
Contents

3 | Executive summary

5 | Understand where you are today

12 | Putting the right team in place

16 | An Agile process for success

21 | Conclusion

Executive summary



Data maturity and organizational transformation go hand in hand; a business that gets better at harnessing data will see transformation in its people, processes and, most importantly, its overall business results. Leveraging your data goes beyond implementing tools. It is a journey your business will take to understand what is important to measure and how you use that information to drive improved decision-making.

[A study by Databricks](#) notes that only 13% of businesses excel at delivering on their data strategy. Those businesses that succeed do so because of their “attention to the foundations of sound data management and architecture, which enable them to ‘democratize’ data and derive value from machine learning.” This e-book is intended to help your business become one that carries out a successful data strategy.

Businesses often use some form of a “maturity model” to mark their progress as they get more sophisticated at harnessing and using their data. A business reaches the peak of data maturity when it can generate incremental revenue based on data it has accumulated and enhanced with other information, and then create a unique data product it puts into the market. There are many examples of this level of data maturity in practice:

- Facebook and Google generate most of their revenue by monetizing user data
- Algorithmic trading, where a computer program, following a specific set of instructions, can place stock trades at a speed and frequency impossible for humans to manage
- Microsoft’s Cortana virtual assistant, leverages information found in a user’s email and calendar to send daily reminders about upcoming meetings or deadlines, creating new value for the end user
- Several traditional retailers, including Target, Walmart and The Kroger Co., are generating substantial incremental revenue by anonymizing point-of-sale data and then selling it to packaged goods manufacturers. These retailers are driving new revenue by going beyond their core business, selling household goods or groceries, and selling market intelligence.

Executive summary cont.

There is a wrong way and a right way for a company to solve a problem using data. Companies that jump into building a data solution without defining the “why” behind it might be disappointed in the results. A business focusing on the wrong things may get left behind, whereas businesses that have the right indicators at the right time can make better tactical decisions. Businesses can’t manage what they can’t measure. An approach that moves from ideation to prototype to execution, as outlined in this e-book, will more likely result in progressive and satisfying solutions.

A successfully data strategy starts with understanding the current state of your key data, as well as understanding how a data maturity model can help guide your data analytics journey. As the business becomes more sophisticated in understanding and using its data, it will require new roles from both inside and outside the business to support the strategy and help make a data project successful.

The e-book outlines a simplified Agile model for a data analytics project. Adopting this process within a business is the fastest way to advance across the maturity model. The business will effectively move from an abstract process that helps a company understand the core problems limiting the business to a concrete project aimed at solving that problem.

Many businesses know that they do not have the right data to make decisions at a speed that successfully supports and grows the business. They may have had some success at guessing what the right solution is in the absence of factual evidence. Guessing, however, is not a competitive advantage.

Successful continuous integration and deployment happens when a company can easily roll out new data analytics tools over time, a continuous flow of code and successful projects that it can leverage throughout the business.

Understand where you are today

Leveraging your data goes beyond implementing tools. It is a journey your business will take to understand what is important to measure and how you use that information to drive improved decision-making. Step one is setting a baseline of where your business is currently regarding its most important data and understanding why moving forward will provide value in the future.

Maturity overview

Data analytics maturity and organizational transformation go hand in hand; a business that gets better at harnessing data will see transformation in its people, processes and overall business results. Data analytics maturity happens when a business advances how they leverage key information to make critical business decisions.

The Baker Tilly data analytics maturity model shows four phases businesses may go through in their data analytics journey.

