

PAVING THE ROAD TO VALUE WITH DATA DOMAINS

How data journeys are
operationalized through
collaborative domain spaces

Capgemini  invent





EXECUTIVE SUMMARY

Data Domains are the key for scaling data and analytics to generate business value

The Essence

Data masters enjoy financial and organisational advantages and have opted for data domain-based approaches for managing the hyper-complexity of data. These light-weight structures serve as agile collaboration space for everything surrounding data. By managing data in domains, an organisation can utilize data effectively and scale data journeys. Through domain driven control and governance of data, high quality data products can be provisioned, that lead to better collaboration and decision making within the organisation. It is also through trustworthy data products, that an organisation can unleash the full potential of AI and ESG, to become a resilient organisation.

While defining data domains is not an easy task, they enable organisations to mature in both behavioural and technological dimensions of their data journey in unison. The provided strategies

offer a way to implement a tool that will allow organisations to exploit an asset that has been largely underestimated in organisations, unlocking new value streams. Ultimately, this approach will lead to a competitive advantage through data mastery, *as data will remain a key driver for the coming waves of innovation!*

What's Inside?

Inside this point of view, you will find:

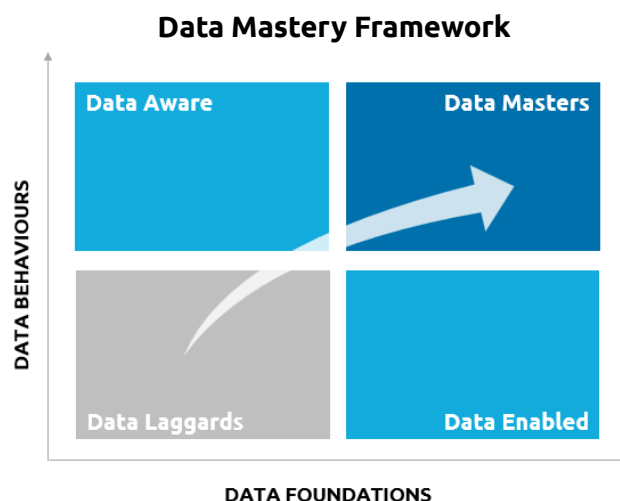
- Analysis of the **market situation**
- A decomposition of the **barriers** of data journeys and their implications for the **Chief Data Officer**
- Introduction to the concept of **data domains**
- A **blueprint process**, frequent **pit-falls** and guiding **best practices** for organisations wishing to adopt a data domain-based approach



State of the data powered enterprise

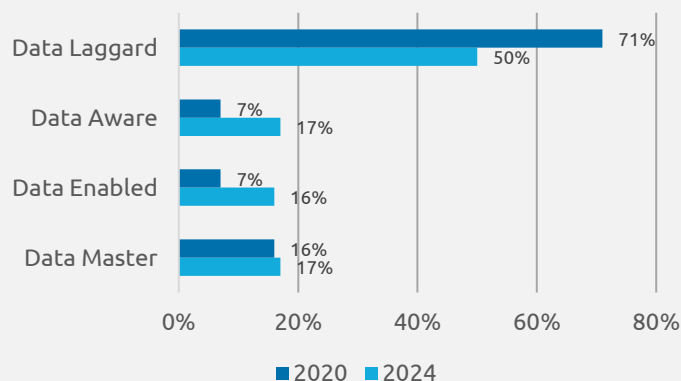
The benefits of reaching data mastery

The latest Capgemini research shows a number of significant financial benefits for companies classified as data masters¹. These include higher growth in EBIT and net income over the past four years, as well as a higher net income margin when compared to non-masters. But what exactly makes a data master? A data master excels in two dimensions. First, the **data behaviours** (e.g. governance, culture and talent) and second, the **data foundations** (technology and tools). Companies excelling in both are considered **data masters**, those with only strong behaviours are data aware and those with a mature technological foundation are data enabled, others are data laggards. The transformation to data mastery is the **data journey**, which spans from data strategy to its operationalization.



What does the research say?

