PROFITECT

Erasing the Bias: How Profitect is Reversing Thirty Years of Misinformation

Gartner

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With a reputation of lies and under delivered expectations, purchasing an analytics solution is comparable to purchasing a second hand car. Although there is a stigma that used car salesmen are often misleading, people regularly purchase used cars, taking into account the potential risk. In comparison, buyers are continually let down by their analytic solution, but it is a risk that companies are willing to accept on the off chance that the solution does what is promised. Although routine disappointment establishes a cynical attitude towards prescriptive analytics and its promises, the benefits often far outweigh the risks. Below, John Deane, former CIO of Abercrombie and Fitch, cites the major constraints in different analytic solutions, how to combat them, and how Profitect is working to reduce the bias of traditional analytic solutions.

"Meaning that after all the time and money spent implementing a solution, the passive nature of the reports delivered by most vendors leaves traditional business intelligence tools underutilized and undervalued."

"The promise is that the outputs - often in the form of reports - will generate value, but that is not the case."

30 Years of Lies - John Deane

Over the past 30 years, I repeatedly encountered the same idea when it comes to the implementation of an IT project: vendors always underestimate the amount of time it takes to get up and running and we, the customer, just accept that part as the cost of doing business. Retailers shouldn't sit by and lose money by accepting the failed promises of analytics providers anymore. The lies often deal with implementation time, the effectiveness of the information produced, and ease of use of a solution that drives adoption.

Implementation Time + Actionable Findings = Opportunity Cost

The opportunity cost in choosing an analytics provider is the money lost by using a solution with a longer implementation time. For example, Solution A has an implementation time of 6 months, and after that an inefficiency is found and corrected, saving the buyer $1,000 per week. If Solution B is implemented in 3 weeks, and finds the same inefficiency, the opportunity cost by choosing Solution A is $21,000 - the money lost by the customer while Solution A is being implemented. This means the time it takes to implement a solution has a tangible cost to it. Not just the financial cost of the vendor, but the opportunity cost of not finding actionable opportunities early. Often, the slower the implementation the higher the opportunity cost.

The promise is that the outputs - often in the form of reports - will generate value, but that is not the case. These reports require additional time confirming their accuracy, finding the insights and deciding on the appropriate action. Finally, someone has to take action to ensure value is realized. Additionally, most analytics solutions deliver their reports through email making it difficult to determine if they were ever read, interpreted or acted upon. Meaning that after all the time and money spent implementing a solution, the passive nature of the reports delivered by most vendors leaves traditional business intelligence tools underutilized and undervalued.

Source: Profitect

Another pitfall to traditional analytics is that it requires dedicated analysts who are trained, understand the data & the business, and are responsible for generating all of the outputs. This limits productivity because you are dependent upon a select few for every new request. Furthermore, analysts are not always business minded, and may not be able to address the request in an appropriate way that generates the value expected.

Updating to the Newest Technology

The latest form of analytics, known as prescriptive analytics (PA), has changed the nature of business intelligence. PA has taken the passive report and created actionable insights- including a description of information, a judgement, a root cause, a consequent best practice to optimize the outcome, and the ability to pass on an assignment to a specific agent, all in the same product. However, this has also increased the opportunity cost behind slow implementation. Since actions are generated at a much faster and more accurate rate with PA, the longer it takes to get a system up and running,the more money you may be losing.

That is why one of the key things to look for when shopping for an analytic program is the opportunity cost of implementation, which is often not factored into the decision making process, and should include every other possible event that could affect a timely implementation. Additionally, a long implementation can begin to cloud an organization's original intentions. The longer it takes to begin using a solution, the greater the risk that objectives can be lost, which increases the probability of a failed solution.

In addition to quick implementation, using a solution that can analyze a wide variety of data is necessary for success. In addition to losses, you need to find an analytic solution that also aims to minimize other profit leaks. Minimizing profit leaks means finding inefficiencies in day to day operations that could amount to losses, in both profit and margin. For example, poor cashier training can be a root cause of profit leaks in the final stage of a sale, while inadequate inventory management can cause lost sales if a product is not displayed on the shelves correctly. In these instances, the inefficiencies can be reversed fairly quickly - by retraining employees. Analyzing unconventional data from a wide variety of sources can uncover inefficiencies and correct them, minimizing profit leaks.

Since it's development, data analytics has had a reputation for being a slow process. Analysts themselves, as well as their available tools, can be to blame for this. Data analysts in general may be slow to adopt new technology out of fear that it may not be successful, or simply because they want to continue to work with what they are comfortable with. Also, because most solutions are dependant upon an analyst to collect the data, when they take a vacation often so does progress. Additionally, using new technology can often become costly because it requires new installation and sometimes new equipment. In it's infancy, data had to be gathered and analyzed by hand. Once reports were generated, they were sent out to managers, who had to analyze them once again in order to learn anything from them.

Evolution of Analytics

The first type of analytics used in retail was descriptive analytics. They were "manually performed" and included "visualizations such as pie charts, line graphs, tables, or generated narratives" (Gartner Online IT Glossary). This primary method of analytics was largely unsuccessful due to the time it took to perform, not to mention the additional analysis required on behalf of the store managers. Reports simply stated what happened in the past, but gave no indication as to why it happened or what to do about it. Any time the business side needed to see more data, IT had to spend significant amount of time ($) to provide the additional data.

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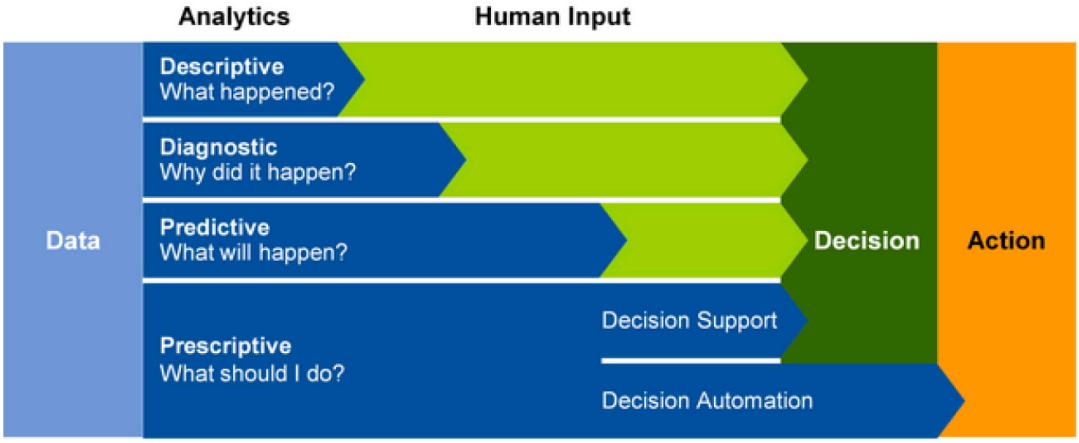

Source: Gartner

"Prescriptive analytics searches the data for opportunities to improve, and gives direction to the end user to act on these opportunities and generate the best optimized success."

"Profitect aims to reverse this bias by providing a powerful analytics tool that encompasses all aspects necessary for success."

