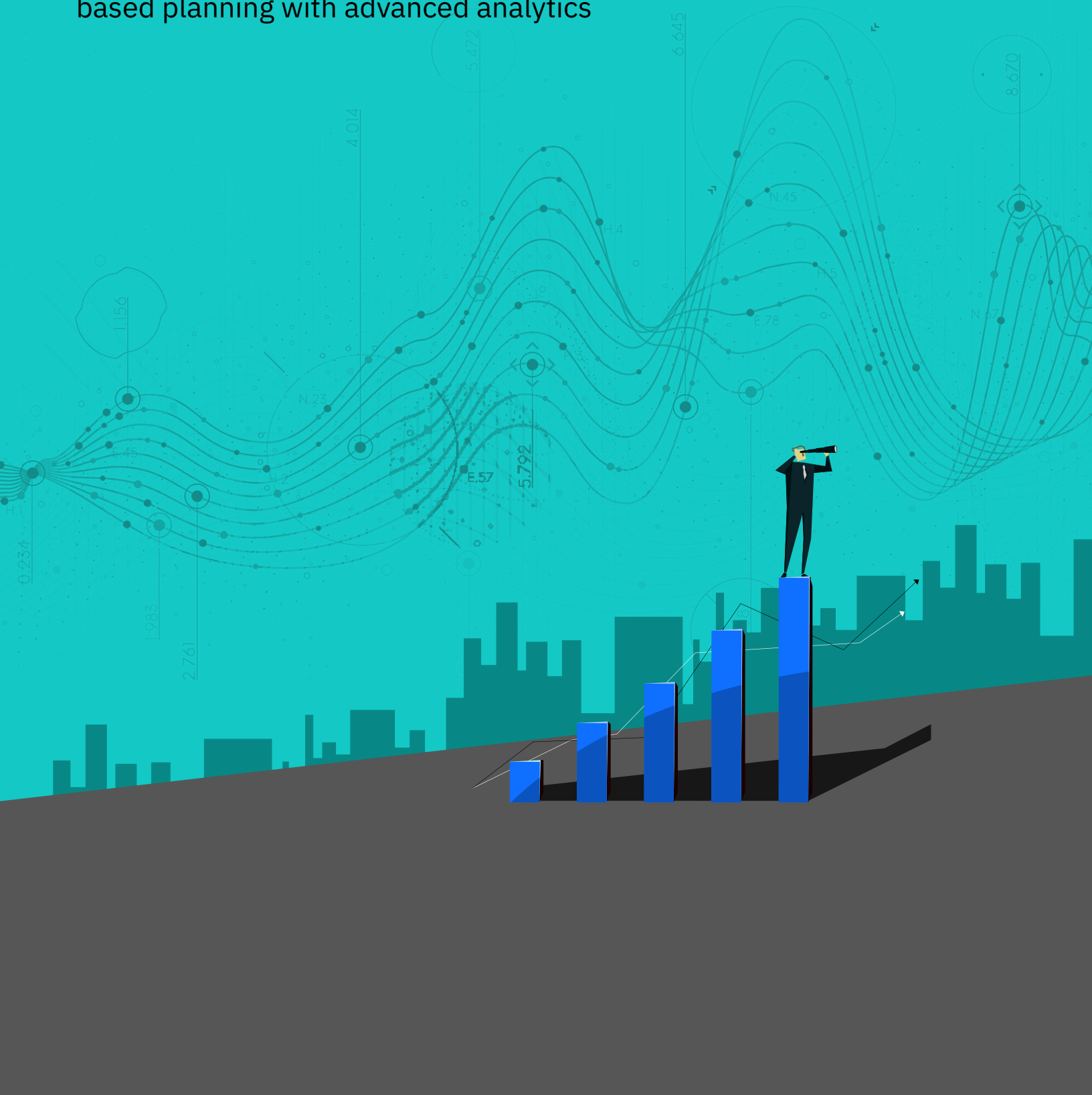
Accurate forecasting and optimized planning:

Get accurate forecasts and better, constraint-based planning with advanced analytics



