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Improving decision-making

A playbook for utilizing data products

We will explore

Introduction

Effective decision-making hinges on two essential elements: acquiring pertinent information and deriving insights from it. Data products have successfully helped, and are still helping, users in seamlessly bridging the gap between these two essentials. With firms collecting more data than ever before, the efficient organization of this data becomes paramount to unlocking its potential. Consequently, this supports business leaders in making more informed and effective decisions.

Enterprises, on the quest for agility, collaboration, and heightened efficiency, are embracing the transformative potential of data products. These entities encapsulate and consolidate business information, seamlessly breaking down silos to present a panoramic view of the entire business landscape. By optimizing processes, enabling informed decision-making, and fuelling innovation, data products serve as catalysts for organizational evolution.

In this playbook, we will outline everything you need to know to successfully create data products, helping to deliver business value.

This is intended for IT and business decision-makers who know they need to use data products but want to make sure that they maximize the business value of their data products by taking the right approach.

What are data products?

Ask ten different people what they think a data product is, and you'll get
ten different answers.

That's why it's so critical to be clear from the outset about what we mean. Often, people use
'data-as-a-product' and 'data product' interchangeably, but this can lead to confusion.

In our parlance, 'data-as-a-product' is an approach to the production of data for various use cases.
It is about applying software engineering principles to the data pipeline. The end result is what we
call a 'data artifact' or 'data service': a specific dataset, with a specific format and operational
profile. These can be used as inputs for data products but are not themselves data products.

Similarly, people often use the term 'data product' when they are referring to a dataset that has
been produced to certain technical specifications that make it discoverable, usable, and
trustworthy.

This is fine, but, in our view, not enough to make that a 'product', which is something that delivers
a business outcome by meeting a customer need and is maintained over time. The business
context is missing from this definition. There's no sense of the business problem, the target
customer, or the potential value.
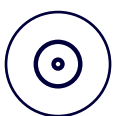
Data Product

Our definition of 'data product' goes beyond both of these terms and specifically considers the
business context. **A data product is therefore not about the data.** Instead, it refers to the
insights that create business value.

A data product is the whole package that creates value, encompassing the data artifact/ service,
the analytics/models, and the business output (e.g. information, insights, actions). For example,
a data product would be a recommendation engine, a pricing model, or a staffing optimization
application.

In practice, these data products tend to either: directly provide value by being sold to external
customers (e.g. market data), tell you something useful about your business (e.g. supply chain
analytics) or tell you what to do in your business (e.g. simulating a product launch in a new
country).

Use cases

Information product

Advanced reporting: Complex real-time reporting from across your entire business and supply chain, e.g. carbon emissions reporting, logistics reporting.

Financial reporting: Surface fine-grained sales, marketing, and finance data on-demand in customizable reports.

Insight product

Single view of the customer: Real-time, on-demand, actionable 360° insights into your customers.

Simulations: Virtually reproduce business conditions to test out new business ideas and mitigate risk, e.g. Digital Twins, Monte Carlo simulations.

Knowledge graphs: Capture complex organizational knowledge and generate sophisticated actions.

Action product

Predictive analysis: Predict future trends and events to drive better business decision-making and product development.

AI/ML-optimized business processes: Using machine intelligence to automatically identify inefficiencies and optimize business processes.

Why do data products matter?

Why do you want to use data products?

The data product approach puts creating value for the customer at the heart of your business. By applying product thinking to your data, you can start delivering data products that meet specific business needs while massively accelerating time-to-value.

By failing to take a data product approach you are setting yourself up with a serious competitive disadvantage.

The key problem is that existing approaches to data are centralized, monolithic, and fundamentally disconnected from business value.

As a result, data management unfolds within highly specialized functional siloes, which tend to act as bottlenecks causing delays. Raw data is taken away from its source and transferred to centralized data warehouses where it's hard for consumers to find, track, and use.

There is a lot of waste and duplication of effort as pipelines are built from scratch for each new proposed use case. Ultimately, business users are disempowered, having to rely on over stretched central teams to provide the data and infrastructure they need to create the kinds of innovative data use cases they aspire to!

Fragmented

Centralized approaches disconnect data from its source, so it starts to drift, becoming fragmented and untrustworthy.

Stale

Even when data is accurate, batch processing means it is often not fresh enough for new use cases that demand more up-to-date datasets.

