

A vertical image on the left side of the slide showing a city skyline at night with a network of glowing nodes and lines overlaid on it.

Break Down the Barriers to Better Data Analytics

Tips and best practices for data analytics executives

By David Sweenor, product marketing manager for advanced analytics, TIBCO®



Introduction

Organizations today understand the value to be derived from arguably their greatest asset — data. When successfully aggregated and analyzed, data can unlock valuable insights, solve problems, improve products and services, and help companies gain a competitive edge. However, analytics executives face significant challenges in collecting, validating and analyzing data to deliver the right analytic insight to the right person at the right time.

This e-book is designed to help. First, we'll explore the growing expectations for data analytics and the rise of the analytics executive. Then we'll explore a range of specific challenges those executives face, including those around data blending, analytics, and the organization itself, and offer best practices and strategies for meeting them.

We'll also provide a short overview of TIBCO Statistica, an easy-to-use predictive analytics software solution designed to turn big data into your biggest competitive advantage.



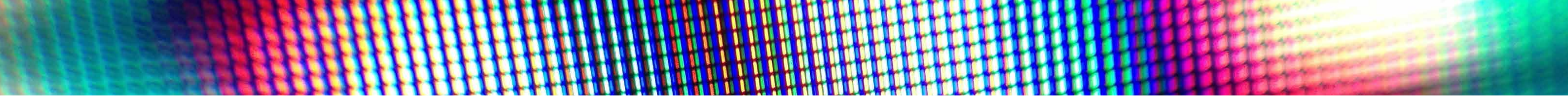
The changing face of analytics

Expectations for big data are high

Companies across the globe understand the business value of using data to develop analytic insights that otherwise could not be realized. In particular, analytics executives are expected to:

- Make the business more data-driven by using analytics to identify potential process improvements, understand customer behavior, anticipate future behaviors, personalize offers, predict value, and measure outcomes.
- Step beyond process improvements to uncover previously unseen opportunities to drive innovation.
- Embed analytics into right-time processes. While there's a general desire for businesses to have access to analytics data in real time, more precisely, executives are charged with providing insights to the right person at the right time and in the right place (a mobile phone or call center screen, for instance).
- Expand the value of the analytics for the company overall by increasing analytic capabilities and enabling more business professionals and executives to consume analytics in a systematic, digestible way.

When successfully aggregated and analyzed, data can **unlock valuable insights, solve problems, improve products and services, and help companies gain a competitive edge.**



Meeting those expectations requires new skill sets

Achieving these goals requires that data be aggregated, consumed, and analyzed. Therefore, many organizations are looking to attract professionals with both functional (business) experience and technical (systems) expertise. In fact, according to a [2014 Forbes article](#), demand for computer systems analysts with big data expertise increased 89.9 percent, and demand for computer and information research scientists jumped 85.4 percent.

As the need for corporate analytic initiatives and professionals grows, analytics executives are becoming increasingly important within organizations. Although their specific titles vary by industry, they tend to have either a specific background in analytics or emerge from a functional area within the business. The latter have built deep knowledge of systems and processes within their line of business, enabling them to apply insights and determine what problems need to be solved and how data can help. Few analytics executives come from an IT background.

New technologies are needed as well

We've all seen the stats: Data is growing at a rate faster than we've ever seen and comes in all shapes and sizes. Moreover, it is becoming more diverse along multiple dimensions:

- **Structured versus unstructured data** — The ratio of structured data (fixed-field records and files) to unstructured data (such as digital images, video,

and long-form text) is shifting as organizations collect and store an increasing amount of information from a variety of channels.

- **On-premises versus in the cloud** — As recently as 10 years ago, companies had very little data in the cloud. Now, much more corporate data is accessed from or stored in the cloud, and CSC's [Data Evolution report](#) predicts that by 2020, more than one third of the data produced will be in or pass through the cloud.
- **At rest versus in motion** — Data does not stay put. Data sets for analysis often must include data in motion, such as data coming from machines, transactions, mobile devices, and sensors.

