Building a High-Impact Data Strategy

QuaXigma

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"By failing to prepare,
you prepare to fail."-
Benjamin Franklin

Convert Data Into Business Impact

Digital technologies such as cloud computing, the Industrial Internet of Things (IIoT), robotics, AI, data and analytics, and additive manufacturing that have contributed to the rise of Industry 4.0 are maturing, bringing the physical and virtual worlds closer. They have been instrumental in enabling manufacturers to generate and collect large amounts of data from manufacturing operations, business operations, supply chain management, and customer engagement, preparing them for digital transformation.

Companies are facing several hurdles to achieving the full benefit of digital technologies, including:
- Shortage of the right skill sets
- Data silos that are hard to reach
- Lack of defined data quality standards
- Missing or inconsistent metrics
- Inefficient or absent analytics and reporting
- Inability to leverage the promise of machine learning (ML) and AI

The gap between data investments and data-driven decision-making can be attributed to ineffective data strategies. A survey by Cognopia found that more than two-thirds of organizations do not have a data strategy at all. Even when companies have defined a data strategy, it often lacks the breadth and depth required to extract value that aligns with the business strategy.

What is a Data Strategy?

A data strategy defines how the technology, processes, and rules are used to acquire, store, organize, transform, analyze, visualize, and deliver data to the intended audience across the enterprise, enabling them to meet and exceed business goals.

A well-defined data strategy aligns with the business vision, has the backing of executive management, and has the support of the broader organization. A data strategy should have well-defined goals with measurable evaluation criteria. An example may look like this:

- Improve incremental revenue by 10% over the next 5 years.
- Cut time to market by 5% in the next 6 months.
- Accurately analyze the economic viability of new products.
- Enhance customer experience and improve Net Promoter Score by 2+ points.

1. Define Business Objectives

There can be dozens, if not hundreds of problems you may need to solve to provide meaningful and impactful business value. To prioritize and pick the right ones to focus on, you need to understand your business goals. You would then identify the data needed to achieve these objectives. Some questions to answer include:

- What are the problems to be solved?
- Which ones align with our most important business goals?
- What are the benefits in solving each of the problems?
- Which ones provide higher value to the company?
- Is data currently available in a form that could help to solve the problem?
- What are the inhibitors to getting data into a format where holistic analysis can be made?

Exploring these areas will help align your data strategy with your business strategy. If the right business problems that generate measurable business value are not identified, you risk the waste of financial and human resources, insights that offer no tangible business benefit, and even loss of faith in digital transformation.

2. Assess Current Data Maturity

A well-crafted data strategy lays out a path to a desired target state. The first step of this process is to understand your current state, particularly with respect to data management and analytics. The assessment helps identify your strengths and weaknesses, required skillsets and resources, and realistic time expectations to get to the target state.

It may be best that the assessment is done by expert consultants outside of the organization for the sake of completeness, efficiency, and unbiased input. This would also eliminate any blind spots of the team members and provide valuable outside experience, especially if the consultants have deep, relevant domain expertise. There are several excellent assessment methodologies to choose from should you decide to do your own assessment.

A complete evaluation of the state of data maturity addresses the following items:

- Current data architecture
- Data producers, data sources, and data enrichment processes
- Data transformation
- Data quality
- On-premises and cloud infrastructure