From descriptive analytics, diagnostic analytics was born. According to the Gartner IT Glossary, diagnostic analytics is described as "a form of advanced analytics which examines data or content to answer the question "Why did it happen?", and is characterized by techniques such as drill-down, data discovery, data mining and correlations. Diagnostic analytics paved the way for both predictive and prescriptive analytics - looking into why an event occurred is the beginning of solving the problem and correcting it, preventing it from happening again (How to Get Started with Prescriptive Analytics).

Predictive analytics, a step behind prescriptive and what many companies still implement today, is defined as any form of data mining that contains four components: emphasis on making predictions, rapid analysis, and a focus on business relevance of results and on ease of use (Gartner IT Glossary). The difference here [between predictive and prescriptive] is that users are looking for a product that gives them the necessary information, and that the information is easy to find. These are "Smart machine for Smart people".

Prescriptive analytics takes predictive one step further. Categorized by the Gartner IT Glossary as a form of analytics that answers the questions "what can we do to make ___ happen?" and "what should be done next?" Prescriptive analytics is the most efficient and most well equipped analytics division available today. The difference between predictive and prescriptive is how the end user is notified. With predictive analytics, the user is given a report that identifies what might happen if current trends are to continue. Prescriptive analytics searches the data for opportunities to improve, and gives direction to the end user to act on these opportunities and generate the best optimized success.

Large quantities of available data combined with a decrease in the cost of technology "has given enterprises the opportunity to greatly improve their operational effectiveness and efficiency" while simultaneously generating a need for "decision management to help them deal with the volume of data and the complexity of computation" in their day to day operations (Finding the Best Approach to Decision Management). The convergence of both the opportunity to optimize available technology and the need for it has given life to prescriptive analytics by creating a market for such a solution as well as the platform to execute it.

Joao Tapadinhas from Gartner states that "even if it comes at the expense of slower deployment, data and analytics leaders must embrace all aspects of the implementation challenge - including platform capabilities, integration touchpoints, governance model, roles & processes.." (How to Implement a Modern BI and Analytics Platform). This implies that in order to be a successful prescriptive analytic tool, one must have a slow implementation process. Profitect aims to reverse this bias by providing a powerful analytics tool that encompasses all aspects necessary for success, and delivering on these promises much more quickly than competitors. For example, a popular shoe retailer implemented Profitect, and "all 450 locations [with] about 18 months worth of data, [was] live in the system in about three days."

Why is Outsourcing the Most Economical Idea?

When it comes to implementing a data analytics program in your business, there are three options: build, buy or outsource.

Building your own program is pretty self explanatory - it requires extensive research into your own company to determine what you look to get out of the solution, and then what steps to take to achieve this goal. Once the goal is set, developers must build the solution, thus making it time consuming and expensive. With building a homegrown, in-house team, time and resources are the biggest factor. These programs often take time to build, and require a team of analyst and IT experts, project managers, designers, product managers etc. The benefit of building your own tool is that it is specially crafted to fit your company needs, and can be adjusted as necessary. Since homegrown tools often require a large time and money, it is important to demonstrate the value of their existence, and receive organizational buy-in, proving the long term investment in prescriptive analytics. A negative of home grown solutions can be the lengthy trial and error period. Since the methods are tailored to your needs, it is more difficult to resolve problems because there isn't a "role model" to base decisions off.

Buying a prebuilt program can be beneficial, if your problem is stereotypical of other retail companies, and you operate in a similar fashion. These "off the shelf" solutions are usually the least expensive because there is limited personalization involved. This limitation could inhibit your company from getting the most value out of the product. If applications exist that are made to solve your problem, "they are often good enough," and can provide generic solutions and tips to recover profits (How To Get Started With Prescriptive Analytics, Gartner 2015).

Outsourcing to a prescriptive analytics provider, such as Profitect, is the most economical decision because of the reasonable cost and potential value of a personalized analytic solution being delivered quickly with configurability towards your needs. Although more expensive than a prepackaged application, a provider can configure the services you receive to fit your needs, and train users to get the most out of what they are given, thus dramatically increasing the value to its user. In addition, you can trust that your data is in the hands of competent analysts, and you do not need to invest your time and effort into building a data warehouse and algorithms from scratch.

Quick Implementation

It has been commonplace in the data analytics market to have implementation times of weeks, months, sometimes years! Profitect prides themselves on being able to have a much quicker timeline - sometimes as quickly as three days. A representative from a popular national grocery chain notes that "the implementation time for Profitect is unbelievably quick in comparison to what else is out there in the industry, from time of decision to having the tool with store managers was a couple of weeks."

In "Magic Quadrant for BI and Analytics," Gartner analysts discuss the importance of fourteen critical capabilities for the success of a prescriptive analytics platform. These capabilities include: BI Platform Administration, Cloud BI, Security and User Administration, and Data Source Connectivity, just to name a few.

Analysts highlight the need to sacrifice deployment time in order to achieve all these points. But enterprises fail to realize that a long implementation phase means increased losses. The ultimate goal of any prescriptive analytic platform is to save users money - through objects recovering profits or minimizing losses. Say, as an example, a company is unknowingly losing

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$10,000 a week in a process that would be easily discovered and corrected once an analytic tool was put into place. If the tool takes six months to successfully start analyzing, that is $260,000 in lost profits. If the same company, with the same unknown weekly losses, started using Profitect, they would generate 87% more, or $230,000 in profits (assuming a three week implementation) because analysis and opportunities would be generated more quickly, meaning the problem could be discovered and resolved in a fraction of the time.

Customer - Centric v. IT - Centric

In How to Modernize your Business Intelligence and Analytics (BI&A) Platform for Agility Without Chaos, Gartner analysts discuss the necessities for deriving value from a prescriptive analytics tool. "To drive value, the modern BI&A platform must not only leverage a diverse array of data sources and expand access to a range of users across the enterprise, but also assure adequate governance of self service content." This means that a successful BI&A tool will give users the opportunity to find solutions from a wide variety of data, and draw from other users knowledge, all through the convenience of one platform. The shift away from IT-centric solutions comes from an increase in data available, but was also influenced by a shift to omnichannel commerce and IoT gages, at least in the retail world.

Being able to pull data from not only a cash register, but also from inventory records as well as returns information, traffic, refrigerator temperature and more helped businesses create a larger picture of what their day to day business was like. The added benefit of self service content became vital because it allowed users to record their discoveries and how they solved problems. This collaboration shifted the need from IT-centric & Analyst-centric solutions to customer-centric ones. Businesses now rely on being able to solve problems without having to fund a team of IT specialists. A customer centric solution supports a "full range of analytic workflow," spreading the value of the solution across departments.

Lastly, a customer centric tool shifts the responsibility to individual employees - creating accountability, establishing pride in one's work, and trust between an employee and an employer. In addition, the ability to draw from other user's experiences - through Profitect's comment feature, for example - allows employees to see what worked for others and implement different techniques. This also creates an opportunity for improvement in the product itself. Although Profitect is equipped with a large patternbank, we can draw from user's input to add to the bank, making it an adaptable tool.