Data Journeys from 2020 to 2024*



*In 2020, only 16% of companies were classified as data masters². This number rose by a mere 1% to 17% in 2024. At the same time, the number of data laggards decreased from 71% in 2020 to 50% in 2024. Given the benefits of being data powered, it is no surprise that organisations continue to invest into their data capabilities, even though the **vast majority still falls short** of scaled effects. So, enterprises are on their data journeys, but fail to drive maturity along both dimensions of data mastery to a satisfactory level. While certain **industries** are more mature than others, data masters always outperform their competitors.*

AI, Sustainability and Data Capabilities

Due to the **rise of AI** and the importance of **ESG**, a few words must be said concerning these topics. While the advances in these algorithms and applications drastically change the art of the possible, it is critical to understand that they alone will not materialize **business value** due to their dependencies on robust data capabilities. These trends simply cannot be regarded in an isolated manner,

let alone work without the enablement of data. Looking into the future, data will remain a driving source of **innovation** and **competitive advantage**. Therefore, those with the concrete goal of unlocking the benefit of AI and becoming a sustainable, resilient organisation, must strive for data mastery. A **data strategy** is a good first step, however a frequent point of failure already lies in its operationalization. To master the entire data journey, *pave the road with data domains!*

¹ Capgemini Research Institute – Data-powered enterprises 2024, n=1000

² Capgemini Research Institute – The Data Powered Enterprise 2020, n=1000

* Percentages may not total to 100% due to rounding



The CDO's struggle with data journeys

What are goals of data journeys?

Data journeys usually follow the modern paradigms of data mesh, treating data as an asset, data democratization, self-service platforms, data products or data ecosystems. The **chief data officer** is ultimately responsible for driving this journey. The goal is to enable the workforce to make better decisions, automate tasks or introduce new business models. These buzzwords and goals can be debated, but in essence, all serve the purpose to **scale data in an organisation**.

CHIEF DATA
OFFICER

"A CDO can lead data management initiatives and enable an organization to leverage its data assets and gain competitive advantage from them. However, a CDO not only leads initiatives. He or she must also lead cultural change that enables an organization to have a more strategic approach to its data"³

The barriers blocking the data journey

When scaling data, the CDO and fellow executives typically face the barrier that data is no typical business resource. A **hyper-complexity** arises as enterprises seek to deal with data as they would with any other asset. This is bound to fail. Historically, data was seldom owned by business, yet it typically reflects business information and

knowledge. IT departments, unaware of the business context, provided the technology to store and process data but the question of **governance, ownership and responsibilities** was seldom answered or deliberately left open. Furthermore, data is not static but flows freely along the **data life cycle** (see next page), without adhering to system or department ownership. Data is generated, transformed and built on. In contrast to typical assets, data does not perish throughout this process. Unlike an assembly line, where a product ceases to be the responsibility of one stage when it enters the next, data is multiplied and creates more of its kind when it is transferred. As a result, complex **inter-domain dependencies** arise, and organisations struggle to understand who owns the data at different stages during the life cycle. Lastly, organisations fail to measure the value of their data, which is sure to cause flat tires for any vehicle on a journey to data mastery.

In short, the hyper-complexity* of data stems from unclear ownership, a mix of IT and business involvement, its flowing nature, its non-perishability, and the failure to attach monetary value to data. The CDO typically lacks the means to deal with these challenges due to an inadequate organizational set up. This hinders the CDO to enable the organization with data at scale, leaving the vast value potential untapped.



***Note:** the author recognizes that data hyper-complexity is also fueled by a lack of talent and technological issues. Due to the scope of this paper, these topics are not covered in depth. However, through the alignment of IT and business strategies these capabilities can be built in a targeted manner, hence data domains also offer a solution for these issues.

The implications of the data life cycle

A simplified version of the **data life cycle** can help visualize the implications of this hyper-complexity. Data is created, collected, transformed and written to analytical applications, flowing through a multitude of systems. The traditional IT view is mostly concerned with data management in the **analytical** stage, as "value is created here". There are two reasons why this is a bad approach. First, **operational** data products are used by business processes, creating value as well. Second these determine data **quality** and **accuracy**. It is thus

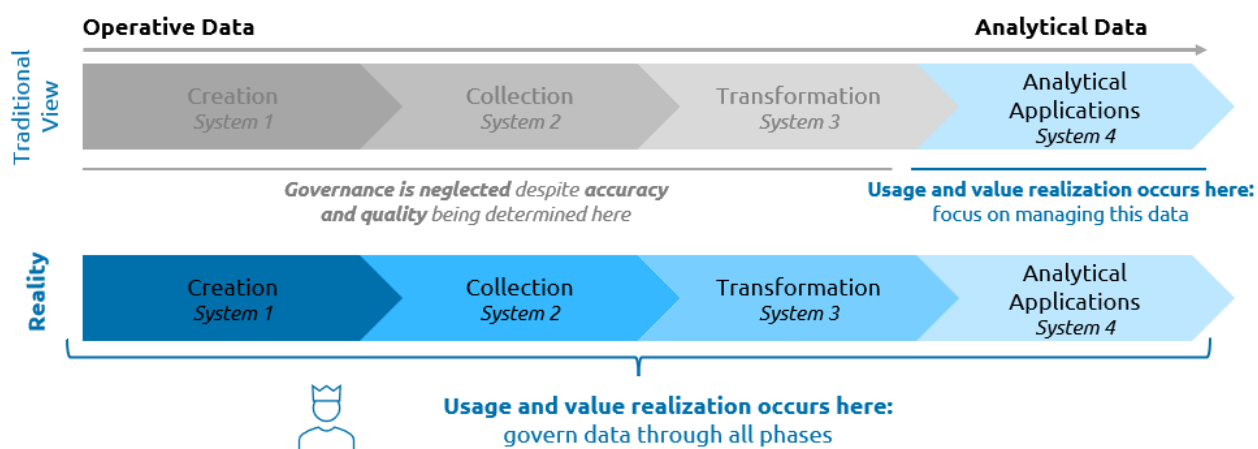
imperative that both operational and analytical data products are carefully governed.