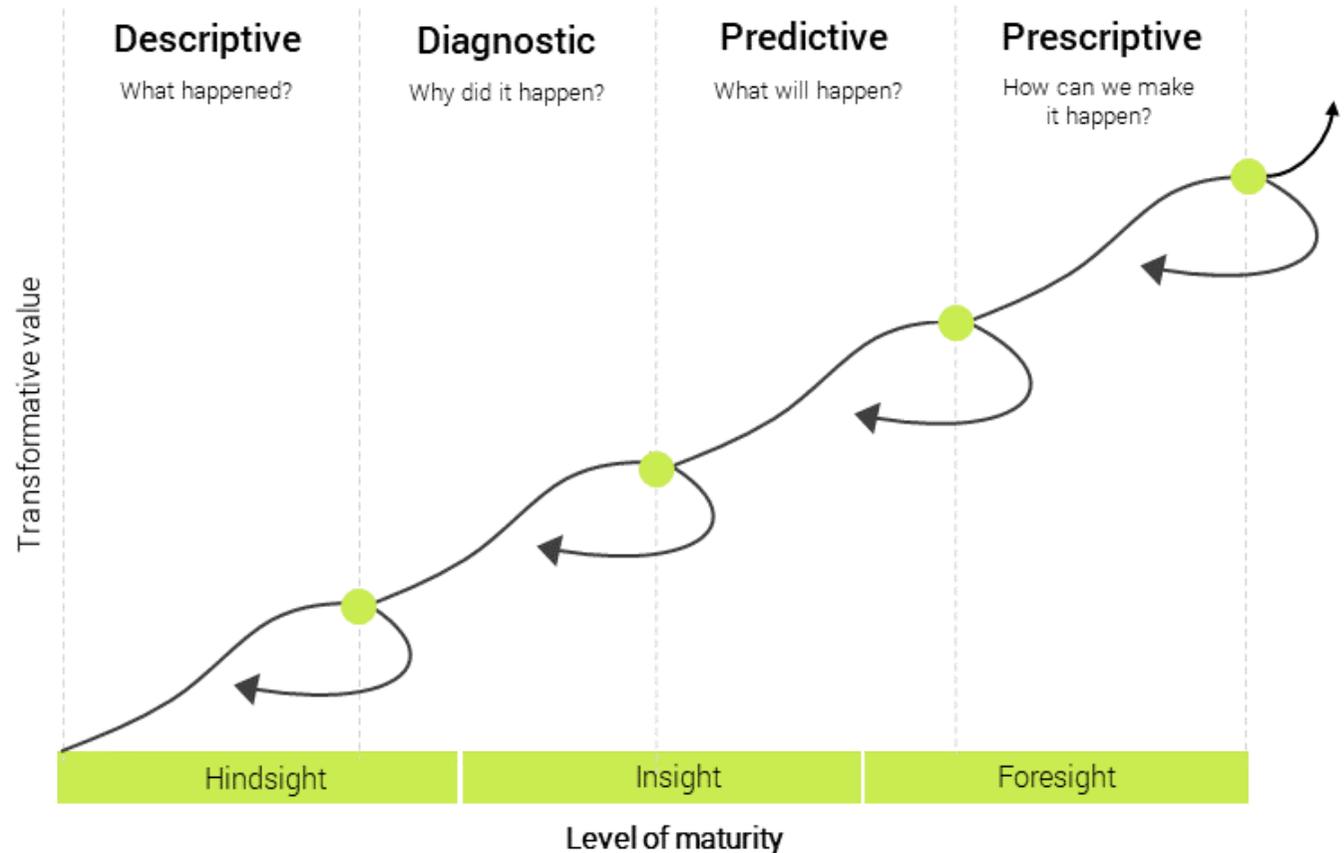
Identifying your analytics maturity

Caveat about maturity models

A major caveat to any maturity model – don't follow a model too rigidly. An article posted on [Towards Data Science](#) notes that analytics maturity models can actually stunt data science teams. The article emphasizes that:

- There is no need to complete building out descriptive analytics before moving on to advanced analytics
- There is no certainty that higher levels of analytics bring more value to a business
- Different types of work described in a maturity model thrive under starkly different management methods

A better way to look at effectively using data: set your data scientists to work on the most important decisions of the most senior person they can get access to.



It's important to remember the early stages of a maturity model can progress at different rates. The green dots represent important inflection points between each stage in your data journey where your business could regress if you're not continually evaluating and improving processes.

Understand where you are today cont.

Businesses start with a view of their data that shows “what happened.” In this phase, businesses are viewing the past. Their ability to act on those events is minimal, but it does give them insights into what to do going forward. **Descriptive analytics** is a fundamental component of any business but has limited effectiveness in today’s fast-paced business environment.

