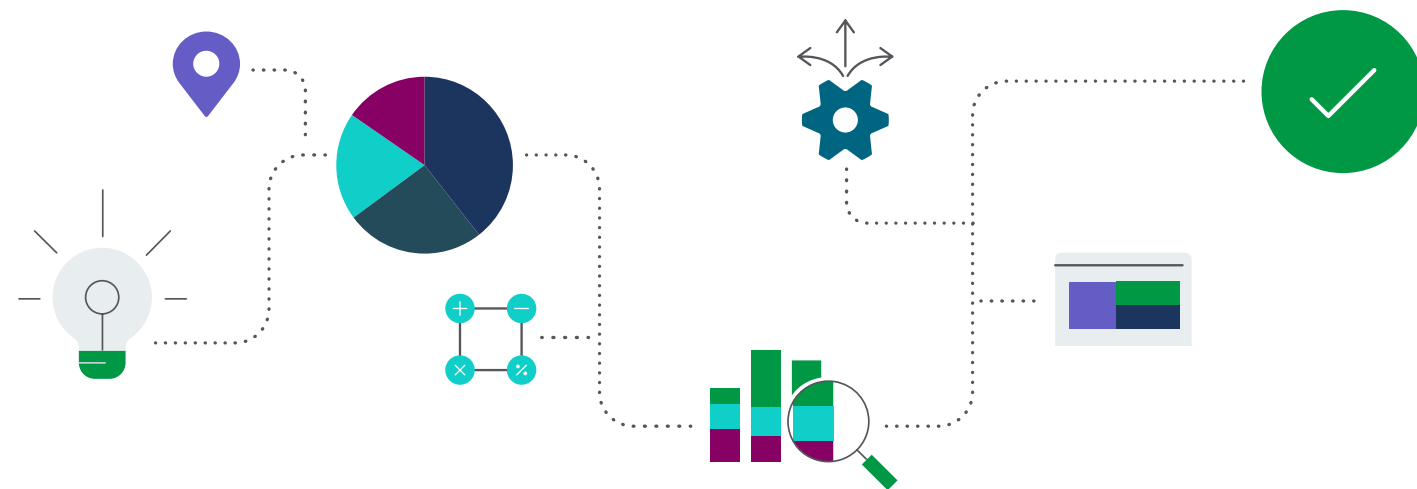
IN THE SHORT TERM

Operational efficiency is the most urgent transformational goal.

IN THE MIDTERM

Leaders will look for wider and more complete business process reengineering. Analytics may drive processes rather than vice versa.

ANALYST PREDICTION

By 2023, 40% of professional workers will orchestrate their business application experiences and capabilities like they do their music streaming experience.

Gartner[15]

We have a recalibrated compass for competition, surveillance and security.

IN THE MIDTERM

Asymmetries from central data repositories may prompt a new wave of antitrust, ethical and privacy concerns.

ANALYST PREDICTION

By 2023, all personnel hired for AI development and training work will have to demonstrate expertise in the responsible development of AI.

Gartner[16]

8 The compass for competition, surveillance and security has been recalibrated.

During the pandemic, governments are intruding further into citizens' privacy, which we have at least temporarily accepted. Additionally, the crisis has triggered collaboration between normally fierce competitors – as with Google and Apple, who have joined forces for contact tracing. Some big problems are better solved with collaboration rather than competition.

One potential upside of the disruption: Large-scale coopetition may lead to new innovation. Shared platform thinking, where we build on each other's strengths, may become a new normal. Governments and AI giants know that the more centralized data and processing we have, the more fertile ground there is for machine learning. But how and where will data be used and stored? Where will the bar for integrity be set? Those are defining questions for our age, and the goalposts may have moved in 2020. Hedging bets, having a strong commitment to ethics and a strong governance of data and algorithms all continue to be important.
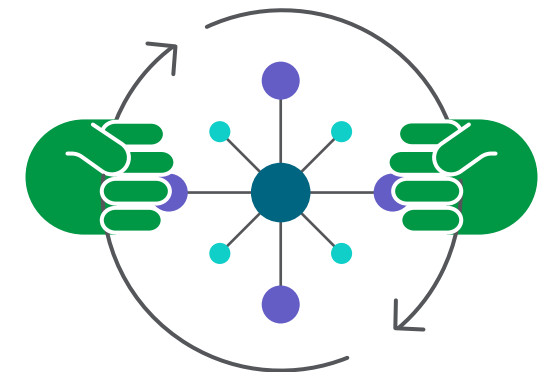
9 Collaboration has to coalesce earlier in the chain.

