Qlik

Calibrate for Crisis

Top 10 BI & Data Trends 2023

Power — and data — are shifting.

Both are becoming fragmented.

At this moment in history, we're in a perfect storm. Geopolitical, social, and economic concerns are churning. We're seeing a rise in conflict and isolationist tendencies; instead of a move toward cooperation, local regulations are amping up. In the economy, confidence is low, recession fears are high, and rising interest rates – plus inflation – are impacting borrowing.

What do these factors have in common? More than a few scholars are claiming that we're in the midst of a shift toward de-globalization.

As it plays out, we'll see new fractures in old structures and the emergence of a state of multipolarity, or the distribution of power among multiple entities. And while the jostling will occur at the international level, we'll feel the impacts locally, in both our businesses and personal lives. Among other repercussions, we'll be challenged with energy shortages, currency fluctuations, broken supply chains, and struggling markets. Multipolarity will also have a significant impact on information technology. (See sidebar.)

As data and analytics professionals, we need to adjust to more fragmentation, with its disparate data centers, disrupted supply chains, nonstop innovation, and hampered access to skilled labor. And in a world where crisis has become a constant, calibrating for it becomes a core competency – so we can react in the moment and anticipate what's coming next.

Data has left the building

According to Gartner, by 2025, more than 50% of enterprise-critical data will be created and processed outside the data center or cloud.

— Gartner [1]

It’s time to calibrate for crisis.

And that requires two key competencies.

During the pandemic, organizations acquired new technology simply to keep the lights on. In that sudden modernization, systems and processes became a chaotic tangle. Now it’s time to play catch-up in areas like governance, responsiveness, and cloud costs.

In these challenging times, nearly 7 out of 10 global tech leaders are concerned about the growing technology investment required to remain competitive.[2]

But few, if any, are looking to reduce their data efforts. Instead, surveys indicate[3] that data integration, analytics, automation, API management, and AI are all top technologies CXOs rely on for crisis management. And now’s the time to use them. In the coming year and beyond, we believe it will be important to focus on two areas in particular:

Calibrate the decision

Hone your decision accuracy – at speed and scale – to better react to, adapt to, and even anticipate unexpected events.

Calibrate the integration

Work to achieve connected governance – the ability to access, combine, and oversee distributed data sets – to handle a fragmented world.

★ What are the top 10 BI and data trends that will help you lead in an uncertain world? Find them in the pages ahead.

Qlik

Top 10 BI & Data Trends 2023

Calibrate the decision

1. Supply chain disruption meets real-time data
2. Decision velocity – at scale
3. Optimizing across low-code and high-code
4. The human/machine arms race
5. Data stories that compel action

Calibrate the integration

6. Market consolidation opens new opportunities
7. What's old is new again – in the cloud
8. "X-fabric" holds connected governance together
9. AI moves deeper into the pipeline
10. The rise of derivative and synthetic data

Calibrate the decision

1 Supply chain disruption meets real-time data

Anyone who has attempted to buy a new car (or computer, or construction materials) in the last few years knows how seriously supply chains have been compromised.

Disruptions can happen anywhere in the world, and they require an immediate response.

That means acting on contingency plans and even, if possible, "pre-acting" – in other words, using forecasts and scenarios to pivot before things begin to break down. The infrastructure to handle real-time data has been in place for some time, but the critical use cases and ultimate potential haven't been fully explored. Now they should be. We're faced with managing inventory when raw materials are scarce and shipping is disrupted; needing to pinpoint supply chain bottlenecks to backfill and work more effectively with partners; and having to shift resources to tackle new opportunities or address humanitarian needs when conflicts arise. And the pace of these issues is only going to accelerate.

The Impact

The pandemic and conflict in Ukraine have created significant components shortages. This backdrop has become the trigger for organizations to update their data-delivery pipelines, from batch-oriented to near real-time data. And as more edge devices appear on the grid – producing continuous, high-volume streams of data – more opportunities to leverage real-time data will arise.