To accommodate this broad mix of data, organizations are supplementing traditional relational databases with NoSQL databases, database appliances, and cloud and open-source technologies. Apache Hadoop and Apache Spark are open-source technologies that offer new methods for storing data, running advanced analytics on it, and running other applications on clusters of commodity hardware. In fact, according to a recent analytics study by Enterprise Management Associates (EMA), 56 percent of respondents identified cloud-based analytics as an important component of their analytics strategy. As infrastructure shifts to emerging platforms, your analytics platform will need the capability to analyze the data where it lies (that is, using in-database analytics) rather than shuffling data back and forth as with the systems of old.

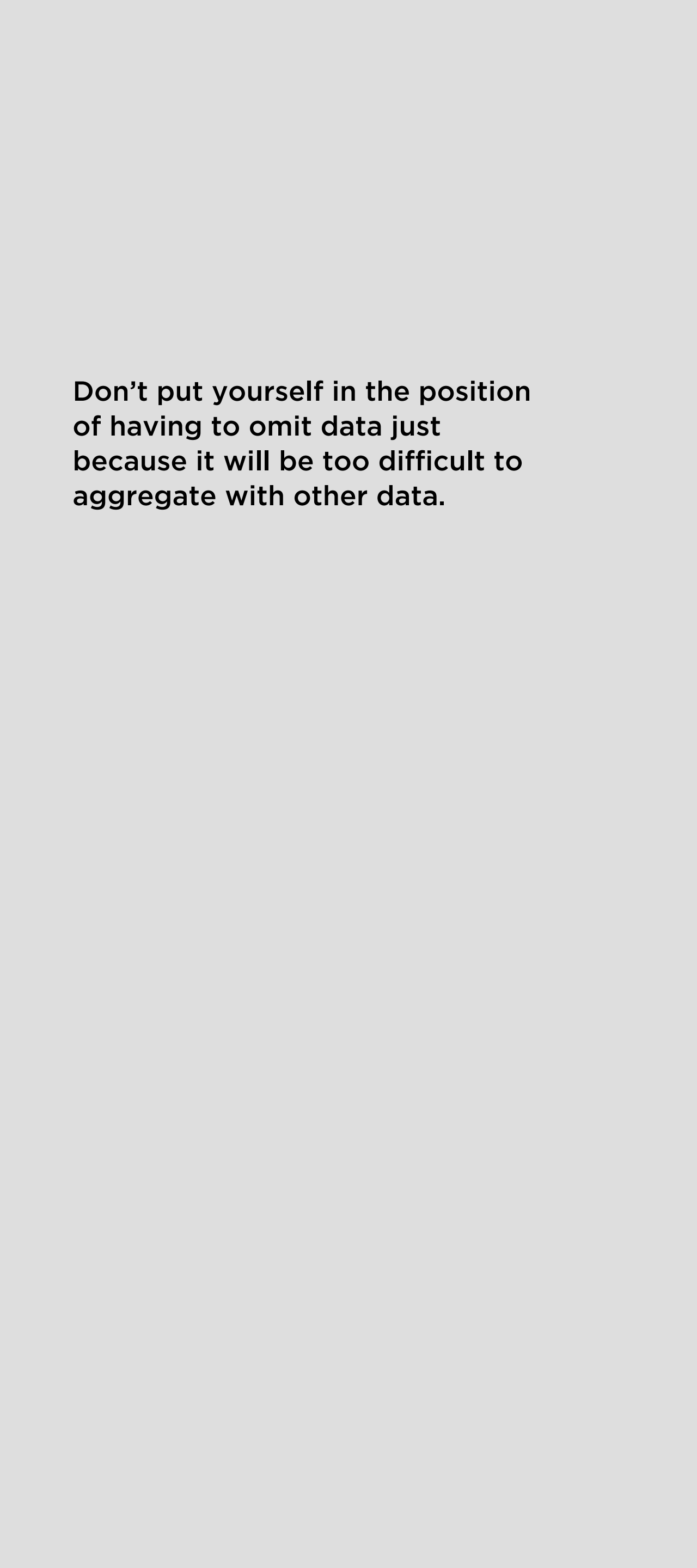


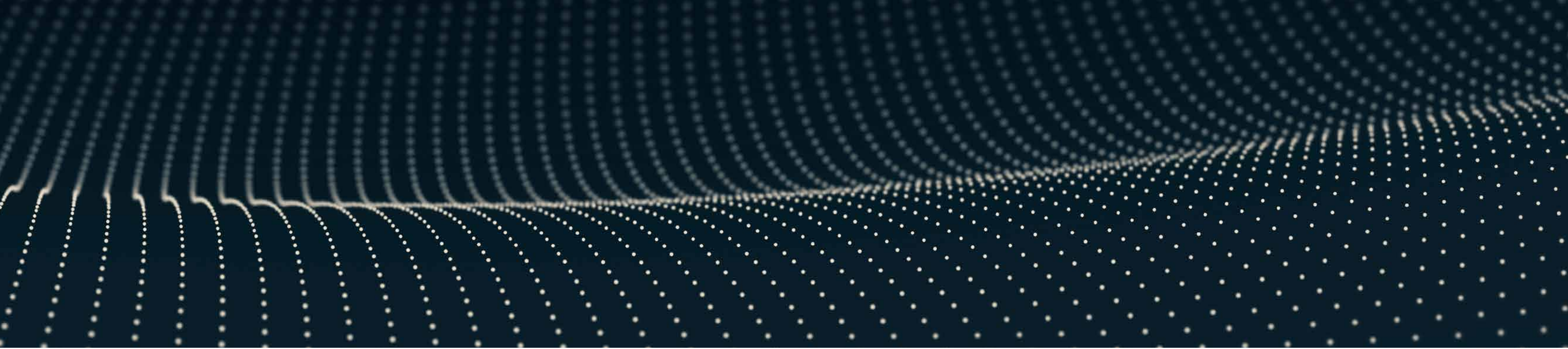
Data preparation and blending: prerequisites for analytics

Before analytics can begin, data must be collected, aggregated, and prepared for analysis. Specifically, analytics executives must ensure that:

- All data, wherever it is, can be accessed.
- The data is blended and prepared in a way that ensures it is consistent and coherent, making use of any master data management (MDM) capabilities within the organization. For example, units of measurement should be standardized. The aggregation process must also respect data privacy.
- The analytics workflow queries the data in a secure and validated way. That is, users should be able to retrieve and see only the data that they are entitled to see.

Don't put yourself in the position of having to omit data just because it will be too difficult to aggregate with other data.





To address these challenges effectively, keep the following best practices in mind:

- **Choose solutions that can integrate data from across the enterprise as well as inside and outside your firewall.** Adding new and valuable data to applications and analytics creates new opportunities for organizations to differentiate themselves and create competitive advantage. Don't put yourself in the position of having to omit data just because it will be too difficult to aggregate with other data you are using.
- **Automate data blending and preparation tasks.** To meet the challenges of complexity and a wider end user community, organizations need solutions that provide business users with self-service capabilities. Save time and drive return on investment (ROI) by deploying data preparation tools that automate query, aggregation, data quality, and transformation tasks.
- **Add self-service tools.** With a shortage of skilled data management staff to perform complex data integration, reporting, and analysis work, organizations should invest in self-service tools that enable users with limited IT or analytics expertise to more easily complete these tasks. Some solutions that leverage crowdsourcing to share integration methods are known to work well.

Use Case

Shire, a global specialty biopharmaceutical company, had been using a complex network of heterogeneous systems, including LIMS, Excel, and JMP to manage vast amounts of manufacturing data. Employees could manually collect and report on key findings, but ensuring accuracy was extremely time-consuming.

The organization selected Statistica, which provides a validated single point of entry for data capture across processes and locations. Business users were able to publish charts, graphs and reports to a web portal, improving accuracy while saving considerable time.

Barriers to strategic, efficient data analytics

With all data collected, integrated, and assessed to ensure integrity, analytics processes can begin. But analytics executives face both corporate and technical challenges to effective data analytics.

