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AIM Axtria Intel Monitor | 5 STEP GUIDE

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ESTABLISHING ENTERPRISE-WIDE DATA ARCHITECTURE STRATEGIES TO DELIVER VALUE

Today's life sciences industry is under tremendous pressure to develop new drugs and get them to market quicker than ever. At the same time, the industry is being scrutinized by governments, customers, and patients. With increasing regulations, pricing pressures, and rapidly changing market dynamics, life sciences companies must adapt quickly and deliver better patient outcomes.

Data is the backbone of the pharma and life sciences industries. An effective data strategy can truly transform decision-making, leading to positive outcomes and growth.

Data is abundant in today's world but converting it into a valuable business asset requires the right strategy, technology, and execution. With every patient generating nearly 80 megabytes of information, the volume of big data in the life sciences industry is expected to hit 50,000 petabytes in 2022[1]. If we were to print out all that patient information, the stack of paper would be nearly two billion miles high – enough to extend beyond the planet Uranus!

This unprecedented explosion of data creates complexity that makes it imperative to properly align technology with business requirements. Doing so allows companies to understand, adapt, and identify opportunities in this rapidly changing environment. This data deluge strains the ability of current commercial sales and marketing, R&D, finance, manufacturing, and regulatory IT infrastructures.

50,000

PETABYTES

The big data volume in life sciences industry is expected to hit 50,000 petabytes in 2022[1].

1. Forbes - The Skyrocketing Volume Of Healthcare Data Makes Privacy Imperative – August 2021

Big data, AI/ML, and other emerging technologies are making inroads into the life sciences industry. But incorporating new capabilities can often paralyze companies, due to challenges with their existing data management processes. A plethora of data sources are available for stakeholders, but that data is often stored in discreet databases, creating "siloed" systems. Finding a way to harness the power of a company's data for use across all its business groups, requires a robust data foundation and architecture. Over the past decade, we have worked with over 100 life sciences companies in the data management space to plan enterprise-level data strategies that build strong data foundations across business areas. Our clients want to create a culture of data-driven decision making by creating scalable strategies for data.

Picture of Success

Based on these engagements and what we've learned along the way, we've created a 5-step strategy guide that will help you establish an enterprise-level data architecture that realizes the full potential of your company's data.

5-STEP DATA STRATEGY GUIDE

Step 1: Define Data Architecture Strategy Needs

Step 2: Assess As-is State and Recommend

Step 3: Align Business Areas, Markets, and their Datasets

Step 4: Select Data Migration Strategy

Step 5: Define Implementation Roadmap

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STEP 1:

DEFINE DATA ARCHITECTURE STRATEGY NEEDS

> Organizations do not need a BIG DATA STRATEGY, They need a BUSINESS STRATEGY that incorporates Big Data.[2]
>
> Bill Schmarzo, CTO Dell

Life sciences companies benefit from customized approaches to data strategy needs, not one-size-fits-all products.

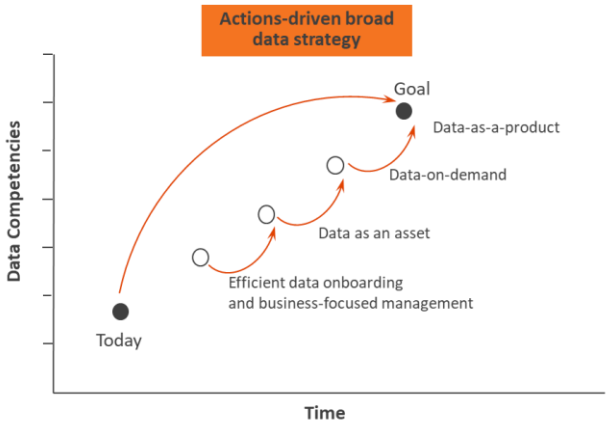
Data can be a strategic asset only if there are enough processes and supports to govern and manage data effectively. Data-gathering paralysis sets in when a company simply gathers data without moving forward. To avoid this, it is important to establish what kind of data you need, plus the business goals you want the data to help achieve. Every company has its own processes, business functions, and stories they want the data to tell. A comprehensive requirement-gathering exercise ensures that all the organization's data needs are noted, understood, and documented. These requirements help determine what kinds of data sources must be purchased to fulfill the organization's analytical needs.

The 80/20 Rule, if applied in this case, says 20% of the data sources should give you 80% of the valuable data. Considering this, be logical and business-like when plotting your course. Because this step is crucial yet very technical, companies need consultants with years of experience gathering, organizing, and discovering the actual value of customer data sources.

In addition to the requirement-gathering initiative, developing the foundation of a robust data governance model is imperative. Step 1 is the right time to start defining these processes and policies. A governance model will make it easier to pull out critical data, ensure the quality of that data, and generate more actionable insights. This will help you create a blueprint for the architecture, source type, catalog method, change management process, and data cost control, which will generate improved data ROI.