Analyst Prediction

"By 2027, 60% of spending on data capture and movement technology will be on streaming data pipelines, enabling a new generation of real-time simulation, optimization, and recommendation capabilities."

— IDC[4]

Calibrate the decision

2 Decision velocity — at scale

Once you have real-time data in place, the next step is to tune your operational decisions to the same pace.

For example, during times of inflation, it's unsustainable for a retailer to push all their cost increases to customers. Instead, they should improve efficiencies – thousands of them, occurring thousands of times a day.

Automation will help. According to Gartner, 95% of decisions based on data can be at least partially automated,[5] and in a more challenging environment, automation will accelerate. But even though analytics, AI, and automation **can make more and faster decisions than humans**, make sure to place humans at the beginning and the end of decision-automation cycles for design and review.

Decision velocity at scale is also about shortening the data-to-action pipeline for humans – decreasing the time it takes for people to find data and increasing the frequency of acting on it. In addition to technology, data literacy is a key enabler for that. And finally, decision velocity leaves a big data trail, with patterns that can be analyzed. That will create an opening for decision-mining.

The Impact

New roles will emerge with a focus on decision innovation – such as Chief Decision Officer, Decision Designer, and Decision Engineer. These roles should be tasked not only with automating routine decisions but also with addressing the biggest, thorniest problems you face.

Analyst Prediction

“By 2026, 85% of enterprises will combine human expertise with AI, ML, NLP, and pattern recognition to augment foresight across the organization, making workers 25% more productive and effective.” — IDC[6]

Calibrate the decision

3 Optimizing across low-code and high-code

In recent years, we've seen the emergence of low-code tools for building applications, enabling non-technical workers to compose their own apps.

These tools not only drive the creation of apps, they also increase the consumption of data and insights. For example, application automation enables workers to create chains of events triggered by data. AutoML gives business analysts access to the most advanced algorithms. And data transformations within data-delivery pipelines can be largely automated, too.

One prominent tool is GitHub Copilot (based on GPT-3), which translates plain English into code. **GitHub estimates that Copilot generates roughly 30% of the application code created on the site.**[7]

On the other hand, some organizations have progr ammers and app developers who simply want prompts they can code in. This is particularly the case in data engineering and data science, as those fields get reinvented for cloud. To cater to these needs, we've seen the emergence of high-code tools, which provide templates for coders who want maximum flexibility.

The Impact

These two camps will always exist, though many use cases will gradually evolve from high-code to low as repeatable workflows are identified and markets mature. Still, the choice shouldn't be between low-code and high-code. Instead, it should be code optimization, focusing on the highest productivity and best business outcomes given the available skill sets.

Analyst Prediction

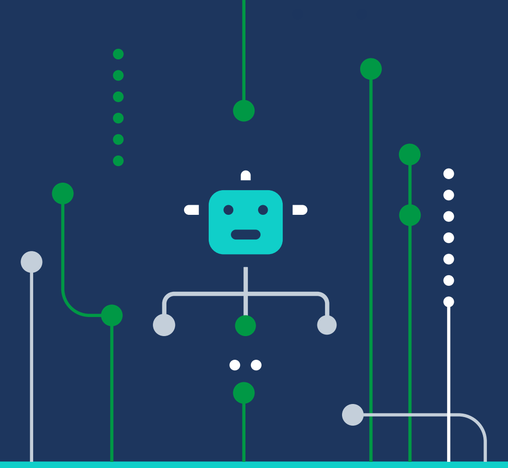
"By 2023, 60% of net-new applications will be developed with no-code/low-code platforms, up from 30% today."

— IDC[8]

Qlik

Calibrate the decision

4 The human/machine arms race



In the summer of 2022, a Google engineer claimed that one of the company's chatbots (named LaMBDA) had achieved consciousness, or a human level of self-awareness.