Corporate challenges include:

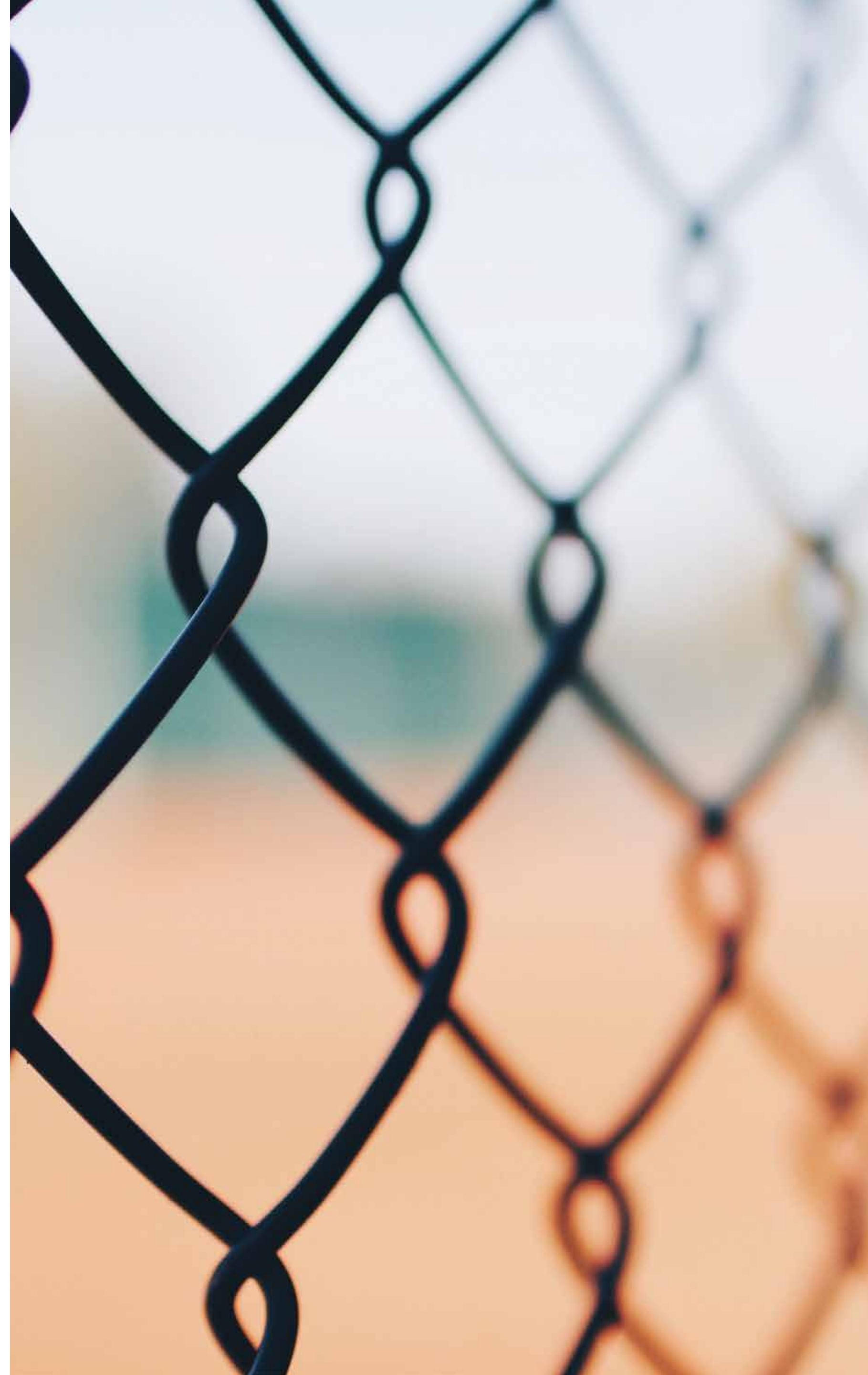
- Lack of deep analytics skills
- Cultural adoption of analytics
- IT backlog
- Productivity drains

IT challenges include:

- Legacy systems
- Complexity
- IT support and governance requirements

The following sections explore these challenges in turn and recommend ways to break through the barriers.