Allowing Time to Grow

Some believe that a slow integration is a stepping stone necessary to achieve maximum impact, allowing for holistic integration and achievement of a broader scope. Holistic integration of a prescriptive analytics solution allows it to fully engage in daily processes of an organization, and the organization can benefit from everything the product offers. By choosing a solution that involves itself into every aspect of a business process, you are able to achieve maximum impact and ensure nothing goes unnoticed.

That being said, this holistic integration does not have to take extensive amount of time. Profitect's customer success team works efficiently to integrate data in a timely fashion, saving your business more money, more quickly. In addition, Profitect's ability to integrate multiple data sources means that less time is spent converting data to a standardized form. Using this Minimum Viable Product (MVP) approach, one could start and evolve quickly.

Holistic integration also means being able to achieve more in more areas of business. By implementing a prescriptive analytics solution that can be applied across multiple platforms and organizations, the opportunity to find inefficiencies is greater. Profitect embraces holistic integration by bringing in data from multiple sources - such as POS, inventory data, and marketing data.

Common Problems in Modern BI

In most modern business intelligence initiatives, a lack of integration presents a problem with most businesses. Problems with integration include "not implementing a user-built content validation process, keeping strict limitations on data access, and deploying the platform as a parallel tool to traditional BI, without enough touch points between them" (How to Implement a Modern BI..).

Profitect counteracts these problems by using a system that allows for a wide variety of data, including structured and unstructured, to be ingested and utilized to improve performance. User suggested content in the form of comments can

be used to gauge the success of best practices, and the ability to "like" the comment leverages crowdsourcing to reinforce the success. Adding unstructured data and applying sentiment analysis alongside other data points improves the overall picture of the performance. The ability to take in a wide variety of data also creates flexibility within an organization because they can use data that they already have without having to convert it. Further, Profitect prefers raw data because it allows for the most analysis, and thus the greatest chance for an opportunity to be found. Since Profitect's solution can be integrated using numerous data sources, it has the ability to weave it's way into existing products, thus creating an innumerable amount of touchpoints.

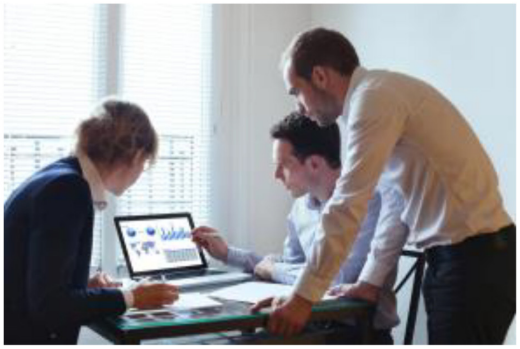
In addition to being able to correct these problems, a successful modern business intelligence is able to "leverage wide array of data sources, expand access to a wide array of users, and assure adequate governance of self service content, " (How to Implement a Modern BI.) all of which Profitect does successfully.

Autonomy Focused Model & Machine Learning

In the grand scheme of things, the purpose of prescriptive analytics is to save a company money while generating increased revenue and make their processes more efficient & effective at the same time. This purpose is negated if the solution provided requires endless resources to support it. Profitect eliminates this by using a machine learning algorithms that focus on autonomy and self sufficiency. The system regularly learns as time progresses, becoming more and more efficient. Gartner highlights the importance of machine learning as a top 10 strategic technology trend, emphasizing that machines have "evolved to extract greater meaning from a rapidly expanding set of sources" (Top 10 Strategic Technology Trends of 2016: At A Glance). To succeed in advanced analytics, a solution must be "programmed to learn and adapt, rather than programmed only for a finite set of prescribed actions." In the same paper, Gartner cautions users that autonomous agents are "a long term phenomenon that will continually evolve and expand their uses for the next 20 years." This statement again emphasizes the idea of evolution. Technology is continually evolving, and solutions and tools must adapt as well in order to achieve maximum value. The added benefit of a machine learning tool is that this adaptation is done for you, and is not another item that the user has to be concerned about. Michael Lewis, the author of Moneyball, sums up the benefits of autonomous solutions, "People... operate with beliefs and biases. To the extent you can eliminate both and replace them with data, you gain a clear advantage."

Lack of Training Negates Benefits

Benefits often become negligible if the end user cannot execute them properly. For example, consumers may be compelled to buy the latest version of a smartphone, strictly because of the new features it boasts. However, it is likely that although it has new features, you are probably not going to utilize the phone any differently than you use your older model. To parallel this with prescriptive analytic solutions, in order to optimize a new solution with new features (in comparison to an older, predictive solution), you must take the time to learn how each feature works and how it



benefits you and your company. Once this is fully understood, you have the ability to receive the full value of the solution.

To counteract this possibility, Profitect provides its users with unlimited onsite training & coaching to ensure their users are getting the most out of our product. In addition to initial training, members of their customer success team are available to handle problems and questions as you come across them.

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"The integration of these two perspectives paint the full picture of what is really going on, and the appropriate personnel can take the correct action."

Profitect's group of passionate problem solvers has access to unlimited resources when it comes to training/coaching their users to use the service achieving maximum value. In addition to initial implementation, users have access to their assigned customer success partner throughout their use of the solution. This access also provides peace of mind because no matter what questions you have, someone will be there to answer them that knows and understands how you operate your business. To ensure everything is run smoothly, Profitect's customer success team also initiates frequent contact with our users, including establishing user to user connections and executive steering committees. These user to user connections are beneficial because they provide insight from a customer perspective, providing a community to share methodology and ideas.

How Using Multiple Data Sources is the Key to Success

In order to understand the entire picture of what goes on day-to-day, you need to be able to access data from numerous different locations at a detailed level. For example, POS data can reveal that sales of an item have dropped significantly, and from this one can infer that the item is not in demand. This conclusion might lead a store to reduce the items allocation because of the declining demand. But, from an inventory perspective, the item might be out of stock, even if the perpetual system "believes" it is on hand - thus causing the declining sales. The integration of these two perspectives paint the full picture of what is really going on, and the appropriate personnel can take the correct action when a "smart system" tells them about it in plain language (PA).

In conclusion, the success of a prescriptive analytic solution, or any analytic product, is dependent on its ability to adapt to change and its adoption from as many users as possible. In the past, solutions failed because they over promised - ensuring customers that they will be able to analyze lots of data and get immediate results, and under delivered. Profitect is pioneering a rebranding to analytic solutions. Rather than slow implementation and below average results, Profitect is paving the way to the future with fast implementation, easy to use features, and large opportunities for success in your organization. As Steve Jobs said: "Simple can be harder than complex".

Source: Profitect

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Research from Gartner

How to Implement a Modern Business Intelligence and Analytics Platform

A modern BI and analytics platforms that is easy to implement and operate is not enough to guarantee success. Data and analytics leaders must offer the right platform capabilities, roles, processes and integration with existing BI environments to meet user expectations.

Key Challenges

- Most of the modern BI and analytics platforms available in the market today are easy to set up, administer and work with, but that alone does not guarantee successful data exploration.
- The modern BI and analytics platforms can be deployed with disparate capabilities and follow different architecture models, leading to different business outcomes.
- Some organizations deploy modern BI and analytics platforms that offer the wrong set of capabilities to business users, or are used as analytics silos, with no governance or proper integration with the overall BI landscape, which leads to poor results.
- While most vendors are growing their capabilities and expanding their footprints from the information portal to the data science laboratory, there are still gaps that can't be solved by a single tool, leading to problems with solution design and integration pains.