Google stated that his claims were unfounded [9] – and the engineer was fired for violating company security policies – but this incident shows how far machines have come in a short time.

Because natural language models have been trained on massive troves of data using deep-neural-network machine learning, they've reached a paradigm shift. Perhaps the most widely publicized is GPT-3.

It's so capable that it's spawned a number of services, from code optimization, to writing marketing copy, to mimicking the voices of authors like Kafka and Hemingway.[10]

There are now 5 - 6 global developments even bigger than GPT-3,[11] models trained on even larger data sets. Where those will take us, we can only imagine. We may be about to cross the Rubicon where machines can finally pass the Turing test.

The Impact

In the space of data and analytics, natural language capabilities will have huge implications for how we query information and how it's interpreted and reported. We'll find not only the data we're looking for but also the data we hadn't thought to ask about.

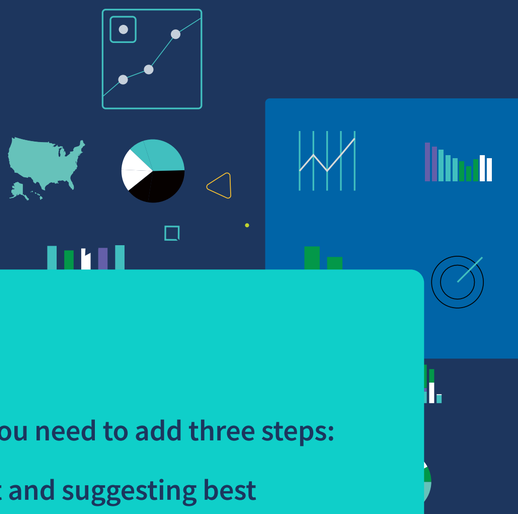
Analyst Prediction

"In the next five to 10 years or sooner, based on the groundbreaking innovation in AI, TuringBots will be created by several tech vendors." — **Forrester Research**[12]

Qlik

Calibrate the decision

5 Data stories that compel action



For decades, we in the data industry have shared a mantra: *Provide the right information to the right user at the right time.*

That's more important now than ever. But in a fragmented world, where data is distributed and time is scarce, it's tougher to do.

Fortunately, you don't have to get all the data to all the people all the time. **Having the right slices of small data at the right time is more useful**. And not every insight has to be arrived at through user exploration. Many can be more prescriptive and recommendation-oriented, delivered straight from the data.

Data storytelling has been touted as the way to get data to make sense to users; **stories can reach people emotionally – and compel them to act – when data alone does not.** But data storytelling needs to be much more than adding charts to infographics or PowerPoints. It needs to be connected with action.

The Impact

To connect storytelling to action, you need to add three steps:

1. Predicting what will happen next and suggesting best actions with AutoML
2. Using alerting, reporting, and automation to bring stories into workflows at the right time
3. Embedding not just dashboards but micro-stories into the systems where people work. That will move data storytelling from insights you *could* act on to insights you *do* act on.

Analyst Prediction

"By 2025, data stories will be the most widespread way of consuming analytics, and 75% of stories will be automatically generated using augmented analytics techniques." — Gartner[13]

Qlik

Calibrate the integration

6 Market consolidation opens new opportunities.

In an increasingly fragmented world, there's also a market trend in the opposite direction: convergence.

We're seeing the consolidation of previously siloed systems, including data integration, management, analytics/AI, visualization, data science, and automation.

Combining these functions opens opportunities that weren't possible before. It makes it easier for data producers and consumers to collaborate, starting with the product, outcomes, or decisions they have in mind and working backward to build agile data pipelines around their business goals.

Common standards and APIs enable interoperability. And when a vendor operates across more segments, convergence is even easier. This isn't about going "all-in" on one data stack, which can lead to vendor lock-in or compromise compliance. Instead, choose platforms that can work with multiple stacks, and consolidate the data across them.