- Metadata
- Data privacy and security policies
- Business intelligence capabilities
- Data analytics organization
- Data science
- Agile execution
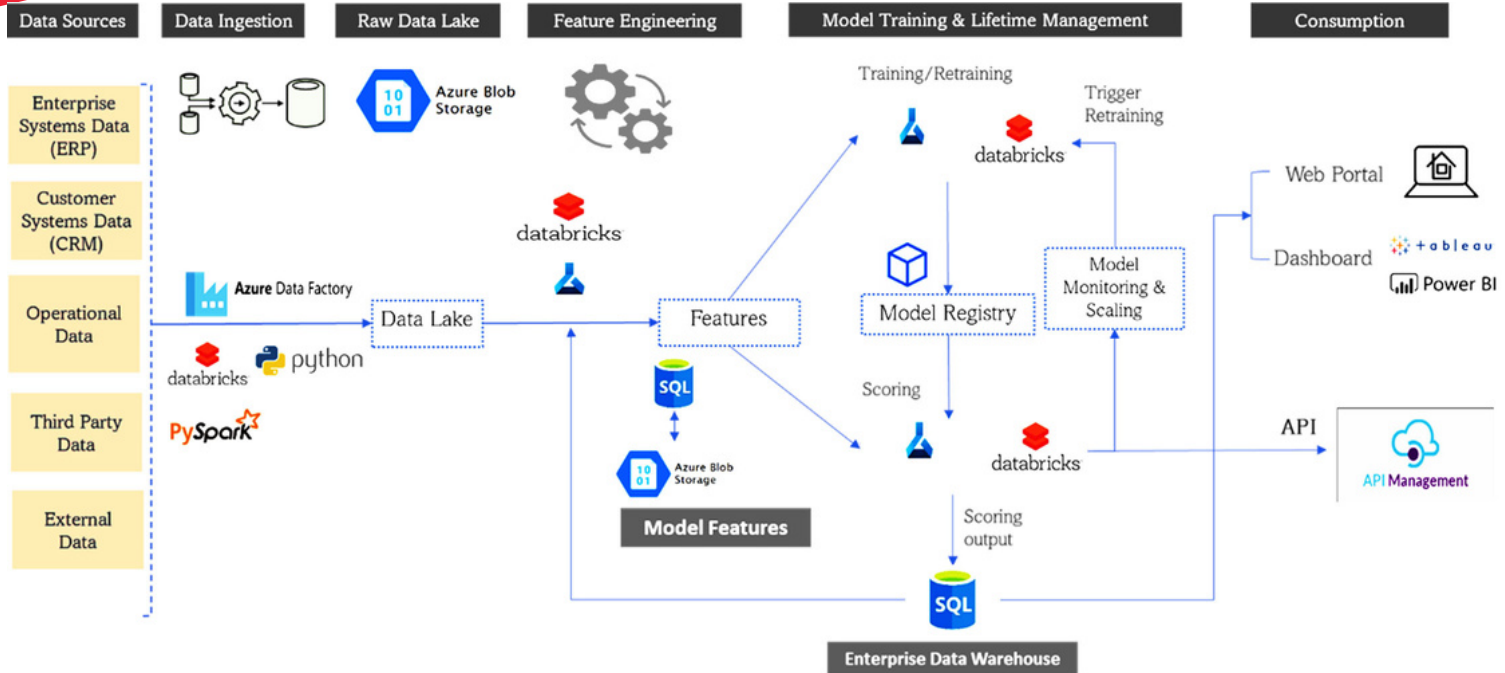
3. Map Data Infrastructure

Data infrastructure encompasses the on-premises and cloud environments with systems that create, ingest, store, and support flow throughout the data life cycle. It includes physical infrastructure such as hardware, networks, and facilities; information infrastructure such as databases, applications, and data repositories; and business infrastructure such as business intelligence systems and analytics.

Prior to making big investments, it is important to lay out the architecture that would serve the organization's needs at its target state. The infrastructure should be flexible, scalable, and available, delivering the desired performance for the current and future organizational needs.

Here are some key elements of the infrastructure -
- Data repository that ingests and stores data from multiple sources.
- Robust ETL/ELT data pipelines that integrate and get the raw data ready for analysis.
- Data enablement – including data quality, validation, and management.
- AI and ML models that deliver predictive, and prescriptive insights.
- Data visualizations that present valuable information to business users in an easy-to-digest format.

4. Establish Data Governance

Data governance includes everything an organization does to ensure the availability, security, and integrity of the data. This could involve setting internal policies encompassing the entire data lifecycle from data generation, data collection, storage, processing, archival, and destruction of data.