Once a business knows what happened, they need to move deeper into **diagnostic analytics**. They need to understand “why did it happen?” Are there trends in the data to address? As an example, can the business see that a specific customer, product or territory is performing well? The analysis at this phase must provide a level of detail that allows the business to draw connections to events and present that information quickly enough to stakeholders so they can make smart decisions.

Moving further up the maturity model, businesses get into **predictive analytics**, understanding “what will happen?” This type of insight requires the detailed and timely information created in the diagnostic phase. Predictive analytics tools and methods depend on advanced analytical technologies to both predict and group given outcomes, leveraging historical data sets as well as current information. Examples would include online shopping carts that suggest additional products to shoppers or forecasting solutions that show cash flow projections based on current sales and historical payment patterns.

The final phase in the maturity model is **prescriptive analytics**, automated decision-making through machine learning and artificial intelligence. One example of this sort of system includes automated trading systems. The information moving through those systems moves so fast and in such a massive volume that it would be impossible for a human being to do the analysis. Instead, sophisticated algorithms make those decisions. The Google Maps app employs this type of intelligence when giving driving directions. If enough slowdowns exist in an area, the app will automatically reroute drivers to an alternate route.



Understand where you are today cont.

Where to start: assess your current maturity level

Businesses need to take a close look at the goals of key functional levels of a company – sales, finance, marketing, operations – and identify the data needed to support those goals. Then, a business should examine this data from technical and business perspectives.

From the technical perspective, the business should ask questions like:

- Do we have this data today?
- How technically feasible is it to get the data?
- Do we have to implement new systems to collect it?
- How clean is the data?
- What is the volume or quantity of this data?

From a business perspective, the questions include:

- How does the data align to our strategic goals?
- Does it drive revenue or reduce cost?
- Does it exist somewhere already?

After looking at all the technical and business factors, a business can score the data using an opportunity matrix to determine which data has priority for the business's success.

Opportunity matrix scoring

Domain - KPI	Business Impact						Technical Feasibility					
	Impacted # Users	Alternatives	Achievement to Goals	Strategic Significance	Frequency of Use	Total	Data Availability	Transformation Complexity	Volume, Velocity, Variety	Maintenance	Data Quality	Total
Sales	4.3	2.6	4	4.3	4	3.8	4.3	4.3	4	3.6	4.6	4.2
Sales \$	5	4	4	5	5	4.5	4	4	5	5	5	4.7
Margin \$	4	3	4	4	4	3.8	5	5	3	4	5	4.2
Units Shipped	4	1	4	4	3	3.2	4	4	4	2	4	3.6
Finance	1.5	1	2.5	2.5	1.5	1.9	1	1	4	2	1.5	2.2
AR Balance	2	1	3	3	2	2.3	1	1	4	2	2	2.3
AP Balance	1	1	2	2	1	1.5	1	1	4	2	1	2.1

Understand where you are today cont.



Keys to analytics success

At the lower end of the maturity scale, a business is hampered by a lag in visibility of what is happening in the business. As businesses become more mature in handling their data, “lag time” becomes tighter and transforms into “right time,” as opposed to “real time,” data. A business can take specific actions using “right time” data. If a business can’t do anything actionable with their data, then the data is just noise.

A business that tries to implement or build better data analytics may find detractors. Becoming better at analytics may turn into a larger change management issue for a business.

While sales is usually where a company focuses its data improvement efforts, sometimes a “champion” or senior leader enthusiastic to support change works elsewhere in the company – in finance, marketing or operations, for example. Businesses should look for these champions and develop better data analytics in areas where such a program can have traction and buy-in. When a business demonstrates that it can add value by using data to make decisions in one area, data maturity may become viral. Once one part of the business buys in and builds the discipline and good habits of running as a data-driven business, that discipline can be instilled into other parts of the business.

Understand where you are today cont.

Data analytics becomes table stakes to thrive

The pandemic made the ability to effectively use core data table stakes for successful companies. If a business can adjust its business based on what it sees in its data, and a competitor cannot, this ability to move faster and smarter will outcompete everyone.