Similarly, a quality inspector at the end of an assembly line may raise quality concerns but cannot amend them because the product is already finished. No one would blame the inspector for pointing out quality issues. So why should data scientists act as **data stewards** in analytical systems and answer for suboptimal data quality that they cannot control?

³ DAMA DMBOK – 2nd edition



The Data Life Cycle



What to do about the hyper-complexity of data

This hyper-complexity drastically impedes the progress of data journeys for the majority of companies because it stifles their ability to work with data at scale. This keeps the return on investment low and in turn decreases traction for data initiatives. Without mitigation, the CDO cannot drive

the journey and the value of data will remain locked regardless of the complexity of applied algorithms. Due to the versatility of data, a holistic approach, that allows the organisation to break the journey down into digestible bits, is imperative.

What are data domains and how may they help?

Data Domains are so much more

To effectively scale data, The chief data officer must enable and coordinate local, autonomous units, while leveraging scale economies from enterprise-wide initiatives. How can this be achieved?

Over the past years the concept of **data domains** has gained traction. In their essence, data domains group related data from a particular business domain. For these they provide data assets that serve as single sources of truth, frequently with an IT and System centric approach. Many data executives stop there and see domains as a purely technical concept connected solely to data

architecture and models. We must transcend this paradigm, for data domains to unleash their potential.

Enterprises must see data domains as **light-weight organisational** units within which business and technical stakeholders collaborate, operationalize data governance and establish robust data capabilities. They can thereby drive data foundations and behaviours in unison and allow the chief data officer to coordinate all initiatives through central steering and local execution in both technical and governance aspects.

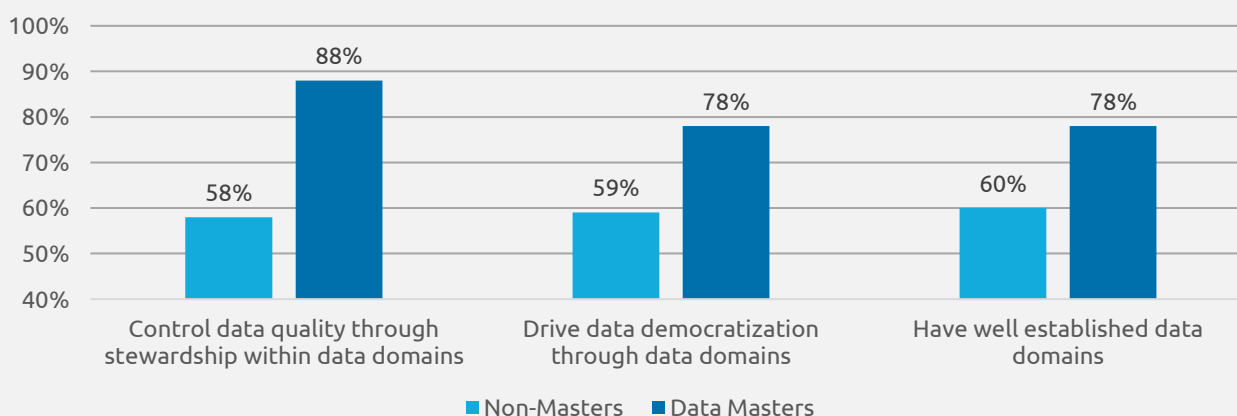


What does the research say?

The research also makes it apparent, that **data domains are an integral part of successful data journeys**⁴. To assure high data quality, 88% of data masters assign roles and responsibilities over data through their domains. No surprise, as high-quality data is the basis for provisioning high quality data products and these are the fuel for any journey. 78% leverage their data domains to drive data democratization and culture forward, i.e. ensuring the wide scale use of data within the organisation. Finally,

78% state that data domains are well established within their enterprise. These insights make evident that data masters drive their data journeys forward by operationalizing data domains in a holistic manner. They begin by assigning responsibilities to improve data quality and then broadly provision high quality data, drive collaboration, create awareness and build a general data culture through the context of data domains.