Recommendations

- Embrace all aspects of the implementation challenge — including platform capabilities, and integration touchpoints with existing BI and analytics platforms, roles and processes.
- Build a holistic modern BI and analytics platform gradually — spanning from the information portal to the data science laboratory to create an analytics continuum, with time to grow and consolidate skills and processes.
- Prepare to follow a portfolio approach and integrate components from different vendors, identifying and deploying tools that can mesh with each other.
- Make the complementary investments in information management and governance that will act as a backbone for the modern BI platform.
- Create a BI and analytics center of excellence to ensure successful deployment, establish proper governance models, and support the adoption of the required roles and processes.

Strategic Planning Assumption

By 2018, a third of modern BI and analytics platform implementations will fail to meet user expectations due to poor design, lack of governance or improper integration within the overall BI landscape.

Introduction

This is one of two research notes that help data and analytics leaders select and implement an architecture model for the modern BI and analytics platform. Readers should refer first to "Select the Right Architecture Model for Your Modern BI and Analytics Platform."

In this document, you will find details of the platform components for the three scenarios described in the first note:

1 Analytics Trust

2 Analytics Autonomy

3 Analytics Depth of Insight

This will be complemented with information about the roles and processes required to support the modernization initiative.

Additional insights to select the software solutions (not covered in this document), can be found on "Critical Capabilities for Business Intelligence and Analytics Platforms" and "Magic Quadrant for Business Intelligence and Analytics Platforms" or discussed directly with Gartner analysts through phone inquiries.

Analysis

The deployment of a modern BI and analytics platform is a relatively simple technical challenge. Most tools available in the market are easy to set up, administer and work with, but that alone doesn't guarantee success. Gartner often sees organizations deploying modern BI and analytics platforms that offer the wrong set of capabilities to business users, or are used as analytics silos, with no governance or proper integration with the overall BI landscape. The results tend to be below expectations in those cases.

Vendors also, in general, fail to address these issues (or avoid them). There is real risk of falling into the kind of cultural and organizational traps that could stall or totally derail their "land and expand" strategy for the organization. The result is often a silo of self-service analytics capabilities that does not blend properly with the rest of the BI initiative, and will not deliver its full potential value.

Common implementation shortcomings include:

- Failure to provide access to the existing metadata layer (or a proxy of it)
- Not implementing user-built content validation processes
- Keeping strict limitations on data access and preparation that hinder proper information exploration
- Deploying the platform as a parallel tool to traditional BI and the data science laboratory, without enough touchpoints between them
- Using a single tool to provide the entire spectrum of analytic capabilities, and then retrofitting user requirements to the wrong solutions

Thus, even if it comes at the expense of a slower deployment, data and analytics leaders must embrace all aspects of the implementation challenge — including platform capabilities, integration touchpoints, governance model, roles and processes — as described in this document. Due to its complexity, the organization should mandate a BI and analytics center of excellence with the objective of ensuring a proper orchestration of all these components.

Moreover, data and analytics leaders must be aware that the modern BI and analytics platform can be delivered with disparate capabilities, leading to different business outcomes. It is their responsibility to provide the right mix of features and a consistent evolution roadmap. This holistic approach will maximize the impact of modern BI and analytics on the organization and allow it to achieve a broader scope.

The following three scenarios lay out potential analytic architecture models for a number of discrete use cases. Follow the advice provided by the companion document "Select the Right Architecture Model for Your Modern BI and Analytics Platform," to identify the recommended option for your organization. Then go through the implementation and operation requirements in the current document. Properly done, this will help regain user confidence in the BI initiative.

Implement a Trust-Focused Model to Better Support Analytics Governance

A very important objective of a modern BI and analytics platform is to empower business users with the ability to create their own insights. The Analytics Trust implementation scenario achieves that objective with a high focus on the reliability of the user built content. The platform components, people roles and processes support a high degree of analytics governance, encouraging compliance with corporate business definitions, trying to keep track of data lineage, and assuring consistency of user-built insights.

Platform Components

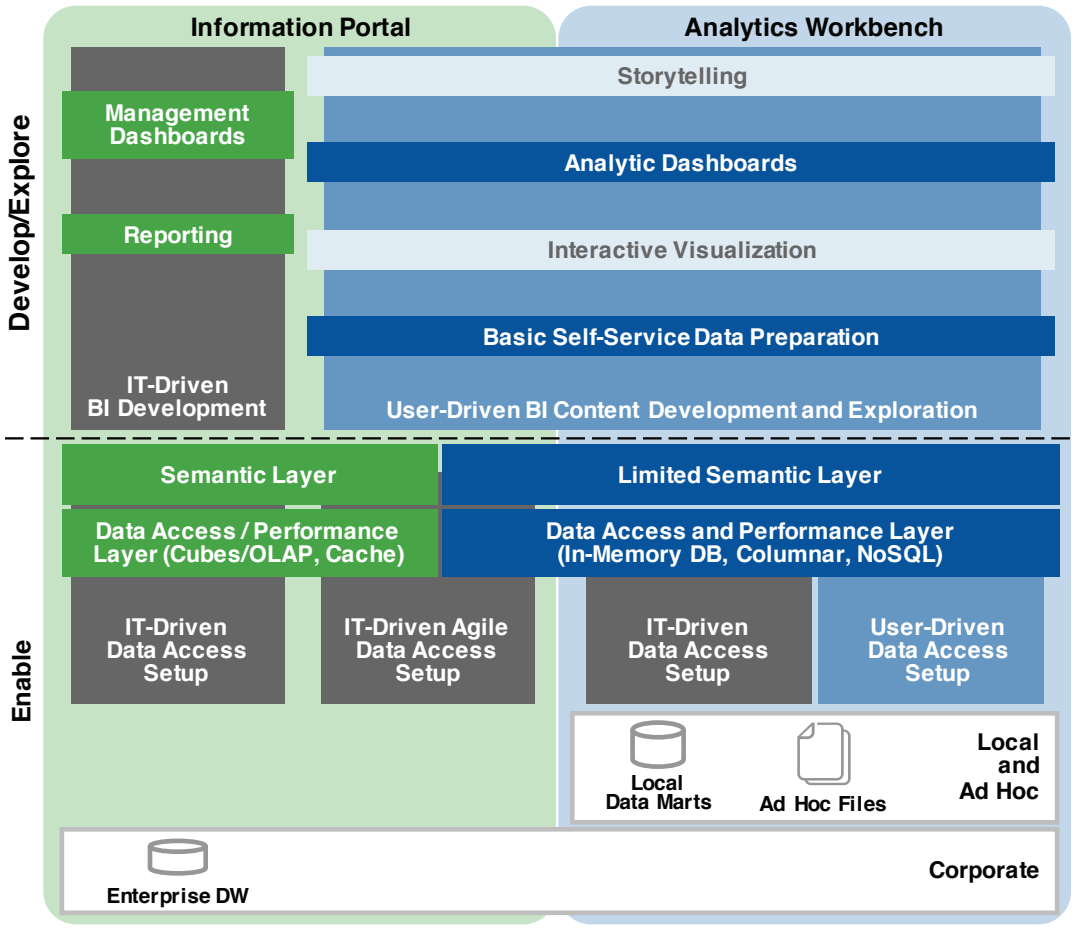
Figure 1 shows the most relevant and common platform components for this scenario.