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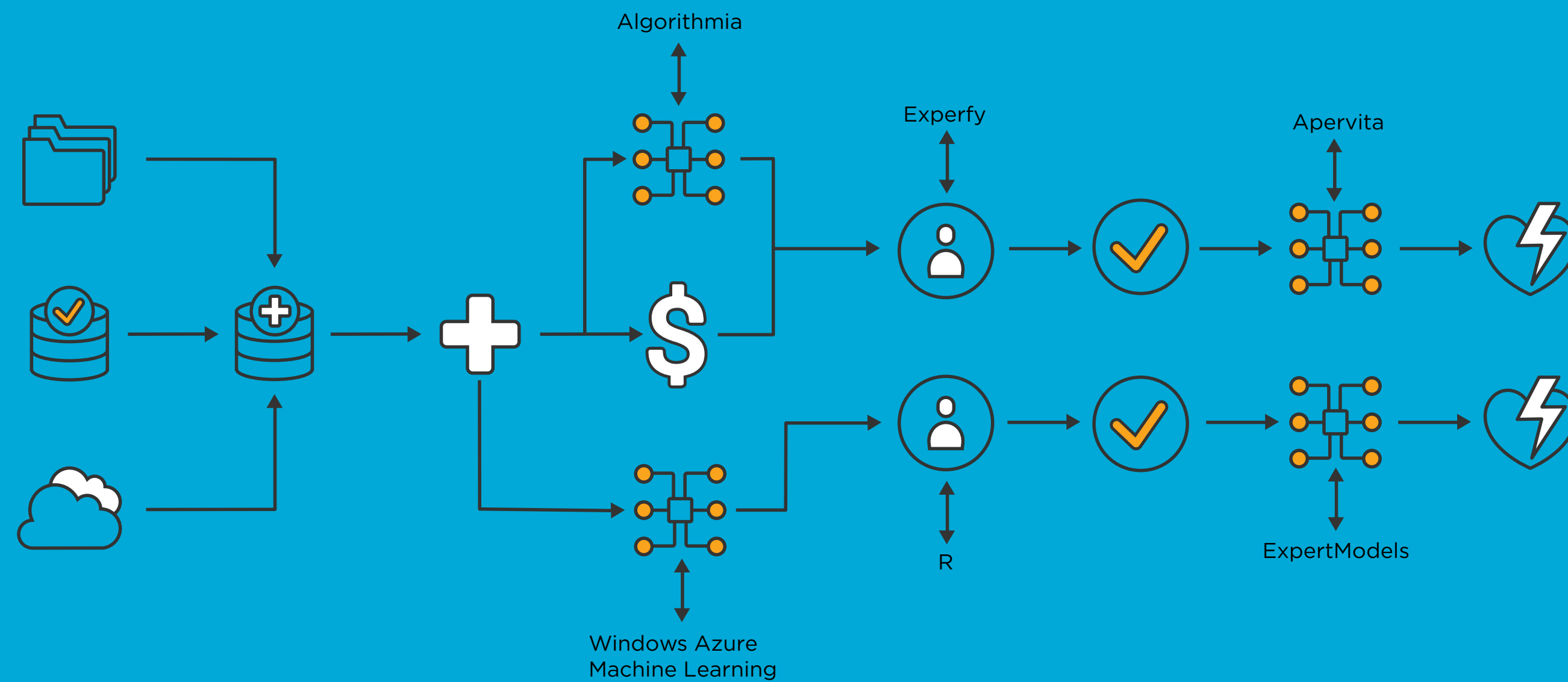


Figure 1. By pairing algorithms developed in-house with others available from analytics marketplaces, organizations can benefit from collective intelligence.

Corporate challenges

Lack of deep analytics skills

Despite heavy recruiting for analytics talent, many organizations lack the expertise they need to move beyond basic analytics and develop integrated processes to drive business change.

To break through this barrier, analytics executives need to:

- Accurately assess analysts to identify gaps in their skills.
- Implement training programs to advance professionals with less experience or skill gaps.
- Invest in analytics and data visualization tools that help automate tasks to make users more productive.
- Take advantage of collective intelligence. By pairing algorithms developed in-house with others available from analytics marketplaces, analytics professionals benefit from the wisdom of crowds. To take full advantage of internal and external analytics skill sets, it's important to select an analytics platform that incorporates a variety of algorithms from different sources, such as R, Microsoft Azure Machine Learning, Algorithmia, and Apertiva.

Cultural barriers to the adoption of analytics

Often, adoption of business analytics is driven by a directive that comes down from the C-suite. Unfortunately, there are often misconceptions about what resources are needed to develop usable analytics, and staff with analytical skill sets and those with functional expertise are siloed.