Some of the best practices of data governance include:
- Creating a dedicated team that has expertise in data management.
- Setting well-defined, measurable goals, such as lowering cost, and increasing the speed of access.
- Defining and documenting policies and data controls.
- Establishment of role-appropriate access rights.
- Specification of data quality requirements.
- Setting security policies.
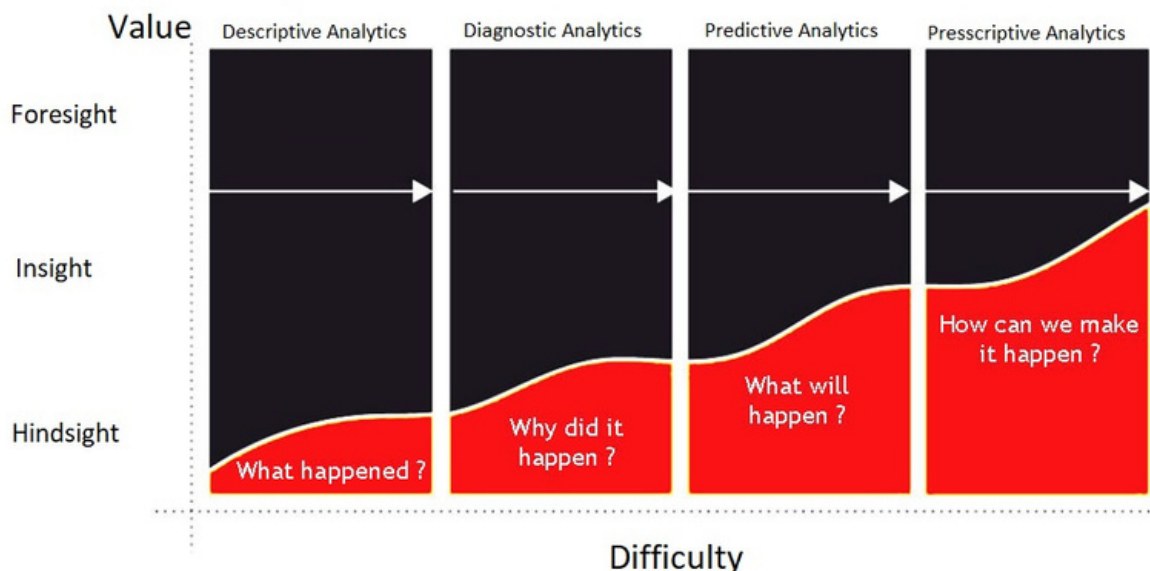- Management of metadata.
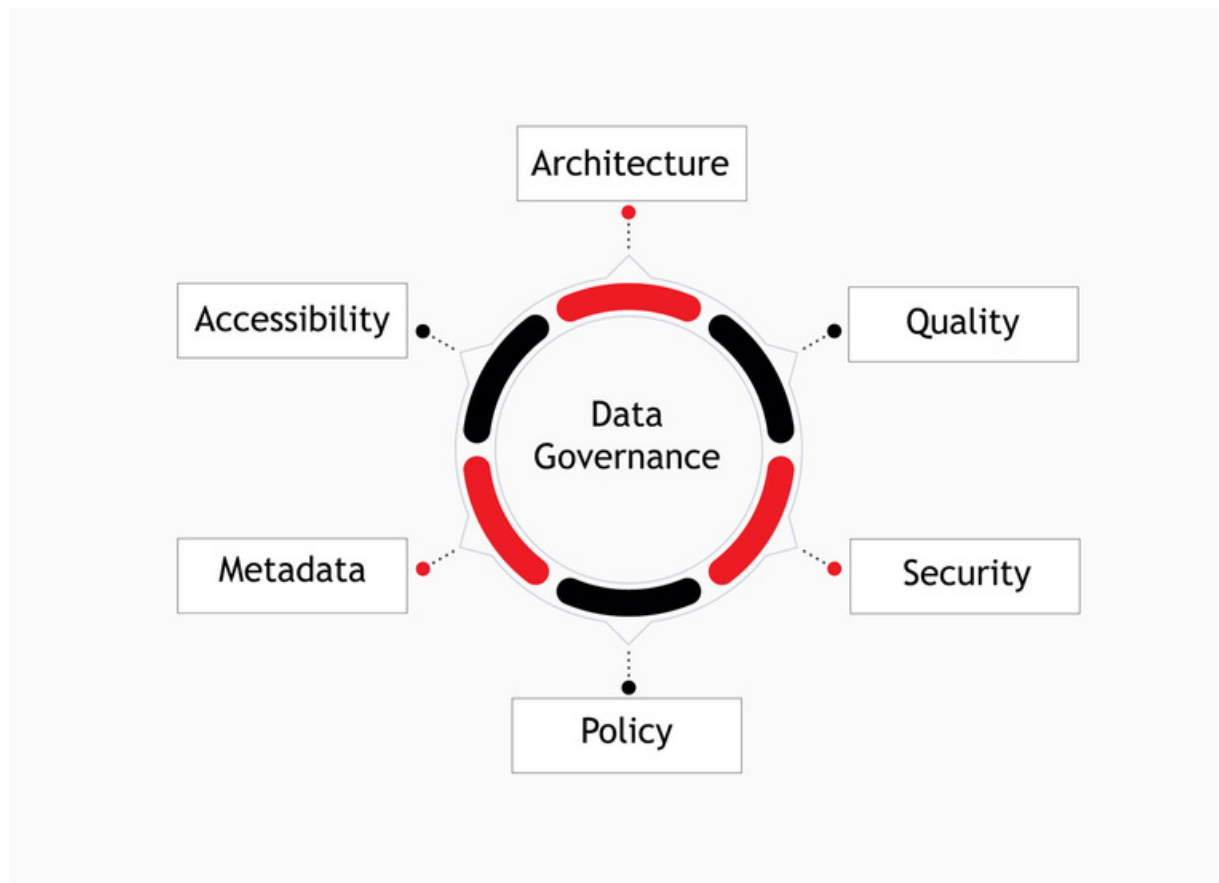
5. Develop Analytics Roadmap

Data is a raw material, which by itself is not of much use to businesses unless it is refined and analyzed to answer specific business questions. There are multiple statistical, mathematical, and machine learning techniques available to refine complex and large amounts of data and extract insights, including data mining, predictive modeling, forecasting simulations, and optimization.