Represented in green, we have the typical components of a traditional BI deployment, while in blue we depict the modern BI and analytics platform layers. In the background, the IT-driven processes are colored in gray, and those that business users lead are light blue.

These are the most important components:

- **Data access and performance layer:** In this implementation model, users require access to the existing corporate data repository, complementary data sources (including local data marts and ad hoc files such as spreadsheets) and the ability to blend them together.

FIGURE 1 Architecture Model for a Trust-Focused Platform



BI = business intelligence; DB = database; DW = data warehouse; OLAP = online analytical processing
Source: Gartner (April 2016)

- **Semantic layer:** A key component of this scenario that provides access to the standard business definitions. While most tools from incumbent vendors will offer seamless connectivity to their own semantic layers as a core strength, for data discovery specialists it might be a challenge. Organizations have several options to address the issue:
  - Use a self-service data preparation tool to set up a layer of datasets providing the most important metrics and dimensions.
  - Deploy specialized tools to capture, manage and provide access to the corporate semantic layer.
  - Deploy connectors from third-party vendors to link the modern BI platform to the existing semantic layer — for example, Toreo Data is able to provide access from Tableau to SAP BusinessObjects.
  - Duplicate the most important metadata definitions in the modern platform as the starting point for user-driven analysis. A pragmatic way of achieving this objective, requiring relatively low effort, is to create dashboard templates on the modern BI platform, replicating the key metrics and dimension definitions from the semantic layer and sharing them with users as analytics templates.

- **Basic self-service data preparation:** Modern BI and analytics platforms usually incorporate capabilities to perform:
  - Basic data blending (including the ability to select by which fields datasets can be joined).
  - Transformation and cleansing.
  - Renaming and selection of data field format.
  - Field split or concatenation.
  - Simple data updates (replacing nulls with zero, or changing uppercase to lowercase in fields, for example).
  - Creation of simple derived metrics.
- **Analytic dashboards:** The most important outputs of this implementation scenario. Business users must have an easy-to-master interface that allows the creation of dashboards to support insight sharing with decision makers.

Capabilities layers with less relevance for this implementation scenario include:

- **Interactive visualization:** This is a useful component for ad hoc information exploration, but is not essential in this scenario. In some cases, it is not even supported; the selected tool could just target the design and sharing of interactive dashboards.
- **Storytelling:** Although a good fit for this implementation scenario, because it delivers a guided view of predesigned insights, this is still an emerging capability that most organizations are not yet exploring.

As a general rule, traditional BI vendors that offer data discovery tools differentiate by providing better integration with their existing information-portal-focused products and, thus, are a good fit for this implementation scenario.

MicroStrategy, for example, shares the semantic layer between traditional reporting and data discovery, and also adds the option of using standard reports as dataset inputs for exploration on its data discovery tool — Visual Insight.

Alternatively, there are vendors offering modern BI capabilities that are focused on the information portal — with agile creation of reports and dashboards but reduced ad hoc information exploration capabilities. Domo and Yellowfin would fit into that category. Nevertheless, the implementation of this scenario with data discovery specialists is also possible.

People and Roles

The Analytics Trust implementation scenario provides a level of self-service analytics to business users, without significantly disrupting the BI content creation processes in the organization.

The most relevant roles are:

Information analysts: In this scenario, these are business users that have training on the standard business definitions and information distributed by the information portal, and can design consistent dashboards that follow those standards and share them across the organization according to analytics governance rules.

BI content managers/curators: Can be located in a centralized team (BI or IT) or distributed across the business. They validate and promote to a governed environment — the information portal — the dashboards built by information analysts, and encourage information analysts (more than they enforce) to adopt sound insight-production practices that maintain a high level of information trust in the organization.

The top challenge for these roles is to make sure that they break away from the centralized, IT-driven content development model, into a decentralized insight-creation environment that is able to preserve information reliability and, at the same time, increase agility and decrease time to insight. This must be the mission at all times.

The activities of the centralized BI team and IT are centered on enabling rather than doing. Their role is to train, transfer knowledge and coach local staff in the development of their own insights. The organization may employ certifications or "gamification" methods to encourage user adoption and drive acceptable behavior.

Processes

To create insights that users can trust, there is a need for processes that establish access to the right data, create the metadata foundations, and validate and share content delivered by users.

The most relevant are:

- Semantic layer access setup or replication in the modern BI and analytics platform is the cornerstone of the Analytics Trust scenario. Provisioning the additional layer of dashboard templates that information analysts can rely on to start their analytic process will also be helpful but should not prevent users from creating their own from scratch if required.

- Validation of content produced by business users, and promotion to the information portal before sharing across the organization, will close the loop between users and centralized BI management. The process must be swift and easy, or users will bypass it. Marking content with certification levels (gold, silver) as a result, will help create a sense of purpose and reliability to which the business will adhere.

- Holistic BI content curation across the BI tiers that develops trust in user-built content will contribute to the success of the BI initiative. It can be delivered through continuous inspection of user-built BI content and data lineage verification. This process cannot be seen as a critique or punishment of users, but rather as help and support for them.

Creating trust, without a negative sense of control by the centralized team, and delivering greater agility than before, may prove to be difficult. Successful case studies that implement processes similar to the ones described above prove it is possible.

Recommendations:

- Include the modern BI platform solution of your incumbent vendor (when available) on the shortlist of tools to assess, to facilitate the initial deployment. Compare it with tools from data discovery specialists that may offer a broader range of analytics capabilities and autonomy.

- Invest effort in the integration of a modern BI platform with an information portal, including semantic layer, data repositories and BI content. This can be achieved, for example, by recreating key components of metadata in dashboard templates made available to users in the modern BI platform.

- Establish content validation processes and, if created on the analytics workbench, promotion to the information portal.

Implement an Autonomy-Focused Model to Nurture an Information-Driven Culture

The tools, roles and processes of this implementation model must be designed to support a business-driven environment, offering self-service and a fair amount of analytics features. The target audience is composed of today's spreadsheet users that have high demand for insights, but do not possess the advanced skills of data scientists or technical specialists. They work closely with business decision makers across the organization and must be able to quickly address their questions without needing to go back to IT or the BI team to ask for access to information or help.