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I. Introduction

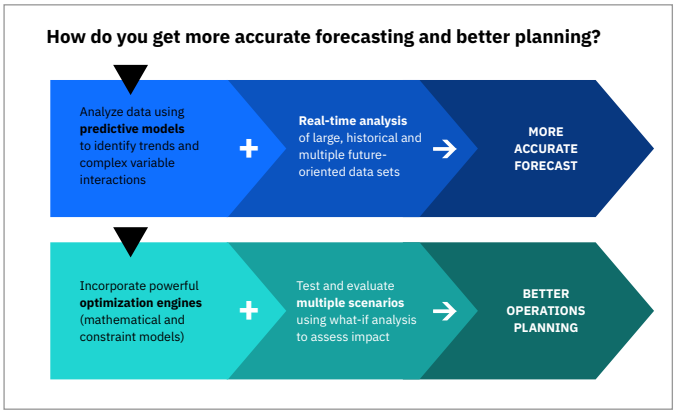
Siloed teams and misaligned plans are a bane for organizations when it comes to demand forecasting and planning. When operations, sales, and product teams use disparate data, apply differing assumptions and perspectives, this creates misalignment in an organization's overall expectations and performance. This is especially true in supply chain management. Surprisingly, **only 6% of firms say they have achieved full supply chain visibility**. And supply chain visibility has risen from the sixth most important priority in 2015 to the third most important in 2017.[1] Slow, error-prone manual planning cycles can create a mismatch in supply and demand, overstocking, or stock outs. Lack of timely allocation of resources means unfulfilled orders which results in substandard product quality. And all the delays can create issues in getting your next planning cycle together before the holidays hit!

Conversely, when the process is collaborative and plans are aligned with financial goals across the organization, alternative scenarios can be analyzed, tradeoffs between revenue, margins, and working capital can be optimized. The best options can be identified so that plans are more accurate. Gartner has predicted that **by 2020, at least 25% of large organizations will increase planning accuracy by integrating key operational planning processes with financial planning and analysis.**[2] The Financial Executives Research Foundation found that collaboration across business and finance, departments and geographies helps drives competitive advantage. **Collaboration results in more accurate forecasts** and improves a company's agility. It improves the ability to identify high-value product enhancements, target customers more effectively, and gain operational insights.[3] The need for better collaboration and better demand forecasting and planning solutions also applies to data science teams, that can now apply complex optimization models and what-if analysis capabilities in this process. They can deploy models into production faster and reduce the chance of costly re-work.

The need for better alignment applies primarily to two key audiences:

- **Leaders in operations, supply chain, sales, manufacturing, product development, IT, finance, marketing, and HR.** All these areas need to work together as a "Dream Team" in the planning process to create a better forecast and a more accurate plan with the complete view of inventory, production and revenue, and alignment of corporate and operational objectives. Business leaders accomplish accurate forecasting and better planning with predictive models and powerful optimization engines.

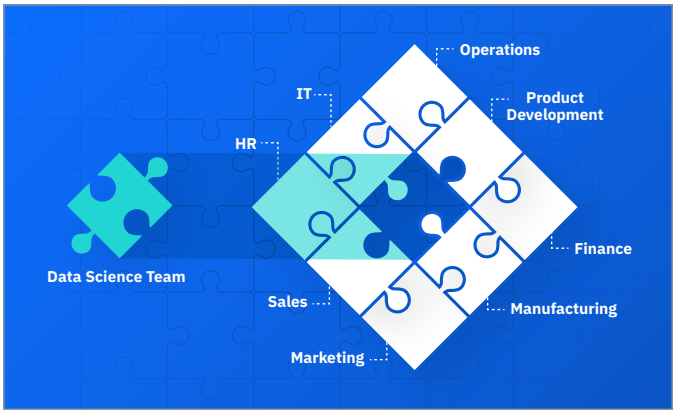
- **The data science leader** needs to support line-of-business demand planning, with sophisticated yet easily shareable mathematical models that factor in business constraints and trade-offs, and evaluate what-if scenarios. At the same time, this leader needs to maintain a highly productive, balanced team comprised of data scientists, analysts, and data engineers. Why? Data science leaders strive to achieve forecast and planning accuracy, reduce model production from months to days, and forge closer collaboration with the business.



Read on to understand the full consequences of misalignment, and gain insight into how an organization's functions can work in concert to achieve more accurate forecasts, and with solutions that enable more optimized financial plans for better performance.