The Impact

The move toward consolidation on the supply side is met by the demand side. In challenging times, CFOs and CEOs get more involved in the business, and they want to see ROI articulated clearly. This will help drive pricing models away from per-user toward the value generated. After all, you can't predetermine who in your organization should use what tool when you don't know where the next challenge will come from. Instead, facilitate general access to tools and platforms, in a governed way, and build from there.

Analyst Prediction

"By 2023, the stand-alone data preparation market will disappear, and data preparation capabilities will be embedded within modern data management, analytics, and data science tools."

— Gartner[14]

7 What's old is new again — in the cloud

During the pandemic, organizations quickly modernized applications and moved data to the cloud.

As these changes mature, many of the same issues from the on-prem world are rearing their heads. For example, after you adopt a cloud warehouse or lake, you need to tackle data movement, transformation, metadata catalogs, and so on.

These needs are driving investment in a multitude of software segments around warehouses and lakes – including semantic layers and data integration, movement, sources, and observability.

This has created a Wild West of startups (often dubbing themselves part of "the modern data stack") fueled by venture capital, each going after one specialization. And while winners will certainly emerge, the vast majority will disappear as industries mature and consolidate. And this trend will accelerate as VC funding goes from boom to bust. (In Q3 2022, VC funding declined 53%, an early signal of what may come.[15]) In other words, expect a big wave of M&A as small vendors look for the exit. It happened in the on-prem world, and it'll happen again in the cloud.

The Impact

From a cost perspective, it's not sustainable for organizations to work with a wide array of niche vendors. Fortunately, many of the features will be recreated in the larger integrated data and analytics platforms. As cloud markets mature, managers may abandon architectures reliant on too many startups that struggle. Instead, these startups may be used as a source for "acqui-hires."

Analyst Prediction

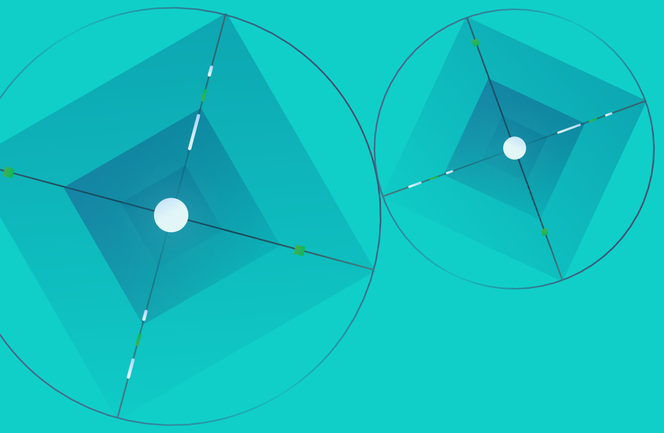
"To help alleviate the developer skills shortage, 55% of organizations will use cloud marketplaces and tech startup acquisitions as their most important approaches to software sourcing by 2024."

— IDC[16]

Calibrate the integration

8 “X fabric” holds connected governance together

The discussion in recent years has been about data fabric (as well as hubs and mesh), an important methodology that connects distributed data sets through semantic models. But for connected governance, we need more than that.



In a world with millions of builders, we need other fabrics, or “X fabrics.” These include application fabric, BI fabric, and algorithm fabric – and right now, these methodologies are even less mature than data fabric.

Being able to reuse data and analytic assets is critical, spanning models, scripts, and analytics content. And the need for reuse also underscores the importance of the catalog, as well as its evolving role. Common APIs will make it possible to have modularity and composability, and catalogs can provide the oversight that spans artifacts.

The Impact

For connected governance, you need X fabrics. You also need to certify artifacts based on how trustworthy they are – for example through watermarking based on thresholds. Every organization today is looking for better ways to access their data and analytic artifacts. And in a distributed world, orchestration becomes even more important.