In 2020, we've seen a step change in the embracing of web conferencing, remote collaboration and online learning. We're in a new world where we can't gather as often for a quick huddle in the office or sketch out an idea on a whiteboard.

Also, an increasingly fast-moving world means that in many cases, people don't have time to wait to make a decision while someone builds a dashboard. The convergence of data management and analytics in the market has created opportunities for integration points between the components of a data pipeline, combining synthesis with analysis and enabling active metadata, business logic and catalogues to act as connective tissue. This in turn will push collaboration, innovation and discussions to the data itself.

We'll see more experiences that introduce easy and enjoyable ways of working together in areas that were previously rendered "boring" or "difficult." Tasks for moving data from raw to analytics-ready will become more engaging, fast and iterative. The separate, siloed worlds of data curators and consumers will begin coming together, and business logic will persist, enabling analytics-ready data to become business-ready much faster.
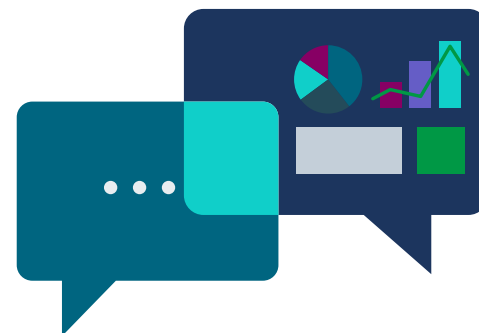
IN THE SHORT TERM

Collaboration and learning have moved online.

IN THE MIDTERM

As data and analytics converge, opportunities arise for collaboration between data curators and data consumers, making business-ready data more available to users.

ANALYST PREDICTION

By 2023, augmented data management will reduce the reliance on IT specialists for repetitive and low-impact data management tasks, thereby freeing up to 20% of their productive time for collaboration, training and high-value data management tasks.

Gartner[17]

IN THE SHORT TERM

Disjointed legacy solutions often can't meet a new set of expectations.

IN THE MIDTERM

Companies will expect solutions that help them move from passive to active.

ANALYST PREDICTION

The ability of business leaders to quickly use data from operational applications to make strategic decisions and deliver on strategic outcomes will rapidly be seen not just as a potential competitive differentiator, but also as a fundamental requirement and strategic imperative.

451 Research[18]

10 The Great Digital Switch may force a generational shift in analytics.

On a general level, the demand for data and analytics will stay strong, as they're the raw material for making the digital switch. But COVID-19 will be a catalyst for bigger change. In the 2008 crisis, there was a generational shift from reporting-centric to analysis-centric BI to deal with more agility. Companies kept their first-generation tools but invested in second-generation ones as well.

Drastically changed circumstances have again disrupted expectations, which may trigger another generational shift. And the expectations for next-generation technology, in addition to being outlined in the preceding trends, can be summed up in a single phrase: the movement from passive to active.

The increasing convergence and integration points between data management and analytics have the advantage of bringing more timely, contextual business logic across the information value chain. They allow AI to surface collaboration, signals and actions much earlier, often before a dashboard is built. Organizations will be looking to vendors that can embed tactical actions into workflows, processes and moments – but also, strategically, to synthesize data and signals early, enabling them to embark on more informed paths.

Our goal:

Uncovering the unseen – and keeping you ready to pivot.

The pace of change is accelerating, and disruptive anomalies are becoming increasingly common. Every organization should be enacting The Great Digital Switch – building the capacity to react more quickly, read signals more clearly and outline options for action. In the short term, the switch from physical to digital operations is a matter of survival, but it's also a chance for creative destruction and taking a leap forward. In the long term, switching from being a reactive to pre-active enterprise will become necessary to thrive. Are you making the switch?

Be Ready for What's Next

Qlik® technology is designed from the ground up to empower everyone in your organization, no matter their skill level, to combine data from a multitude of sources, explore it freely in an intuitive way and make associative discoveries that other solutions won't uncover. With end-to-end data integration and analytics solutions, powerful boosts to data literacy from AI and an independent, open platform that enables you to embed analytics anywhere, Qlik helps you achieve Active Intelligence – a state of continuous intelligence where technology and processes support the triggering of immediate actions from accurate, up-to-date data.

Qlik's vision is a data-literate world, where everyone can use data and analytics to improve decision-making and solve their most challenging problems. Qlik provides an end-to-end, real-time data integration and analytics cloud platform to close the gaps between data, insights and action. By transforming data into active intelligence, businesses can drive better decisions, improve revenue and profitability, and optimize customer relationships. Qlik does business in more than 100 countries and serves over 50,000 customers around the world.

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