To break down this barrier, analytics executives need to:

- Understand that breaking an inherent culture requires a mind shift, which doesn't happen overnight. They need to develop a vision of where the organization can be in terms of using analytics and educate everyone on realistic expectations and timeframes.
- Realize that cultural adoption happens more quickly when approached bilaterally, from the ground up and from the top down. With a vision established, get the C-suite on board to hand out directives while arming junior analytics staff on quick wins to establish support from the bottom up.
- Develop joint teams to eliminate silos of professionals skilled in analytics and professionals skilled in business functions.



IT backlog

IT professionals often have too much to do, so they tend to focus on keeping business operations running smoothly by addressing areas such as security, privacy, and governance. Other items, that from their perspective are lower priority, may go uncompleted — but those projects may be extremely important to specific business units. As a result, analytics executives may find their projects waiting in line for IT's attention.

To break down this barrier, executives need to enable users to pull together the data they need and run the analyses that are important to their business units, with IT and business analytics executives available for support. Dozens of information management and analytics tools are available to support self-service analytics, data preparation, and visualization. To avoid training costs, look for solutions that are intuitive and easy to use.

Analytics executives need to develop a vision of where the organization can be in terms of using analytics and educate everyone on realistic expectations and timeframes.

Productivity drains

Too often, analytics executives spend their time on activities such as managing the IT infrastructure to ensure data collection is happening or deploying analytic workflows by re-coding processes, rather than actually building new data sets with different data sources.


To break down this barrier, analytics executives need to:

- Make it clear that innovation occurs when executives can actually perform analytics functions, such as identifying where data can make the best impact on the business. Work with management to identify other resources to manage the infrastructure.
- Calculate the time needed for lower level tasks that can be automated to make a case for additional support. Money always talks, and inefficiency often comes with a big price tag.

Use case: identifying where data can make an impact

Surgeons at the University of Iowa Hospitals and Clinics needed to know if patients were susceptible to infections to enable critical treatment decisions to reduce the infection rate.

The hospital used Statistica to analyze data and make real-time predictions in the operating room. As a result, surgical site infections decreased by 58 percent, improving patient health and reducing costs, as well.



Innovation occurs when executives can actually perform analytics functions, such as identifying where data can make the best impact on the business.



IT challenges

Legacy systems

Legacy systems, and the languages used to build on or pull data from those systems, are often proprietary, which limits innovation. For instance, it would be extremely difficult to invoke an analytics workflow or method from a web service via a legacy platform. Nevertheless, the cost to rip and replace a legacy platform is high, so even if analytics executives know a better long-term solution exists, an overhaul might be vetoed by those holding the purse strings.

To break down this barrier, analytics executives should:

- Call attention to hidden costs. Yearly license renewals and maintenance could cost millions, meaning a replacement should break even more quickly than executives might think.
- Look for modular and embeddable analytics technology that can fit into or leverage existing systems.
- Consider the alternative to replacing the legacy solution: working around it.
- Look for simple solutions. There's no need to pay for a high-end system with many bells and whistles if you need to complete a fairly routine task.
- Avoid making a similar mistake by thinking twice about deploying a single system to solve all your data, infrastructure, and analytics challenges. While it may seem like there is simplicity in deploying a system from a single vendor, it's difficult to truly get everything you need within one platform. Again, modularity is key.

Look for analytics technology that can fit into or leverage existing systems. Modularity is key.



Use case: speeding ROI by improving processes

Danske Bank Group needed to quickly build and deploy advanced analytical models to deliver around-the-clock services to customers. For example, it needed risk models that predict the credit worthiness of loan applicants and models that assess the value of assets.

The bank's method for creating and updating its analytical models was a slow, labor-intensive process, which impeded its ability to quickly and accurately respond to customer needs. As a result, Danske Bank Group found itself at a competitive disadvantage compared to financial institutions that had superior analytics capabilities.

By adopting Statistica, Danske Bank Group was able to speed the development and deployment of analytical models by 50 percent. Statistica also deployed easily and integrated smoothly with existing systems, enhancing ROI.