Businesses from any type of industry can benefit from data maturity, although some industries have more experience than others in handling large quantities of data. Manufacturing and distribution companies have been using enterprise resource planning (ERP) systems for decades. Healthcare providers have ramped up their use of electronic medical record systems in recent years. As a business grows into the middle market (around \$100 million in annual revenue), it needs tighter visibility into its data throughout the business.

That being said, innovation around data analytics in recent years has brought the price point for sophisticated tools down to where smaller businesses can benefit from certain dashboards and technologies. Even smaller businesses can focus efforts on strategies that provide the most value: "What should I sell? What actions should I take?"

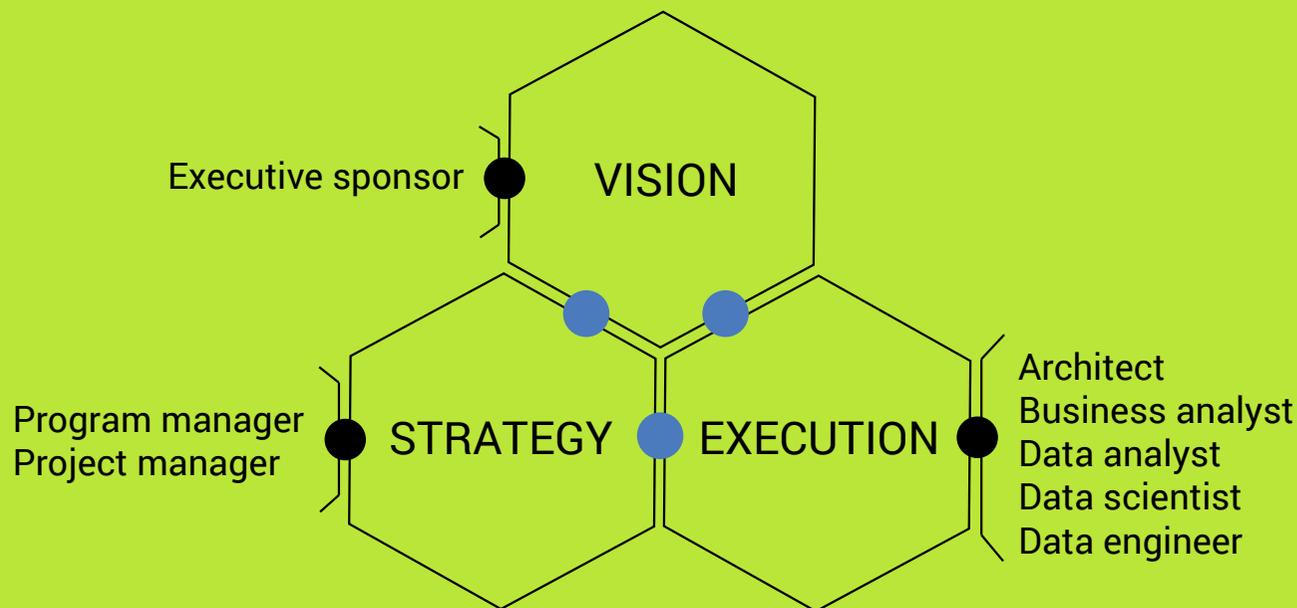


Putting the right team in place

A business that gets better at harnessing its data will see a transformation in its people, processes and overall business results. As the business becomes more sophisticated in understanding and using its data, it will need to fill new roles from inside and outside the business.

Depending on where a business sits on the data maturity model, one person may fulfill more than one of the roles listed below. As a business moves up in the maturity model, more and more of these roles will be added, either internally or with outside support from contractors or consultants.

Data analytics roles and responsibilities



Role identification

Each business will likely have an imbalance among the vision, strategy and execution roles. A business may have a visionary leader with a specific plan for growth but lack the talent to clearly understand the data or define a strategy. Another business may have enterprising data engineers and scientists who have interesting ideas about how to manage data, but the business lacks leaders who can lay out a vision to take advantage of that data. In addition, not every business has filled each of the roles listed below. As businesses grow and get more complex, however, each of these roles will be necessary for the business to use its data successfully.

Putting the right team in place cont.