Not user-friendly

Datasets in centralized systems are often prepared in ways that suit the data engineers, rather than the needs of the end-users.

The benefits of data products

By implementing a data product approach, you open the door to a range of benefits, both technical and commercially orientated.

Technical benefits

- **Improved accuracy:**

  Data products are produced much nearer the data source, making them much more accurate, fresh and up to date.

- **Continuous creation of assets:**

  Important assets are available, for example, the latest sales data, broken down by number of categories.

- **Data-driven decision-making:**

  Move beyond gut instincts to making informed choices based on real-time insights.

- **Empowered ownership & expertise in data:**

  Boost data quality and foster innovation by placing data management in the hands of data domain owners.

- **Efficient data discovery & reusability**

  Accelerate analysis and reduce resource waste by making data easily discoverable and reusable.

Commercial benefits

- **Accelerated delivery:**

  Data products massively lower the amount of friction involved in realizing new use cases, bringing valuable business outcomes in weeks, rather than months of years. The whole process of finding data, turning it into a data product, creating value and then iterating further is massively accelerated. And these data products can then be used and reused throughout the business.

- **Gain competitive advantage:**

  By analyzing in depth market data, data products can both gain insights into market trends beyond our current understanding and do so in minutes. With such speed and accuracy, businesses can make more informed decisions quicker than their competitors.

- **Improve operational efficiency:**

  Leveraging self-service capabilities and automation, as emphasized in data mesh principles, significantly improves operational efficiency by circumventing the bottlenecks often encountered with platform teams. This approach empowers workers to directly access and manipulate data, fostering a more agile and responsive environment. By reducing dependencies on specialized teams for data tasks, organizations enable their workforce to focus on generating tangible outcomes, thus accelerating innovation and productivity across the board.

- **Cost savings:**

  Reusable data assets and more efficient operational processes make your subsequent data investments much more cost-effective.
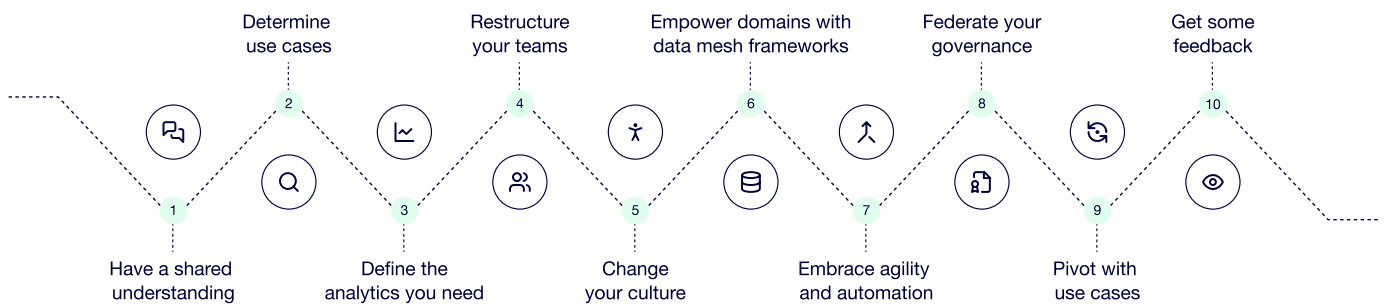
- **New revenue streams:**

  By identifying and leveraging data assets you can unlock new potential income that can be transformed into valuable products or services.

How to build a data product

There's a temptation to dive straight into the tools and technology. But you will be much better served by contemplating exactly what you want to achieve and how before diving into the tech.

esynergy has created a ten-step process for building a data product. Following each step will take you from the initial stages of starting to grapple with the problem, all the way to executing their data product approach and continuous improvement.

Step 1: Have a shared understanding · Determine use cases (2) · Define the analytics you need (3) · Restructure your teams (4) · Change your culture (5) · Empower domains with data mesh frameworks (6) · Embrace agility and automation (7) · Federate your governance (8) · Pivot with use cases (9) · Get some feedback (10)

Step 1: Have a shared understanding

Key stakeholders must align on the definition of a 'data product' to ensure the project's focus and objectives are clear from the start, setting a solid foundation for development and collaboration.

A data product is a solution that transforms data into actionable insights, directly contributing to business value. It goes beyond datasets and analytics to address specific business challenges, meet customer needs, or unlock new opportunities. This encompasses everything from the data itself to the analytics/models used and the insights or outcomes produced.