Depending on the questions you are trying to answer, you need to perform one or more of the following analyses.
- Descriptive analytics – It answers the question 'What happened?'. It is used to summarize the data and gain insights into the collected data to answer business questions.
- Diagnostic analytics – It answers the question 'Why did it happen?' by digging deeper into the data and looking for relationships between variables.
- Predictive analytics – It explores the question 'Will it happen again?'. AI techniques are often used to learn from past data by looking for patterns. This knowledge can then be used to predict the possibility of a similar event occurring in the future.
- Prescriptive analytics – It sheds light on the question 'How can we make it happen?'. Prescriptive analytics provides possible next steps to address an unexpected situation or to achieve a desired outcome. This can be used to tackle future challenges and trends.

6. Identify the Right Tools for Data Insights

Once meaningful insights are derived from the data, you should think about how to present the findings to the end users. Reporting and visualization tools translate the vast amount of information that is analyzed into a concise and easy-to-understand format. The trends, patterns, and outliers extracted from data provide insights to the users empowering them to make informed business decisions.

Answers to the following questions help you decide on the right tools and processes.

- Who is the audience for the insights?
- What are the metrics and KPIs of interest?
- What type of reports are needed?
- How frequently should the reports be generated?
- What level of interactivity is required?
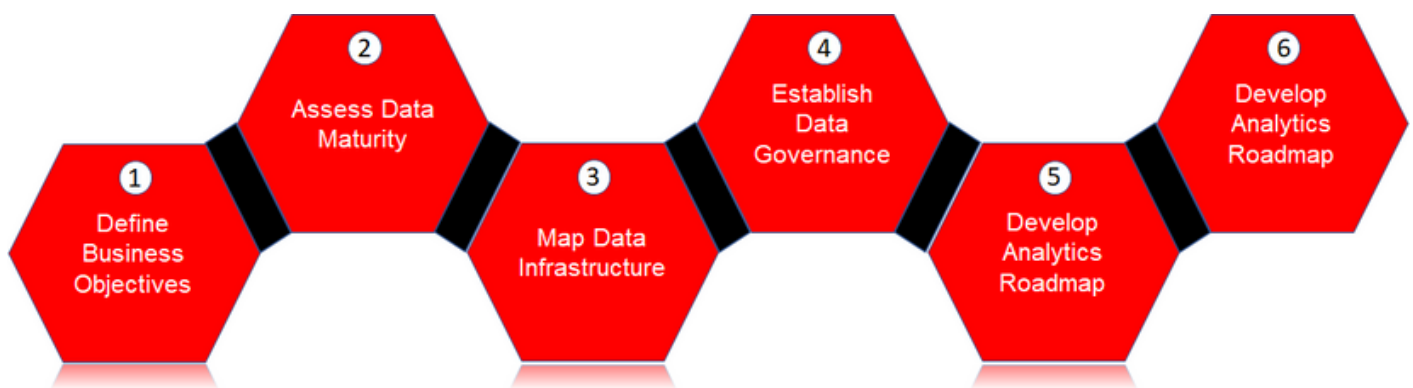- Are the reports generated from batch data or real-time data?

Summary

Developing and executing a data strategy that works for an organization requires discipline, commitment, and a long-term vision. Having a strong data strategy helps organizations improve their bottom line by providing benefits across the organization such as:

- Higher productivity
- Lower production costs
- Improved quality
- Better inventory management
- Faster decision making
- Lower IT and compliance costs

Bear in mind that data strategy is not a once-and-done process. Similar to other business strategies, it needs to be reviewed periodically to make sure it is in line with corporate goals and addresses new data sources and pipelines as they are added. New technologies often present data in new formats from new sources that may require companies to amend their data strategy to derive real benefits. It should also be reviewed whenever new industry regulations are to take effect, or whenever there is a change in corporate strategy.

Once you have laid a strong foundation with a sound data strategy, you are ready to start your journey of digital transformation and reap the benefits of analytics with data-driven decision-making.

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2 Assess Data Maturity
3 Map Data Infrastructure
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5 Develop Analytics Roadmap
6 Develop Analytics Roadmap

About <u>QuaXigma Inc</u>.

QuaXigma helps companies deliver the business value that is locked away in the data that already exists within the enterprise. By combining deep business leadership experience with extensive data platform expertise, QuaXigma becomes a critical ally aligned to clear and specific business objectives, setting itself apart from other analytics providers in implementing technology-first solutions.

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