Executive sponsor/steering committee

Any data project is directly related to specific strategic goals: growth, efficiency or something else. The executive sponsor could be a combination of senior-level people, including the chief executive officer, the chief financial officer and the chief information officer. The technical resources necessary to fulfill the goal will vary depending on what the goal is; the sponsors likely will not have the background understanding of what technical resources are necessary to fulfill the goal.

Program manager

A successful strategic plan needs an evangelist, which is one of the primary roles of the program manager. The program manager has an organizational vision into what is necessary to meet the goals set by the sponsor. They will determine what resources are necessary to carry out the goals. At a high level, the program manager will understand what types of data the business has, and what data it needs, related to key areas such as sales, finance and operations.

Project manager

The project manager bridges the gap between strategy and execution, ensuring the right resources are in place or added to ensure the project is completed within deadline and budget.



Putting the right team in place cont.



Data architect

Like a building architect who understands different structural techniques, the data architect understands different data platforms, both the ones the business currently uses and other platforms in the marketplace, and how these platforms can work together to help support the business's data maturity journey. The architect will make recommendations along the lines of, "Our enterprise resource planning (ERP) platform is going to migrate to the cloud in six months; so, we should wait to do X, until we get to that migration point." The architect will be aware of how-to time data management changes and not rush migrations to new technologies and platforms.

Business analyst

The business analysts will have a clear idea of both the goals laid out by the sponsors and the business's core business processes. They will identify if the right data exists and if it is in the best condition to support the organizational goals. They will work closely with both the architect and the data engineers, analysts and scientists, balancing "nice to have" ideas with "must have" ideas. The business analyst will create a backlog of items for the rest of the development team to accomplish.

Data engineer

The data engineer is core to moving data efficiently, accurately and with minimal interruptions. They understand how to best implement various data platforms and technologies and are well versed in data modeling techniques to support a given business use case.

Putting the right team in place cont.

Data analyst

The data analyst is a data storyteller. They will dig through existing data and create visualizations that will help inform the managers, architect and sponsor.

Data scientist

The data scientist identifies the right models or builds new models to drive insights previously undiscovered in existing datasets. Data scientists use a structured process that involves the application of machine learning and artificial intelligence to answer business questions.

Moving toward enterprise wide success

Most business functions work in silos, such as finance and marketing, each with their own unique data needs and systems. For example, a data project may develop in one silo and all roles will do their part to make the project successful. The key for a business as it moves along the data maturity model is to be able to translate success with these specialized skills in one part of the business to an enterprise wide level.