Analyst Prediction

“By 2023, 60% of G2000 enterprises will have a data control plane architecture to enable DataOps, propel ML-based data engineering, reduce data risks, and propel innovation among Gen D workers.”

— IDC[17]

Calibrate the integration

9 AI moves deeper into the pipeline

As we mentioned in Trend 6, analytics, automation, and AI are converging, increasingly overlapping with each other. In the process, they're cross-pollinating, generating new insights that weren't possible before.

But what about moving those components deeper into the data pipeline, before an application or dashboard has even been built? There are several ways this could benefit organizations.

Using AI in data management would shift the perennial 80/20 distribution (between preparing the data and analyzing it) by automating more of the rote tasks in data engineering. It could, for example, automate anomaly detection and reporting, take advantage of self-healing, use just-in-time deployment, and find risky attributes such as PII data. Algorithms would be able to "crawl" the data and surface insights outside your hypothesis. And finally, automated annotations and tagging would drive better engagement with less skilled integrators.

The Impact

More AI in the data pipeline doesn't mean that humans won't be involved. After all, humans are exceptionally good at synthesizing complex problems with multiple component parts. But AI will automate some of the more manual data preparation tasks, so data engineers and scientists can focus on more impactful work.

Analyst Prediction

"Through 2024, manual data integration tasks will be reduced by up to 50% through the adoption of data fabric design patterns that support augmented data integration."

— Gartner[18]

10 The rise of derivative and synthetic data

Data is a liquid asset; it can look different for different purposes.

And today, it's easier than ever to alter data for different use cases or transform it into formats for specific targets. Data that has been transformed, processed, aggregated, correlated, or operated on is called "derivative" data. Derivative data has been especially useful for test data management – creating, managing, and delivering test data to application teams.

But now, with new privacy laws and integrity issues, it's becoming essential to obfuscate data even further.

In other situations, useful data simply doesn't exist. The lack of available user data, for example, can be problematic for small businesses, who won't be able to train their AI models with vast data sets. Or an enterprise may want to run experiments and what-if analyses for cases – simulations of financial crime and fraud, for example.

In both of the scenarios above, synthetic data can be an option. Synthetic data is data that has not been generated from real operations.

The Impact

Thanks to a number of factors – including data re-use, testing, privacy laws, missing data, and the need for data to train AI models – we'll see more derivative and synthetic data.

Analyst Prediction

"By 2030, synthetic data will completely overshadow real data in AI models."

— Gartner[19]

The way forward.

What do these trends mean for you?

In a fragmented world where crisis has become a constant, it's important to innovate and be prepared. Start by thinking through how these trends apply to your organization.

- Identify use cases where real-time data and decision velocity can address challenges
- Leverage the right mix of code optimization for your business users and engineers
- See how data storytelling can be more closely linked to action
- Use innovations in natural language to bring data querying, insights, and actions to more people
- Look for ways to converge siloed technologies
- Use a fabric not just for your data but for other artifacts as well
- Apply AI earlier in the data pipeline
- Leverage the VC crunch to remediate urgent skills shortages
- Look at derivative and synthetic approaches as ways to maximize value in a distributed world

It's about more than just the technology.

Data professionals of all kinds will play a key role in calibrating through crisis. In a deglobalizing world, localized sourcing of those professionals will become increasingly important. Key to this is increasing the data literacy of your existing workforce, using both education and technology.

Our goal

To give you the power to anticipate, pivot, and navigate through crisis.

While multipolarity is an unpredictable state, data and analytics can help reduce uncertainty. And fragmentation does hold promise; it could move the world to a longer-term vision of data democracy. In the meantime, addressing these trends will drive critical efficiencies in the here and now. And it could lay a foundation for a massive cycle of innovation and prosperity, accelerating growth as we turn the corner.

We're here to help

Qlik® is designed 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 in your organization – continuous intelligence where technology and processes support the triggering of actions from accurate, up-to-date data.

Get ready for what's coming.

See How We're Different

Prefer a conversation?