II. The LoB Leader

Most organizations already perform basic demand forecasting and planning. Yet many likely do not incorporate predictive and optimization capabilities. Much like 3-time professional basketball championship winner, Dwyane Wade with help from talented teammates like LeBron James, business leaders can win big by working together and maximizing each function to its full potential. Picture this scenario: a supply chain leader lacking communication with sales, product development and the other business functions, reactively relied on an organization that was creating forecasts manually, based on a slow data collection process using error-prone spreadsheets, and struggling to fill orders and to correct faults in product quality. This results in disparate data sources and silos, disconnected planning cycles, and inefficient allocation of resources. But no more! The supply chain leader can make it to the finals and be the MVP. With the right solution, leaders can review and update rolling sales forecasts with the greatest of ease, create unlimited what-if scenarios on-the-fly, determine the best product mix, fix quality problems and optimize production quantities. Organizations can also do this with better accuracy based on large, historical data sets, using predictive modeling (versus manual planning), and optimized inventory, factoring in ever-changing business conditions.



It sounds too good to be true, but it's not just a legend. To get to the finals and win, the business leader can strive towards the following:

1. Get an accurate view of what's happening today, based on historical data

Incomplete data, siloed analysis, and misaligned plans can lead to poor financial outcomes. An interactive, customizable planning workspace can enable leaders to measure and monitor performance, evaluate plans, identify gaps, diagnose root causes, and test the impact of different scenarios before taking action.

2. Produce more accurate forecasts with predictive modeling

Slow, error-prone and disconnected planning cycles, without predictive analytics, result in 60-70% of employee time spent on manual data collection and validation. Incorporating predictive modeling can identify trends and complex variable interactions to generate highly accurate forecasts at the distribution center level and help eliminate stock-outs and fall outs at the store level.

3. Optimize inventory and supply, based on changing business conditions

Changing conditions and demands can result in unfilled orders or the wrong product mix. To optimize inventory and supply, business leaders need the ability to perform complex multidimensional analysis of large, historical, and multiple-feature-oriented data sets. Accurate plans, which factor in all business variables, constraints, and trade-offs require powerful optimization engines that solve mathematical and constraint-based scheduling to recommend the optimal action.

If you're thinking – "this is great. But, where do I start?" Learn more about one solution that addresses these needs. Create plans in minutes instead of days, help determine the best production mix and quantities in the right locations at the right time, produce unlimited what-if scenarios, and do all of this using real-time analysis of large historical data sets with:

One Analytics Solution

IBM® Planning Analytics™
See #1,#2, #3

IBM® SPSS Modeler™
See #2

IBM® Decision Optimization™
See #3

III. The Data Science Leader

The data science leader's role is to ensure their team quickly moves models from the early experimentation phases to a production environment. Like a championship team coach, data science leaders must utilize the skill sets of each team member with maximum efficiency and accuracy. They are challenged to demonstrate the business value by helping drive accurate demand forecasts and plans. Data science teams can use powerful forecasting and optimization tools to recommend optimal allocations and scheduling of scarce resources. Relying on gut instinct or simplistic approaches is a sure-shot recipe for sub-optimal forecasts and plans especially because of the complexity involved in considering all possible decision variables, constraints and tradeoffs. With the right advanced analytics tools, data science leaders can help the line-of-business quickly resolve business problems with optimization and better forecast models. The right solution can create automatic recommendations for the line-of-business to allocate, schedule, and plan resources, and speed time to value from sandbox to final production.

4. Show value to the business quickly

Data science leaders need to provide quick insights and visualizations, assist in model-building and deployment, and balance these challenges with demonstrating value to the business.

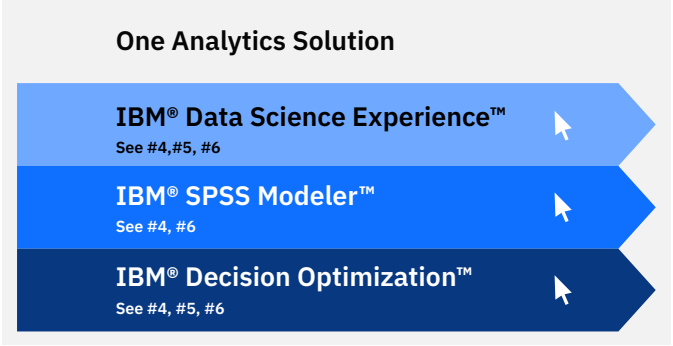
5. Get sophisticated tools to support model creation

Data science teams need to be outfitted with tools that can maximize the value of machine learning insights by running sophisticated optimization models that factor in business constraints and trade-offs, and evaluate scenarios to find the best course of action. Then they need to iterate, tune, and refine their plans by collaborating with the rest of the business.