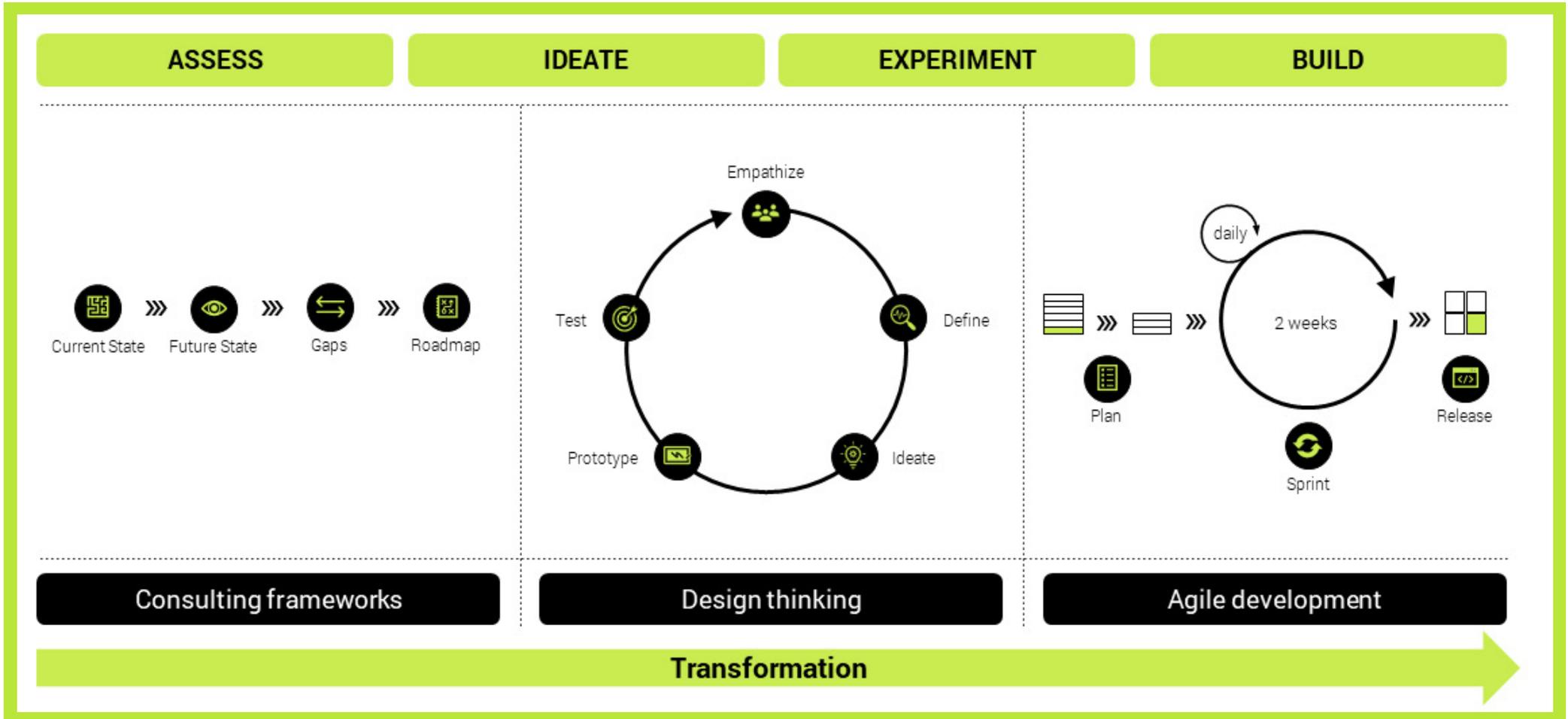
One person might fulfill one or more of the roles described above in a part-time way until the business's data analytics maturity reaches a state that demands full-time coverage. No one individual is going to contain all these skills at a high level. In early phases, it will be necessary to supplement existing teams with outside resources to accelerate maturity.

An Agile process for success

The process for a successful data project applies to any company regardless of where they sit in the data maturity model. Adopting a simplified Agile model (AM) for a data analytics project is the fastest way for a company to advance across the maturity model. The business will effectively move from an abstract process to better understand a core problem limiting the business, to a concrete project aimed at solving that problem.

An effective data analytics project has three parts: ideation, prototype and execution. The ideation process includes the executive sponsor, program manager and project manager; in a \$1 billion business about 10 people would be involved in this step. The prototype stage is driven by the program and project managers and focuses on a specific group within a company, like a business unit or functional area. The execution stage implements the work done in the first two stages throughout the entire business, and features the work of the architect, business analyst, data analyst, data engineer and data scientist.

Digital innovation journey



An Agile process for success cont.



Ideation

Before a company jumps to building a solution, it must identify the actual opportunity. The ideation process is what a company, often working with an outside advisor, will use to identify pain points and consider possible solutions. A client company often will say it needs access to all its data as part of the search for a solution. The ideation process will help a company identify its main pain points and opportunities, and then the necessary related data.

The ideation team uses focus groups to identify key company goals and the pain points that get in the way of these goals. At this stage, empathy is key – asking questions and intently listening to answers. This is how pain points surface. These could include problems with accounts payable, manufacturing processes, new product development or supply chain issues. If the company wants to enter a new market, what do they need to measure about that market? If the company is trying to change the behavior of its sales people, how do they measure current sales practices and desired future sales techniques?

Next, the team defines the personas impacted by the pain point. Personas help the team visualize an actual person who will benefit from the solution – a new product developer, a sales manager, a customer or a key supplier.

After identifying the pain points and personas, the team can ideate where the best opportunities are, the data elements necessary to drive those opportunities, the relative value of pursuing one opportunity over another and possible solutions. For example, while accurately measuring accounts payable outstanding is important, it's less valuable to the business than understanding which are its most profitable products.

An Agile process for success cont.