Get in Touch

Qlik

About Qlik

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 offers real-time data integration and analytics solutions, powered by Qlik Cloud, 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 serves more than 38,000 active customers in over 100 countries.

qlik.com

1 Goasduff, Laurence, "12 Data and Analytics Trends to Keep on Your Radar," Gartner, April 5, 2022, https://www.gartner.com/en/articles/12-data-and-analytics-trends-to-keep-on-your-radar.
2 Future Enterprise Resiliency and Spending Survey, IDC, April 2022.
3 "The Foundation of Data and Analytics is Cloud!," Gartner BI Summit, 2021 Gartner CIO Survey; and Qlik, QlikWorld, customer and former competitor interviews, BCG analysis.
4 IDC FutureScape: Worldwide Data and Content Technologies 2022 Predictions, https://www.idc.com/getdoc.jsp?containerId=US48082521.
5 "Striving to Become a Data-Driven Organization? Start with 5 Key D&A Initiatives," Gartner, https://www.gartner.com/en/information-technology/insights/data-and-analytics-essential-guides.
6 IDC FutureScape: Worldwide Artificial Intelligence and Automation 2022 Predictions, https://www.idc.com/getdoc.jsp?containerId=US48298421.
7 Coberly, Cohen, "Almost 30 percent of new GitHub code is written with AI assistance," TechSpot, October 28,2021, https://www.techspot.com/news/91984-almost-30-percent-new-github-code-written-ai.html.
8 IDC FutureScape Worldwide Cloud 2022 Predictions, https://www.idc.com/getdoc.jsp?containerId=US47241821.
9 Grant, Nico, "Google Fires Engineer Who Claims Its A.I. Is Conscious," New York Times, July 23, 2022, https://www.nytimes.com/2022/07/23/technology/google-engineer-artificial-intelligence.html.
10 Branch, Jr., John E., "Machine writing is becoming more human – all too human, in some cases," Fast Company, September 19, 2022, https://www.fastcompany.com/90784449/machine-writing-is-becoming-more-human-all-too-human-in-some-cases.
11 "Rapid Response: You Should Be Running Toward AI with Eric Schmidt," Masters of Scale with Reid Hoffman podcast, https://podcasts.apple.com/us/podcast/rapid-response-you-should-be-running-toward-ai-w-eric/id1227971746?i=1000541474053.
12 Lo Guidice, Diego, et. al., "Prepare For AI That Learns To Code Your Enterprise Applications (Part 2)," Forrester Research, July 8, 2021, https://www.forrester.com/blogs/prepare-for-ai-that-learns-to-code-your-enterprise-applications-part2/.
13 Gartner: Data Storytelling: Analytics Beyond Data Visualizations and Slideshows, July 19, 2021.
14 Zaidi, Ehtisham, "Utilize Self-Service Data Preparation to Ease Rising Data Engineering Challenges," Gartner Data & Analytics Summit 2022, slide 14.
15 Teare, Gené, "Global VC Pullback is Dramatic in Q3 2022," Crunchbase News, October 6, 2022, https://news.crunchbase.com/venture/global-vc-funding-pullback-q3-2022-monthly-recap/.
16 IDC FutureScape: Top 10 Predictions for the Future of Innovation, November 12, 2021, https://www.idc.com/getdoc.jsp?containerId=prUS48381621.
17 IDC FutureScape: Worldwide Data and Content Technologies 2022 Predictions, https://www.idc.com/getdoc.jsp?containerId=US48082521.
18 Gartner, Magic Quadrant for Data Integration Tools, August 17, 2022, https://www.qlik.com/us/gartner-magic-quadrant-for-data-integration-tools.
19 Linden, Alexander, "Is Synthetic Data the Future of AI?" Gartner, June 22, 2022, https://www.gartner.com/en/newsroom/press-releases/2022-06-22-is-synthetic-data-the-future-of-ai.