Platform Components

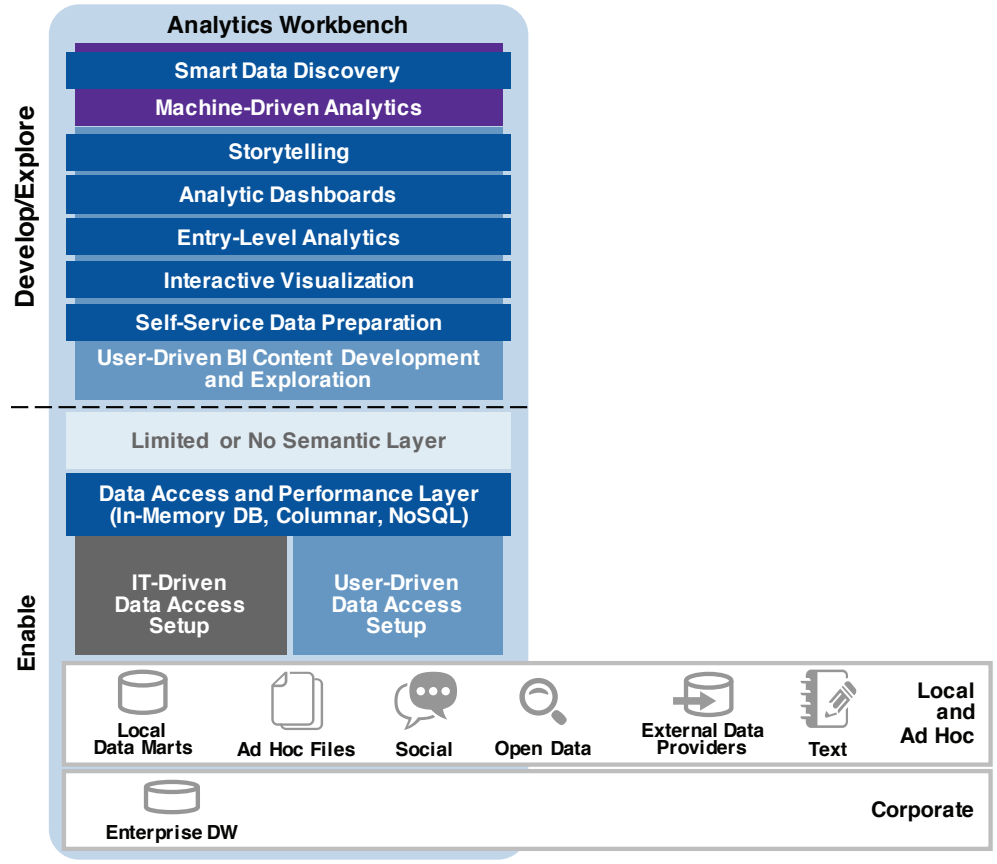
Figure 2 shows the most relevant and common platform components for this scenario.

Although similar to the previous architecture model, the importance of integration with the existing traditional BI platform is reduced, favoring instead more advanced information management and analytics capabilities.

The most relevant capabilities are:

- **Data access and performance layer:** Users need to complement access to the corporate data warehouse with local and ad hoc data sources. Information producers expect to gain access to departmental/domain-specific data marts, spreadsheets, external information providers (such as Nielsen, Dun & Bradstreet, weather or economic data, for example) social media feeds and other internal and external datasets of moderate complexity and volume.

FIGURE 2 Architecture Model for an Autonomy-Focused Platform



BI = business intelligence; DB = database; DW = data warehouse
Source: Gartner (April 2016)

Modern BI and analytics platforms will typically respond to those requirements as part of their portfolio of capabilities, offering connectors to a broad range of data sources and in-memory database engines as a local data store to accelerate exploration performance.

- **Self-service data preparation:** Many platforms offering data discovery capabilities also have some self-service data preparation functionality (as described in the previous scenario). Although useful, this might not be enough to address use cases where the data is not ready for analytic exploration. More sophisticated deployments will require a specialized self-service data preparation tool, offering a broader range of data transformation, cleansing and analytics capabilities. Partnerships between vendors providing this capability and data discovery solutions are becoming common in the market, addressing users' needs to close gaps in data preparation.
- **Interactive visualization:** The key component of the Analytics Autonomy implementation model. Projects in this area often fail or succeed according to how well the interactive visualization component is able to deliver. The solution must be easy to use but, at the same time, offer a broad range of information exploration and visualization capabilities. Functionality required includes:
- An intuitive drag-and-drop user interface to query information
- The ability to create new metrics
- A comprehensive list of visualization options
- Automated chart recommendations
- Information filters

- Custom groups
- Binning definitions
- **Entry-level analytics:** The ability to use analytic functions to create more-complex metrics, basic forecasting, clustering and other types of mathematical and statistical algorithms, as well as advanced data visualizations. Although not always a requirement, this will increase the complexity of analysis that users will be able to address with the platform, without greatly impact its ease of use. On some solutions, the capability will include the possibility of using wizards and drag-and-drop operations to embed predefined R scripts that implement advanced analytics functions, without writing a single line of code.
- **Analytic dashboards:** Business users may design dashboards to allow the sharing of insights with a broad audience of information consumers. These are more interactive than the ones typically provided by traditional BI tools, and offer information navigation on an easy-to-explore interface.
- **Storytelling:** Although not a mandatory requirement, it will be useful to communicate information to the organization and may gain adoption going forward.
- **Smart data discovery:** Tools that will automate the processes of finding patterns and deriving insights from data, applying under-the-hood statistic methods and machine learning capabilities that don't require advanced skills for operation. In some cases, the tools will be able to generate analytic models (translated into R, for example) that can be embedded across the BI and analytics portfolio or in business processes.

As a general rule, independent vendors such as Tableau, Qlik or TIBCO offer greater agility and a broader range of analytic capabilities to business users, with the drawback of offering more limited semantic layer capabilities and raising challenges on the connection to existing ones (if not a total impossibility, depending on the incumbent BI tool). Data discovery solutions from traditional BI vendors are evolving quickly, though, and can also be considered for this scenario. Microsoft, for example, historically known as a provider of traditional BI reporting tools, has addressed this need with its Power BI offering, and is gaining traction in the market.

People and Roles

This Analytics Autonomy implementation scenario offers the business the ability to create insights with low to no IT support.

The most relevant roles are:

- **Information analysts:** Business users with a good understanding of their domain —business model, challenges, opportunities, risks, typical data and processes — above-average analytics skills, curiosity, data-driven mindset and a close relationship (often hierarchical dependence) with decision makers in the organization.
- **IT support specialists:** Can help information analysts in their analytics production — from system setup to content publication, granting them the freedom and the means to achieve their goals. They are not suppliers anymore. Instead, they act as enablers and facilitators — nurturing and monitoring analytics processes.

The autonomy demanded by business users in this implementation scenario can only be achieved if proper consideration is given to the establishment of roles. Users must evolve from rogue spreadsheet authors to officially recognized and supported information analysts. IT must also evolve, and that will not be easy in many organizations. The technical specialists must go from supplier to facilitator, or risk jeopardizing the modernization process. As in the first architecture model, their activities must be centered on "enabling" rather than "doing."

Processes

Autonomy is the relevant keyword impacting user activities in this scenario. Supporting it, business users expect to have agile and easy-to-execute analytics-related processes.

The most relevant of them are:

- Set up access to domain-specific or corporate data sources in a quick and streamlined way, when business users are not able to connect to and collect the data themselves. This process tends to be driven by the IT or BI teams, but may also be assigned to more specialized end users.

It must be considered an exception — the rule is to have information analysts with the ability to connect and explore new data sources.

- Information analysis and BI content production are the core processes and are handled by information analysts. Without hindering autonomy, it may be supported by technical and analytics specialists on more-complex activities.

- Certification and publication/sharing of BI and analytics content created by information analysts. The process can be assigned to IT, a business-located BI team or properly trained business users — depending on the level of (de) centralization adopted by the organization.