Digitization in life sciences has made data management crucial for efficient marketing and creating a 360° view of your customer. Therefore, it is just as important to gather data from traditional offline channels as it is to gather data from the latest digital sources.

When establishing your data architecture needs, you must include all business functions within your organization. Each department will have its own set of processes and stakeholders who scour the data for outcomes. So, for an organization to be truly data-driven, it is imperative for all business areas to work in tandem with a company-wide data strategy. In order to create a culture of data-driven decision-making, understanding needs is a foundational step.



Companies that are in a hurry to shop for technology before they develop a robust data strategy in place often find themselves sitting on million-dollar tech investments that offer little value. A strong data foundation is indeed a stepping-stone to an enterprise-level data architecture that is scalable to support future data sources and analytic needs with ease.

This step truly lays the foundation for the subsequent steps in this guide. However, it is a step that companies must continually revisit as new data sources become available in the future.

2. Bill Schmarzo's Top 2017 Big Data, Data Science and IOT Blogs published in February 2018

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STEP 2:

ASSESS THE AS-IS STATE AND MAKE RECOMMENDATIONS

> "Data quality is directly linked to the quality of decision making,"[3]
>
> Melody Chien, Senior Director, Gartner

The assessment step is where your data strategy vision meets reality. This is where you get to map the current state of the core elements of your data strategy, like people, processes, technologies, and data.

With a data strategy in mind and your requirements in place, look at the architecture and infrastructure you already have in place. This assessment will answer key questions like:

- How close to your data strategy are you today?
- What are the gaps that need to be filled?
- Are there any existing technology investments that can be leveraged?
- Will the current data meet analytical needs for today and the future?
- Do our people have the right skill-set to run the future-state architecture?

The as-is state assessment will also help determine the adequacy of the data security you have in place. While building a data strategy, it is critical to choose the right tools and systems to protect the information and ensure compliance with laws and regulations.

Data quality becomes another critical aspect for all life sciences companies. Every year, poor data quality costs organizations an average of $12.9 M[3]. Apart from the immediate impact on revenue, over the long-term, poor-quality data increases the complexity of data ecosystems and leads to poor decision-making.

Once you have a complete view of the as-is state, it is time to recommend the ideal data architecture along with a technology stack and reference tools. Evaluate several available options and choose the ideal fit for your organization's current and future needs. Re-strategizing is time-consuming and costly. Hence, a conceptual architecture that reflects the current and future needs of the organization should be drawn.

The assessment phase is a crucial step in formulating a data strategy because it prevents the need to reinvent the wheel. It also serves as a benchmark against which the new data strategy will be measured. Having a full understanding of the current state will provide a solid foundation as we move to the next step in the process.

3. Gartner - How to Improve Your Data Quality published in July 2021

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STEP 3:

ALIGN BUSINESS AREAS, MARKETS, AND THEIR DATASETS

> Alignment is the optimal state where the key elements of an organization people, strategy, customers and processes are aligned and integrated to work in concert with each other.[5]
>
> George Labovitz, PhD in the book "The Power of Alignment"

According to Peter Drucker[4], information is "data endowed with relevance and purpose." Raw data such as sales figures, number of prescriptions, or claims have little value on their own until they are integrated with other relevant data to generate insights that aid decision-making.

Many organizations have attempted to create control-oriented approaches to data and information architectures. However, these top-down approaches are not suited to a broad enterprise-level data strategy. Different organizations within a company may want to integrate data differently to generate different views using the same data. The last thing an organization wants is siloed data systems being created by departments whose needs were left out of the overall ecosystem.

A good start is to align the people and processes in the ecosystem. You can begin that process simply by gathering key stakeholders from different business areas and interviewing them about their needs, business functions, user personas, and the markets in which they operate. Each market has its own complexities and regulations, and the details of those can be discovered in stakeholder interview sessions. These sessions can also help in getting insights into the prioritization of markets, subject areas, and data sets.

While doing this exercise, you may come across common objectives or needs in multiple parts of the enterprise. Focusing on use cases where multiple problems can be addressed through insights from similar data sets allows you to start thinking about creating data assets that can support a set of priority use cases.

This alignment process gives a clear view of how data is being used across business units so you can best prioritize expenditures of time and money. From cost optimization to modernization, knowing who needs to be involved and when is a critical part of building a successful data strategy.

With all business teams aligned in a single data strategy, it becomes easy to design a data catalog. With coverage across regions and markets, the data strategy will be strengthened so it will scale easily with markets and new business opportunities in the future.