Ideation cont.

Solutions will vary depending on the problem and where the company sits on the data maturity curve. The solution may be as simple as identifying and collecting data in a more efficient way. It might be developing a data dashboard or a data warehouse. At this brainstorming stage, there may be more than one possible solution to a problem.

When considering solutions, the team also has to consider the necessary resources for successful implementation as well as undertake financial forecasting. Each solution addressing a pain point requires a unique data source to support them.

Prototype

In the prototype stage, the team takes the possible solutions identified in the ideation phase and goes through iterations of building a prototype, measuring whether it is doing what the team expects, and learning from that measurement and adapting the prototype. In practice, the team is building a data analytics tool, getting feedback from the personas most affected by the analytic, and adjusting the tool as necessary.

An Agile process for success cont.



Execution

The next step – execution – is applied across the entire business. Teams that execute well will have a known “velocity,” i.e., the number of backlog projects it can complete over a given period. In this execution stage, the business analyst creates and prioritizes the project backlog – an ordered list of work with short descriptions of a product’s features and fixes. The developers – the architect, data scientists and data engineers – are the ones who execute the backlog. They do this in part by developing story points – units of measure to estimate how long it will take to fully implement a product backlog item. The story points enable a team to define the velocity.

A key part of this step is the cadence that develops between the business analyst and the developers, in which a backlog is continuously created and handed off systematically to the developers, and then back to the analyst. Teams that do not have a consistent cadence for getting feedback from users run the risk of building ineffective solutions.

Part of the work that happens here is accounting for the “technical debt” that accrues because of the speed at which new data analytics tools are developed. Technical debt is the extra rework that is necessary as imperfect new software is rolled out. Project teams should allot 10 to 20% of its development effort for reengineering what has already been built.

Conclusion

A business reaches the peak of data maturity when it can generate incremental revenue based on data it has accumulated and enhanced with other information, and then create a unique data product it puts into the market. A company may be so successful creating what started as “incremental” revenue that they can spin off this part of the business into an entirely new business.

Businesses need to harness data that supports looking forward versus looking backward. For example, knowing sales opportunities in a pipeline is more valuable to the business than knowing sales revenue for the last quarter. In the manufacturing space, knowing projected forecast of units produced is more valuable than knowing actual units produced.

Barriers to gaining the highest level of data maturity include:

- Not having the right people with the right skill sets in place to support data projects that use amplified intelligence and automation
- Managing general business competitive pressures related to a data-driven product or service: Can the business articulate and demonstrate to the market the value of this new data product?
- Managing the fears that some may have relating to an autonomous data-driven product or program (consider the fear some have around autonomous driverless cars)
- Being unable to demonstrate the right level of security and trust in the way the business protects the data. This includes clearly de-identifying data and aggregating it at such a level that it does not put personal information in jeopardy.

Conclusion cont.

The move to data maturity has to happen organically; the right leadership has to be in place that sees the potential in data becoming an asset that produces incremental value for the business. Early in the data maturity process, when a business unit or small team is trying to become proficient in identifying and properly maintaining its key data, they may focus on a “quick win” to demonstrate the value of improving its data maturity. At the high end of the data maturity curve, the business will have a mature development process, where it can quickly deploy new data products into the market and then employ a cycle of continuous improvement processes to enhance the products as necessary.

At that point, a business may form an actual business unit around the data asset, eventually with its own revenue goals and targets. When the company starts focusing on the data asset becoming a revenue-producing product, leadership will be harnessing key functions of the business – marketing, sales, research and development, and IT – to support development of that new data-driven product.



Let's get started! Contact us today.

CONNECT WITH US:

 [@BakerTillyUS](#)

 [Baker Tilly US](#)

 [bakertilly.com/digital](#)

ABOUT BAKER TILLY DIGITAL

Baker Tilly Digital combines strategic industry insight and advanced technical expertise to uncover and solve your digital transformation challenges, providing informed perspectives and working with you to deliver your optimized future state.



Baker Tilly US, LLP, trading as Baker Tilly, is a member of the global network of Baker Tilly International Ltd., the members of which are separate and independent legal entities. © 2022 Baker Tilly US, LLP