Step 2: Determine use cases

The next step is to become clear on what the business wants to achieve with its data product capability and the use cases it needs. For example, do you want to optimize your sales funnels? Create ML-driven pricing models? Predict supply chain disruption?

All data products should be built in line with your business strategy. You cannot create a data product capability without the context of clear business objectives. They serve as the north star for your efforts.

Step 3: Define the analytics you need

Then, you need to determine the kinds of analytics you need for those use cases. In other words, what information do I need to satisfy my use cases? Do you need knowledge graphs? Does your data product demand sophisticated data processing with ETL (Extract, Transform, Load) operations, or will it benefit from advanced machine learning algorithms to predict outcomes and trends?

These will determine the kinds of data architecture and capabilities you need.

Step 4: Restructure your teams

Your teams need to be structured to empower your business domains to take ownership and responsibility of their data.

You can make a start by starting to seed data experts into your various domain teams (e.g. sales and marketing) to support them as they begin to make the transition.

Step 5: Change your culture

Just as important as technology is the culture and mindset around data. There are a couple of important shifts that need to be seeded here.

Create 'data champions' who are tasked with promoting the benefits of the data product approach in different areas of your business.

Similarly, you can use 'tiger teams' (who have already worked in corners of your business where new data cultures are taking hold) to be seeded into other areas of the business to help people transition to new ways of working with data.

Step 6: Empower domains with data mesh frameworks

It is crucial to empower domains within your organization by adopting data mesh-like frameworks. This strategic shift aims to move away from centralized data warehouses managed by central engineering teams, toward a federated, decentralized, and decoupled architecture.

Such an approach not only promotes autonomy, enhances agility, and supports a more scalable and resilient data infrastructure but also significantly improves data quality and control. By enabling data domain ownership, where data owners possess the most comprehensive understanding of their data, this framework ensures that data management and governance are directly handled by those with the deepest insight into the data's context and use. This results in better data stewardship, higher quality data, and more effective data governance across the organization.

Step 7: Embrace agility and automation

Adopt an agile methodology to remain flexible and responsive to changes throughout the development process. Integrating automation with your agile practices streamlines deployments, allowing for quick and efficient promotion to production through swift iterations. This approach allows you to quickly identify and address gaps, bugs, and other issues, ensuring continuous improvement and adaptation. Focus on delivering small, incremental changes and value, facilitating early and frequent feedback from users and stakeholders.

This agile and automated deployment strategy not only accelerates the development process but also ensures that the data product evolves in alignment with user needs and business objectives.

Step 8: Federate your governance

Implementing a robust data governance framework is crucial for modern data environments, with a priority on upfront metadata establishment to align data assets with business goals. Key roles such as Data Owners and Data Stewards are vital to ensure data products meet business outcomes and receive the required approvals.

By making data governance a non-negotiable aspect of deploying data products, organizations can secure a consistent and controlled data and metadata lifecycle, essential for maintaining data integrity and compliance. Automating governance processes and mandating compliance checks before deployment streamline operations. Meanwhile, linking technical and business metadata enhances data discovery and quality.

This comprehensive approach not only enforces data governance and compliance but also elevates operational efficiency and bolsters strategic decision-making.

Step 9: Pivot with use cases

Start trialing your new approaches with one use case, so you can transform that little corner of your business, trialing new processes, tools, ways of working, and so on. Once these new approaches are firmly embedded in your team, you can scale operations to work on multiple use cases at a time.

Focus on delivering a small sliver of value as quickly as possible to demonstrate the outcomes of the new approach. Ideally, you can deliver something concrete and valuable in weeks, rather than months or years.

Step 10: Get some feedback

Iterate and expand the new-and-improved practices to the next slice of your organization. Seed experts from the first slice into subsequent slices to help carry the knowledge and expertise as well as to support cultural changes.

Step-by-step, slice-by-slice you can develop a global data product capability.

Data product best practices

This section lays out some common best practices that we have found
are critical in ensuring the success of a data product approach.

- **Stakeholder buy-in:**

  Because of the breadth of the ambition of data product capability, you need the buy-in of a wide
  range of engineering, data, and business stakeholders. This is critical!

  You'll need to execute a campaign to win hearts and minds, clearly demonstrating the value
  proposition and its impact on the business' objectives.

- **User needs:**

  By focussing on user needs, this allows you to prioritize delivering direct value, not just building
  a cool new technology.