6. Let data scientists work with their existing setup

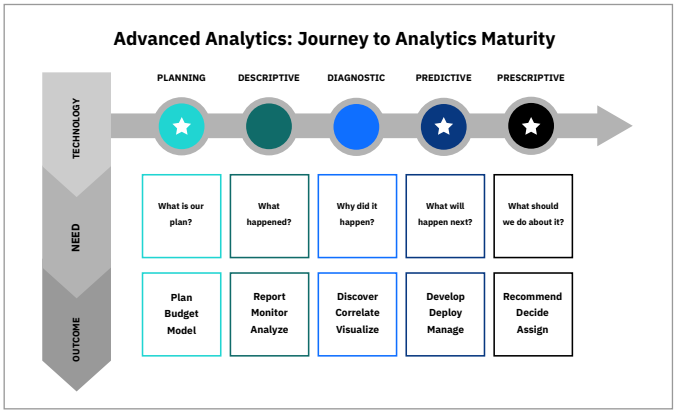
From a business standpoint, it's difficult to acquire and retain data scientists, simply because they're in such great demand. Thus, organizations need to create collaboration between data scientists with a variety of programmatic and visual skills, or help business users learn new skills so they can self-service and offload some early-phase work for the data scientists. And data scientists prefer the flexibility to use existing skills rather than being forced to learn new skills, such as mandated proprietary programming languages. Letting data scientists use their existing setups and existing skills like Python, C, or C++, gives them flexibility and removes technological roadblocks. Providing them with an environment where they can use familiar skills removes impediments from experimentation to production, improves accuracy, and reduces unwanted employee churn.

If you're thinking – "this is great. But, how can my team take advantage?" Learn more about one solution that addresses these needs. Quickly convert business problems into optimization and forecast models, enable greater forecast and planning accuracy, get closer collaboration with line-of-business users, and move models into production in days rather than weeks or months:



III. How it all fits together

To encourage data-driven decision-making and address the needs of both business leaders and data science leaders, an organization requires a range of capabilities spanning the entire spectrum of a mature analytics strategy, from planning and reporting through predictive and prescriptive analytics. And to make it to the championship, organizations need a solution that can facilitate collaboration across the lines of business and create greater integration with the data science team.



1. Better demand forecasting for LoB Leaders

Business leaders can reap numerous benefits by implementing a single solution that addresses their specific needs along the spectrum of advanced analytics. These benefits include connecting data sources across the company to create an integrated plan and delivering a 360-view of the business based on all the necessary data. Seamless integration of optimization in the same view as planning can also help business leaders quickly understand the existing data, find patterns and correlations, and identify the best options. And an intuitive, collaborative planning process can allow multiple units within the organization to work in the same view, adding notes and actions to help stay connected. Accelerating reporting from days to minutes allows more time for analysis, rather than wasting time on slow, manual data collection.

2. Better demand planning outcomes for Data Science Leaders

Data science leaders can gain benefits by implementing a single solution that addresses their specific needs along the spectrum of advanced analytics. These benefits include high productivity in data preparation, machine learning, model management, deployment and more. Now, teams can easily conduct what-if analysis and combine various data science capabilities to optimize business outcomes. Data science teams can empower the business with integrated predictive and prescriptive analytics, which can be fed from models to the planning tool. They can share visual dashboards for line-of-business users and easily validate models with interactive visualizations. Teams can bring their models to the data or vice versa, whether in on-premises or on-cloud deployments, and promote collaboration with seamless access to managed cloud service for Dev IDE. This gives data science teams the agility to work in a sandbox environment, and easily integrate results into a production environment for planning tasks.

3. The combined Demand Forecasting and Planning solution will incorporate:

• Planning and analytics capabilities to help you create more accurate plans, budgets and forecasts with real-time access, unlimited what-if analysis and multi-dimensional modeling. See: IBM Planning Analytics

• Predictive analytics capabilities to help you build models that quickly deliver predictive insights without the need for programming skills.
See: IBM SPSS Modeler