4. 21 Curated Peter Drucker Quotes About Information published in August 2019

5. Rapid Realignment – Leading, Focusing and Mobilizing the Organization.

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STEP 4:

SELECT THE DATA MIGRATION & INFRASTRUCTURE STRATEGY

> Without data, you are just another person with an opinion.[6]
>
> W Edwards Deming

For a company that wants to put an improved data architecture in place, data strategy and technology upgrades go hand-in-hand.

In the steps prior to this, we saw how to formulate a data strategy. While going through this process, a company may realize it needs to overhaul the existing system, upgrade databases, or acquire new data sources.

A large part of this strategy is dependent on the infrastructure chosen to supplement the transformation. The right underlying architecture for internal and external systems— particularly those in the cloud – can solve wider challenges by offering next-gen capabilities like AI. A strong architecture is necessary to build an ecosystem that leverages models and tools, bringing cohesion to customer information and other enterprise data.

Next, ensure you are leveraging a robust data warehouse that can accept different types of input to generate meaningful insights. In order to benefit from next-gen cloud technologies, it is essential that your business units and IT department work in tandem. While teams look for flexible systems that deliver accurate results with shorter cycle times, IT focuses on technology that is secure, robust, and scalable. Any plan for technology transformation and data migration must fulfill the needs of both groups to ensure the alignment of key objectives.

When an organization prepares for a massive shift in data strategy, it is important to consider the problems that may arise. A detailed risk and mitigation plan should be outlined to ensure business continuity. An organizational change this large requires a comprehensive change management plan that is aligned to stakeholder communication and training needs.

Emerging technologies may enable the next generation of data-management capabilities, potentially simplifying the implementation of data strategies. Using software that is grounded in up-to-date data empowers business teams to make the best possible decisions by providing real-time actionable insights.

6. Without Data, Its Just An Opinion published in September 2019

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STEP 5:

DEFINE THE IMPLEMENTATION ROADMAP

> Give me 6 hours to chop a tree, I will spend the first 4 sharpening the axe.[7]
>
> Abraham Lincoln

With all the strategic decisions made, it is now time to get into action. Implementing the selected data strategy architecture requires a robust work plan.

While some organizations prefer a big-bang approach, designing a phased approach helps to mitigate risks and learn from any past mistakes.

In the first 4 steps, we overcame inertia and embraced change. Now it's time to act on the first steps, using an implementation blueprint. Using the stakeholder interviews held in earlier steps, define and plan the various workstreams based on markets, subject areas, and datasets. Focus on cases where multiple problems can use similar data sets. This will let you start creating "priority use" data assets. These help connect specific data to business value. Each workstream must be treated like a mini-project that follows its own Software Development Life Cycle (SDLC) phases. You may find cases where one workstream acts as an input to another. Designing an Implementation Roadmap helps companies prioritize activities, timelines, and communications across their data lifecycles.

When charting your Implementation Roadmap, don't forget about human assets. Mapping the right set of people to the right tasks and projects can enable an effective change management process when the actual implementation begins. A robust change management plan is a critical success factor for the adoption of any transformed system. It is essential to identify any barriers to change that may arise and create effective communications about the new strategy for each group of stakeholders.

A detailed implementation roadmap will minimize business disruption.

Having a data strategy is a good way for organizations to create data-driven capabilities. Spending time and effort on designing and building a solid plan pays off with a smooth implementation, transition, and successful adoption.

A good data strategy unites teams across the organization with an approach best suited to meet business goals. Data can be a true asset to an organization if the data strategy maps out how information flows across the enterprise, thus avoiding hidden data siloes.

Keeping everyone on the same page when developing an enterprise-wide data strategy takes leadership and data literacy. Ensuring stakeholders' support for foundational data practices and following this 5-Step Guide can help make today's massive amounts of data more useable and accessible, so companies can make better decisions that yield positive outcomes and growth.

The success of an organization's data strategy lies in its people, processes, technology selection, and the data itself. Only then will the strategy yield desired results and allow the organization to thrive.

7. Management: Sharpening the Axe

This 5 Step Guide is part of AIM (Axtria Intel Monitor), which is a series of thought leadership articles that showcase Axtria's expertise in therapeutic areas, industries, and other topics relevant to the life sciences.

Over the past decade, we have worked with over 100 clients in the life sciences industry and interacted with their analytics, commercial operations, and commercial IT leaders. Based on what we've learned from these engagements, we have created a series of strategic 5 Step Guides on how to drive commercial excellence.

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Founded in 2010, Axtria is a global provider of cloud software and data analytics to the life sciences industry. We combine industry knowledge, business processes, and technology to help our clients make better data-driven decisions.

Axtria's cloud-based products, Axtria DataMAx™, Axtria InsightsMAx™, Axtria SalesIQ™, and Axtria CustomerIQ™, enable customers to manage data efficiently. By making data easy to use, companies can leverage data science to deliver insights for sales and marketing planning and manage end-to-end commercial operations. We help customers throughout the complete journey from Data to Insights to Operations.