- **Strategic data skills:**

  You will need to invest in more strategic data skills. Rather than just focusing on the mechanics
  of data storage and transfer, data engineers need to broaden their skill sets to include
  architecture, product and systems thinking.

- **Start small and iterate:**

  Rome was not built in a day. Begin with a Minimum Viable Product (MVP) and work in short
  sprints. This will allow you to adapt to changing needs, measure progress and continuously
  improve based on feedback.

- **Data quality:**

  Ensure data quality by investing in data governance and cleaning to avoid unreliable data insights.

- **Partners:**

  There's no need to make mistakes others have made before. A trusted partner can help you to
  assess your current state and craft a proven roadmap to gradually increment towards a potent
  data product capability.

How to measure success and ROI

How you measure success and track the ROI of your data product will depend on your initial business goals and objectives.

In this section, however, we will give an overview of the three main areas where businesses typically develop Key Performance Indicators (KPIs), along with example metrics.

Business impact

How is the data product impacting relevant business metrics?

- Cost reduction
- Revenue growth
- Customer satisfaction

Product adoption

Is your data product being used and do you have stakeholder buy in?

- User engagement
- Usage patterns
- User feedback

Technical performance

Is your data more available, effective and reliable?

- Data pipelines
- Model accuracy
- Platform uptime
- Reliability

Key challenges and barriers

At esynergy, we've seen many businesses attempt to take a data product approach, but few end up being as successful as they envisioned.

The following are some of the major barriers that we see when building a data product:

Defined ownership

Clear ownership is crucial to align data products with organizational standards and ensure they deliver meaningful business outcomes.

Assigning responsibility for data's care, quality, and compliance promotes accountability, aligns data use with strategic objectives, and guarantees the data product contributes effectively to the company's goals.

High quality data

Without high-quality data, business leaders lack the foundation for informed decision-making, potentially leading to missed opportunities and strategic missteps.

Maintaining data accuracy, integration, and security demands continuous effort. Proactive governance, through the development of a business glossary, data catalogs, lineage, and access definitions in platforms like Collibra, is crucial for ensuring high-quality, accessible, and well-governed data.

Seamless integrations

Consolidating data from legacy databases and diverse sources into a single platform presents challenges. These can be effectively addressed by employing modern integration services that extract data from these varied sources and consolidate it into one unified data platform.

Scalable data

Ensuring that data products can handle increased loads without compromising performance is crucial for long-term success. Significant investment in data products can go to waste if it cannot accommodate growth in data inputs. These concerns can be mitigated by either planning for future needs and integrating these needs into the pre-existing system when necessary, or implementing a pre-existing structure that can accommodate such growth when it occurs.

Changing data landscapes

Not only do business requirements change, but also data landscapes. For example, many databases have moved on from using SQL as a coding language. To understand how business and data landscapes are changing, consistent communication with clients and using proactive data observability is the way to make data products consistently relevant to businesses.

Data security and compliance

Ensuring a safe and ethical data product requires adherence to regulations, adding complexity to the build and implementation process. A proper governance framework facilitates this by identifying PII and sensitive data, key to maintaining compliance with laws such as GDPR. These governance processes, central to any data product, must be validated by each domain's data owner, ensuring that data handling meets regulatory standards and organizational policies, thereby streamlining compliance and enhancing data security.

Winning hearts and minds

A data-driven culture creates an environment where data is not only valued but is also readily available to drive decision-making processes. Continuing consistent efforts to embed a data-driven culture is necessary to drive effective decision-making processes.

We are here to help

Building successful data products requires an approach that puts end users' needs at the heart of the development lifecycle. By overcoming challenges and adhering to our principles, data products can be useful in unlocking business value and driving organizational success.

At esynergy, our approach to data product builds is designed to be comprehensive, yet flexible, allowing for customization based on specific organizational needs. We aim to ensure that your data products are not just compliant with current standards but are also scalable, efficient, and prepared to meet future challenges and opportunities.

esynergy has helped many organizations build data products to achieve better performance, scalability, and resilience, view our data product case studies:

Northern Trust: Data modernization
Marie Curie: Single customer view

If you are struggling with any of the key challenges of building a data product:

- Making a business case
- Winning over key stakeholders
- Deciding what approach to take
- Data governance
- Security and compliance
- Measuring success and key metrics
- Continuous improvements

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