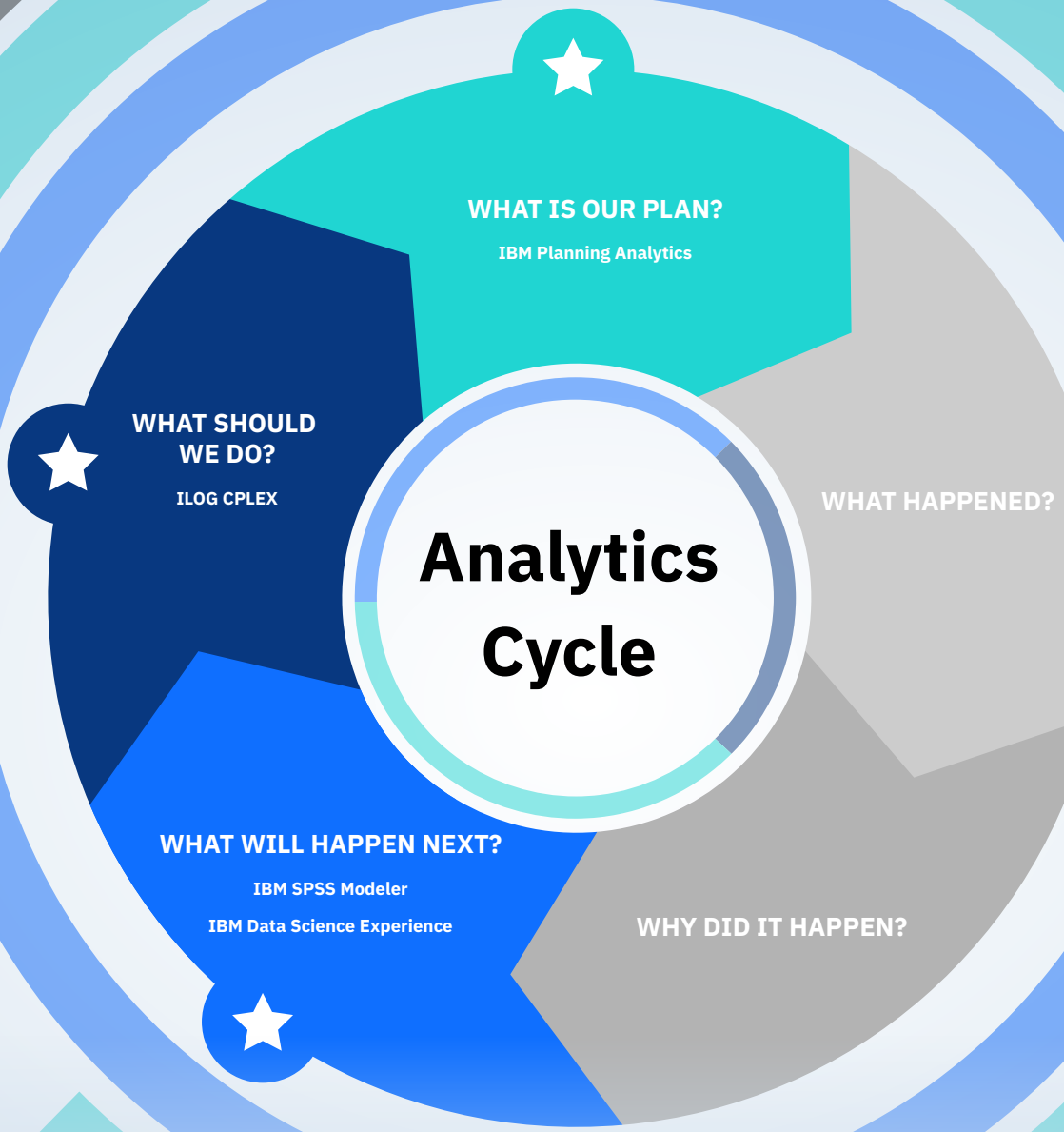
• Optimization capabilities to select the best scenario given trade-offs between business goals while considering business constraints on available resources. See: IBM Decision Optimization

• Machine learning capabilities to manage models across teams using open source tools, and to deploy models that can to detect hidden patterns, predict outcomes, recommend actions, and create data-driven applications. See: IBM Data Science Experience

• In addition, organizations can take advantage of flexible purchasing models for the solution, which enables the deployment of these capabilities as needed, offering the ability to use capabilities in various combinations and for users of different skill levels. Organizations can choose to use only the capabilities required today, knowing that as future needs grow or change, users and/or capabilities can be added.

Learn more about the solution

Experience the solution in action



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1 Supply Chain Worldwide Survey, GEODIS, 2017.

2 Gartner Predicts 2018: SaaS Financial Management Applications Increase Integration, Automation and Sophistication, Gartner, 2017.

3 David Pelland, Thomas Thompson, “Forecasting as a Competitive Advantage: Optimizing Business Planning With Advanced Analytics,” Financial Executives Research Foundation (FERF), July 2017.

IBM Business Analytics
IBM Corporation
1 New Orchard Road
Armonk NY 10504

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