Complexity

As new types of data and data generators are created, new platforms quickly become legacy platforms — and therefore need constant upgrades or add-ons to stay current. With each deployment comes increased complexity and resource demands.

To break down this barrier, analytics executives should:

- Consider technology that's built from the ground up to complete analytics functions in a holistic way. A vendor with hundreds of SKUs should be a warning flag.
- Avoid getting sucked into a services play by a vendor that will add on applications year after year.

IT support and governance requirements

Skilled staff are required to run and manage analytics solutions and platforms. That includes ensuring proper governance, particularly in regulated industries. That makes talent even harder to find and more expensive.

To break down this barrier, analytics executives should:

- Consider the level of support staff required when evaluating new technologies. Ask current users of the product whether their expectations for support matched reality.
- Remember that many analytics solutions, particularly those built from the ground up, have been validated to provide control, governance, and security.

Empowering analytics executives with Statistica

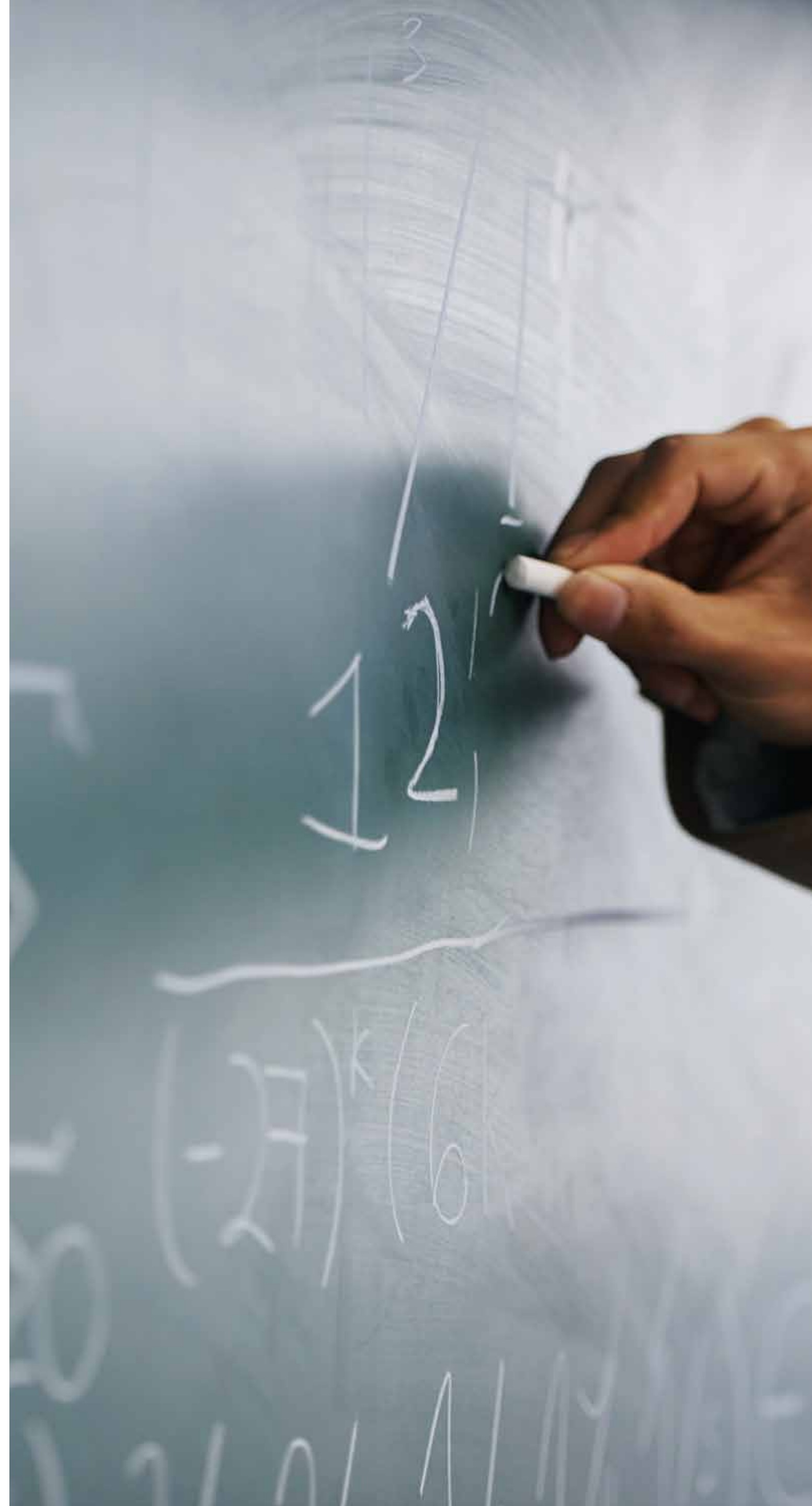
Most analytics executives have come across at least some of the barriers detailed in this ebook. As we have seen, changing corporate structures and legacy systems can help break down those barriers, but often, technology solutions are a more effective strategy. Statistica is one of the most intuitive and comprehensive predictive analytics software solutions on the market. Statistica:

- Simplifies big data analytics to empower the business. Statistica enables analytics staff at any level of expertise to perform advanced analytics by providing easy-to-use recipes and quick-start templates for data mining, predictive analytics, machine learning, and data analysis of big data. Moreover, Statistica works with all data (structured, semi-structured, or unstructured) from any source (including relational databases, NoSQL databases, and modern big data repositories from practically all vendors), whether it is in the cloud or on premises.
- Streamlines implementation and deployment. Statistica is a fully integrated, configurable, cloud-enabled software platform that you can deploy in minutes using industry-standard scripting languages, and it offers native R integration as well as integration with Microsoft Azure Machine Learning.
- Extracts actionable insights from text. Statistica enhances your operational agility and gives you a competitive advantage with out-of-the-box extraction and analysis capabilities that uncover actionable intelligence in vast amounts of diverse data, whether it is in a database or Hadoop, on premises or in the cloud.
- Delivers strong ROI. Modular architecture, easy implementation, and unrivaled simplicity for business users make the solution extremely cost effective for organizations large and small.



Statistica enables analytics staff at any level of expertise to perform advanced analytics by providing easy-to-use recipes and templates for data mining, predictive analytics, machine learning, and data analysis.

Figure 2. Statistica helps analytics executives turn big data into a competitive advantage



Solutions that complement Statistica

In addition to Statistica, analytics executives have turned to other solutions to complement its functionality.

TIBCO Cloud™ Integration

This platform as a service (PaaS) enables you to combine cloud and on-premises applications — without software or appliances. You can sync data between business-critical applications, either on premises or in the cloud, such as Salesforce.com, while eliminating the costs of legacy middleware, appliances, and custom code.

TIBCO BusinessWorks™

Seamlessly connect all applications and data sources that keep your business running day in and day out.

TIBCO BusinessEvents®

Build distributed, stateful, rule-based event-processing systems for experimenting, learning, and quickly evolving.

TIBCO StreamBase®

Quickly build applications that analyze and act on real-time streaming data.

TIBCO® Live Datamart

Perform continuous queries and computations against high-speed streaming data and events. Because you're continually up-to-date on changes, your real-time operations and analytics can leap to the next level.

TIBCO Spotfire®

Help everyone in your organization gain deep insights from their data through built-in immersive data wrangling, and rich visual, predictive, and geoanalytics capabilities. Whether you want to explore your data, create simple dashboards, or develop powerful analytic applications, Spotfire is easy to learn and easy to customize.

TIBCO Jaspersoft®

Make your on-premises or cloud app shine with killer dashboards, cool visualizations, self-service reports, and rich analytics using an easily embeddable, web-scale, business intelligence platform.

Conclusion

With expectations high, but skilled staff in short supply, analytics executives should seek powerful yet easy-to-use tools that can be quickly deployed without an expensive overhaul of legacy systems.

Analytics executives have a unique opportunity to help their organizations unlock valuable insights, solve problems, improve products and services, and gain a competitive advantage. In some cases, enabling advanced analytics might require major changes to corporate culture and existing infrastructure, but, as this ebook explains, there are often other options for breaking through to an effective analytics program. In particular, with expectations high but skilled staff in short supply, analytics executives should seek powerful yet easy-to-use tools that can be quickly deployed without an expensive overhaul of legacy systems.

[Learn more](#)