- Permanent skills enablement program with regular training and experience-sharing workshops for information analysts.

Business users, the BI team and IT must work together — to truly collaborate, not just react to demand and supply — to guarantee the success of the Analytics Autonomy implementation model. The processes described here, when implemented, address that.

Recommendations:

- Include data discovery specialists on the shortlist of potential vendors for the modern BI platform, but also check the evolving modern BI and analytics platforms offered by incumbent vendors.

- Prepare to change the roles of some members of the BI team, from report designers to self-service analytics facilitators.

- Avoid a siloed approach, where the modern BI platform is totally disconnected from the information portal. Try to create a semantic layer proxy with the most relevant business definitions mapped to the data discovery tool.

- Implement analytics governance — supporting the creation and validation of BI content without constraining self-service activities — to avoid falling into a chaotic situation where users often report misleading information. If the selected solution lags in this area, make sure to invest additional effort in the setup of processes and user training to compensate for it, as this is a key requirement across the full spectrum of analytics.

Implement an Insight-Focused Model to Drive Innovation

The Analytics Insight implementation model is the most advanced form of modern BI and analytics platform deployment. It may require tools that are less commonly used (often from smaller and innovative vendors) that provide capabilities able to address complex use cases, but are relatively easy to explore and accessible to the more analytic- and tech-savvy user. It is used to empower the citizen data scientist — a new role that bridges the gap between the pervasive and business-cognizant information analyst; and the difficult-to-find and highly skilled data scientist.

Platform Components

Figure 3 shows the most relevant and common platform components for this scenario.

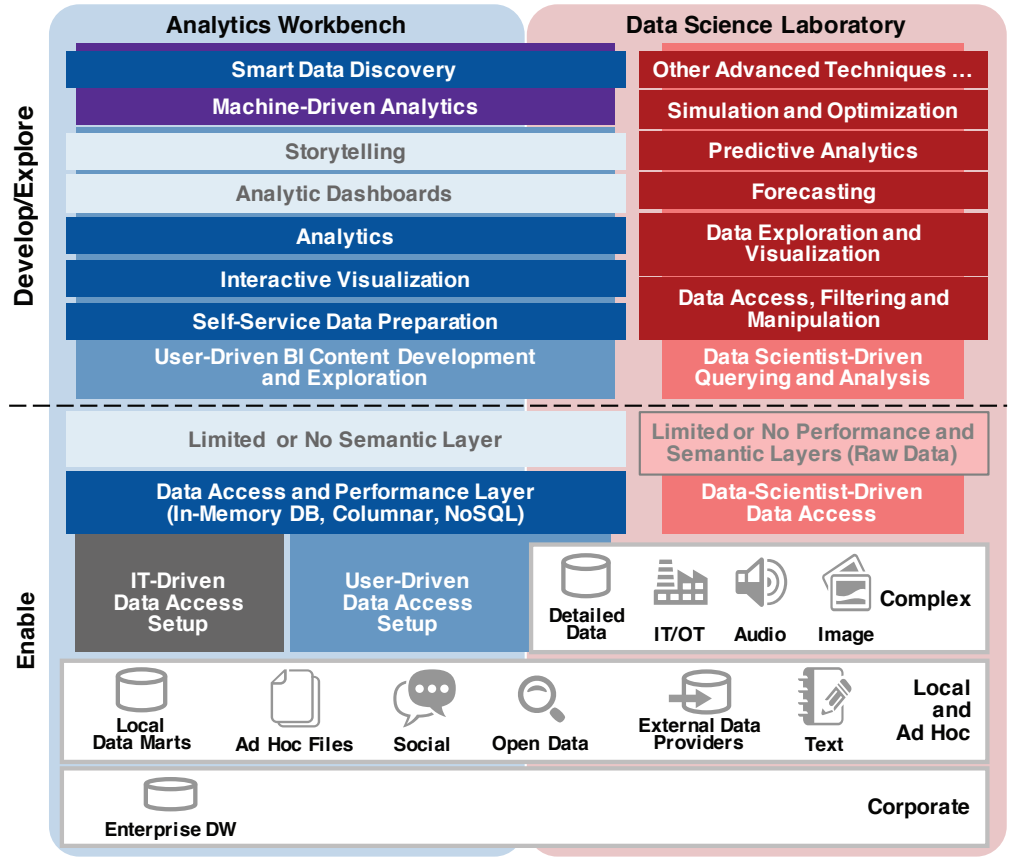
The most relevant capabilities are:

- **Data access and performance layer:** Users need access to a broad range of data sources, including the data layers accessed by the previous two implementation models. A layer of complex formats could be added as a source for the modern BI and analytics platform (the same data sources that feed the data science laboratory). This could include very large data volumes (from internal and external repositories); streaming and near-real-time data (originated on sensors, for example); or varied data types such as Web logs. The complexity will not go as far as in the data science laboratory, but will still raise performance challenges and could be difficult to understand and explore.

  Because users lack the skills to program in technologies such as MapReduce, or to write queries in SparQL or even SQL in most cases, sophisticated but easy-to-use data ingestion capabilities are required, as well as query acceleration features. Technologies such as Hadoop, in-memory database engines or processing frameworks such as Spark (and the connectors to repositories leveraging those technologies) are commonly used.

- **Self-service data preparation:** The ability to easily and quickly blend, transform, and derive new information is critical. Tools offering a data flow user interface are common, but spreadsheet-like user interfaces are also possible as well as script-based solutions. The common denominator is their accessibility for

FIGURE 3 Architecture Model for a Depth-of-Insight-Focused Platform



BI = business intelligence; DB = database; DW = data warehouse; IT/OT = information technology/operational technology
Source: Gartner (April 2016)

(skilled) business users that aspire to do some of the analytic work typically carried out by a data scientist.

- **Interactive visualization and analytics:** Being able to query, visualize and analyze data in advanced ways is paramount to this scenario. The platform should offer what is expected on the Analytics Autonomy model and more, including capabilities such as:
- Creation of complex metrics through sophisticated mathematical functions
- Data reshaping features such as binning and hierarchy definition
- Agile and fast-performing querying
- Advanced visualizations (including rendering of very large datasets, complex representation of information like network graphs, or multilayered geographic maps)
- Use of visualization libraries such as D3
- Analysis of Web logs and other semistructured and unstructured data sources
- Easy-to-use forecasting, clustering, predictive modeling and other analytic functionality typically expected from advanced analytics platforms
- Integration with analytics scripting languages such as R, providing visual ways to embed advanced analytics models

Most platforms will not cover all of this functionality. A broader range of capabilities will allow users to address a wider range of use cases, but a specialized tool with a narrow focus could be the right solution to gain more analytic

depth and solve specific problems. For example, the use of link analysis tools for cybersecurity threat prevention, or money-laundry analysis, or streaming analytics for use cases involving the Internet of Things.

- **Smart data discovery:** Tools that will automate the processes of finding patterns and deriving insights from data, applying under-the-hood statistic methods and machine-learning capabilities that don't require advanced skills for operation. In some cases, the tools will be able to generate analytic models (translated into R, for example) that can be embedded across the BI and analytics portfolio or into business processes.

Vendors such as ClearStory Data, Pentaho and Platfora offer tight integration with NoSQL data sources that can support complex information loads. Advanced analytics specialists like SAS Institute provide more comprehensive integration within a data science laboratory environment, where more-skilled users will try to address more-complex questions. These are just two sets of tools that could support the implementation scenario, but the list of potential tools is much broader.

People and Roles

This implementation model can create a very important new role in the organization — the citizen data scientist.

It supports/requires other roles too, including:

- **Citizen data scientists:** To leverage the analytic capabilities and create advanced insights. These are skilled business users, with experience in information exploration, dashboard creation and some degree of analytical and technical capabilities. Some could be able to develop basic analytic models given the right user interface, or even write simple SQL queries. Their knowledge will not match that of a data scientist or an IT technical specialist, though.

- Optionally, there may exist **data scientists** with the ability to further analyze the insights created on the modern BI platform, as a first analytic exploration before using the data science laboratory's capabilities.

- **Technical specialists (eventually from IT):** Able to set up access to very complex data sources.

Processes

The citizen data scientist is deeply entrenched in business areas, with ample interactions with information analysts and decision makers. The most relevant processes that need to be added to support their activity are related to the availability of data sources for analysis, and the establishment of links with the data science laboratory.

They might be required to:

- Set up access to complex data sources in a quick and streamlined way.

- Communicate the insights that have been uncovered to the data scientist for further analysis.

- Hand analytic models over to data scientist and information analysts for embedding in analytic dashboards and business processes.

- Be part of a permanent skills-enablement program with regular training and experience sharing workshops with other citizen data scientists.

Due to the innovative nature of the analytic activities expected from this implementation model — often applying unproved, and maybe even unconventional, tools and analytic technics — the organization must also be willing to experiment with innovative ways to empower citizen data scientist. Analytic hackathons, information-discovery workshops, and swapping of analysts between business units to foster knowledge transfer, are all examples of less-conventional activities that can be adopted.

Recommendations:

- Consider using innovative analytic capabilities such as smart- or Hadoop-based data discovery tools that might be offered by new and smaller vendors.

- Establish collaboration processes between the citizen data scientists and data scientists.

- Support a culture of experimentation and analytic curiosity that is not constrained by the predefined assumptions of traditional BI and KPI monitoring.

Combine Architecture Models to Amplify the Scope and Impact of Your BI Initiative

Organizations should work to expand the capabilities offered by their modern BI and analytics platforms, not just wait for their vendor to deliver additional functionality. The implementation process should be gradual, but persistent, extending the platform's span from the information portal to the data science laboratory, in an integrated architecture. Because no single vendor offers all the required components, it may be necessary to integrate solutions from multiple providers.

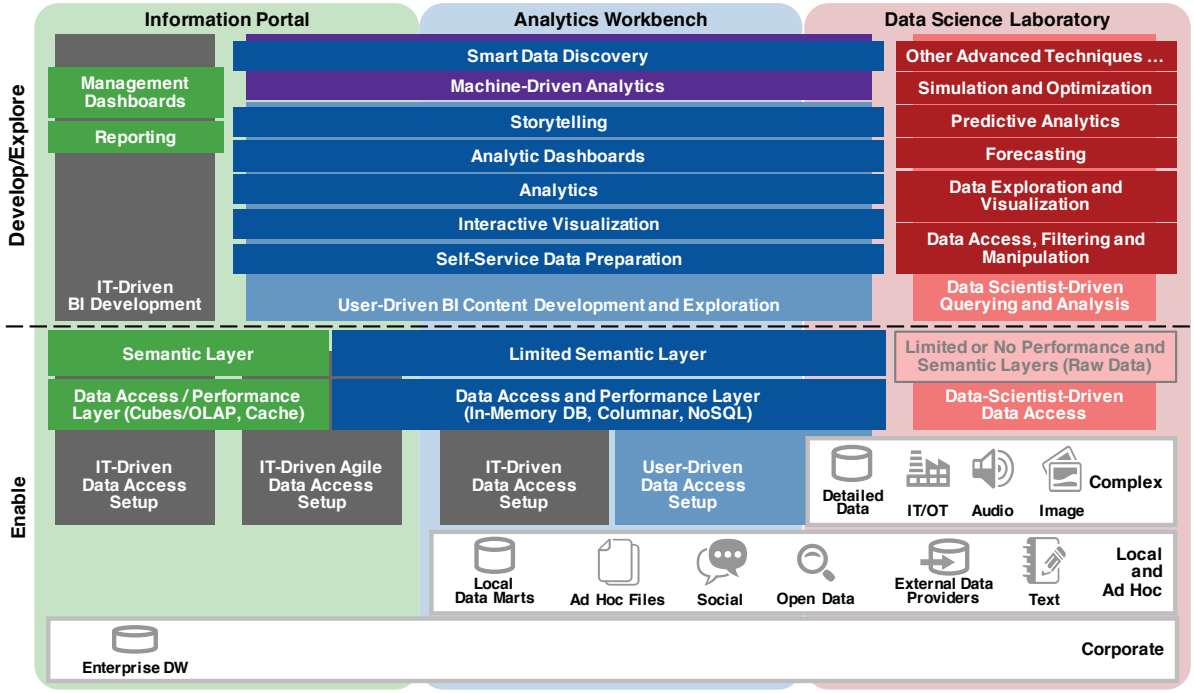
While most vendors are growing their capabilities and expanding their footprint from the information portal to the data science laboratory, there are still gaps that can't be solved by a single tool, leading to solution design problems and integration pains. The top challenge will be the integration of tools from different vendors — within and across the tiers — to create the touchpoints that support the analytics continuum.

Most of the vendors' investment is spent on broadening the scope of their platforms, but some solutions are also improving their ease of integration and interoperability with other tools. Consider them as potential alternatives, or as a complement to monolithic solutions. Third-party data connectors that are able to expose the semantic layer of information portal tools to modern BI platforms can also support integration.

Recommendations:

- Build a holistic, modern BI and analytics platform gradually — spanning from the information portal to the data science laboratory to create an analytics continuum, with time to grow and consolidate skills and processes.
- Prepare to follow a portfolio approach and integrate components from different vendors, identifying and deploying tools that can integrate with each other.
- Make the complementary investments in information management and governance that will act as a backbone for the modern BI platform.

FIGURE 4 Holistic Modern BI Platform Architecture Model



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Source: Gartner (April 2016)

About Profitect

Since 2012, Profitect has offered a suite of solutions to help retailers easily understand and act on their data. They help companies leverage existing big data investments and drive value generation by not requiring technical resources to understand and interpret data. Instead of sending someone a report to analyze, Profitect's prescriptive analytics tells them exactly what happened and how to take action to correct it. It's that simple. Profitect helps retailers in every segment and across the retail business operation to realize improved sales, margins and compliance. With customers across the world, they have amassed a vast library of patterns combined with machine learning to automatically identify behaviors quickly. They offer a unique implementation that allows customers to be live in days and believe customer success is of the highest priority. Profitect has been recognized as the industry leader for technology and customer choice.

Contact Profitect

1601 Trapelo Road, Suite 286, Waltham, MA, USA

+1-781-290-0009

info@profitect.com