The State of Data Domains in 2024



Data domains to the rescue!

So how do data domains resolve the hyper-complexity of data? Organisations need to learn how to deal with data as a **new type of business resource**. By creating these collaboration spaces, all required expertise and authorities are bundled in one location and the journey can progress.

That's why the role of the CDO is so critical, as these activities require a guiding hand. Through the alignment between business and technology stakeholders, one **common language** is established, greatly aiding both communication and knowledge transfer. **Data products** and use-cases can then be ideated, and corresponding business cases drafted. Their sum will amount to the value of data within a domain. A first milestone to achieving sustainable change.

By analyzing the existing **business architecture**, end-to-end ownership can be assigned over the data life cycle. The trick is, that responsibility is granted to those with authority at any given stage rather than on a department or system basis. This creates clarity for both IT and business stakeholders, as responsibilities are settled. While this will also raise dependencies between domains, it clarifies responsibilities of all data products, copies and versions.

A data organisation built on data domains will furthermore improve **enterprise agility**, through a quicker time to-market due to granular data control and federated governance. In turn, a collaborative data culture will foster talent and technology, and raise the demand for data by default.



Defining and operationalizing data domains

Data domain models and what to avoid

Data domains are typically defined following the formulation of a data strategy and together form the **data domain model**. Data domain models are the basis for the data organisation within a firm through which the chief data officer orchestrates all data & AI related initiatives.

It is noteworthy that merely grouping analytical data in domains within IT will change nothing. There must be shift towards collaborating with business stakeholders and including operational data. Tracing end-to-end data lineage along the business architecture within domains, assigning ownership and defining the data products is where everything comes together. All stakeholders must buy into the set up and be onboard, that's why the domain cannot be defined or

managed purely from within IT. Constructing a complete data domain model with this in mind is not an easy task and there are several caveats to be aware of. The most common **pitfalls** during the design phase of data domains include:

Common pitfalls

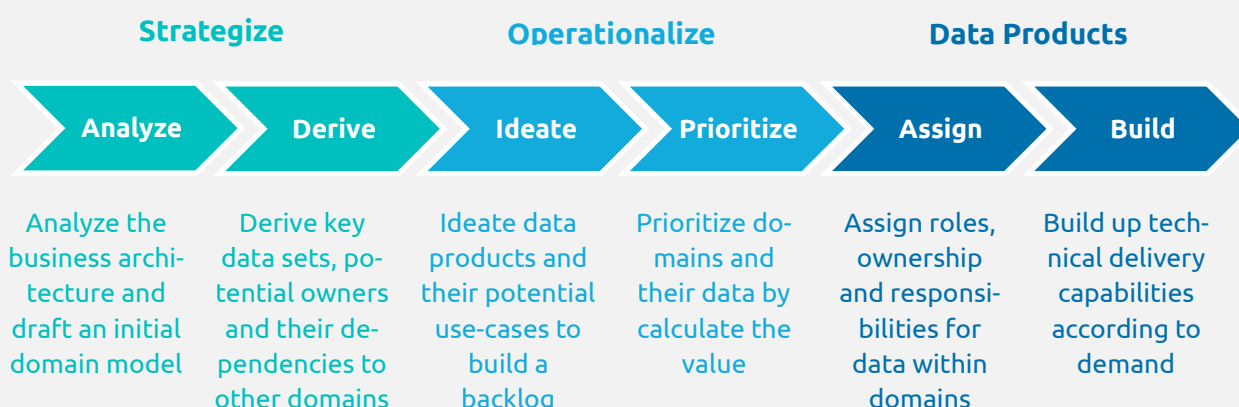
- 1 Replicating existing organisational structures
- 2 Lack of accountability of domains towards a chief data officer
- 3 Assigning system-based ownership over data
- 4 Driving data domains from within IT
- 5 Limiting domain scope to data architecture

How to define a data domain model

A data domain model must strike an organisational balance, group matching data, assign ownership to the right stakeholders, focus on business value and enable innovation within the organisation. The following **6-step process** acts as a

blueprint for defining a data domain model and is divided into three phases (Strategize, Operationalize and Data Products). It must however be noted that this is an iterative process, and multiple repetitions may be required. In general, the data domain model will evolve and change around the available data and requested data products.

6-Step Domain Definition Process



⁴ Capgemini Research Institute – Data-powered enterprises 2024, n=1000



Best-Practices for the road

Depending on the effort put into the definition of data domains, this can be a quick or longsome exercise. The goal is to identify valuable data, group it and ensure that those governing the data have the authority to deliver, manage and influence it. The collaboration space is shaped around the corresponding business context. Since data products

are relatively new asset types for many organisations, this will not be an intuitive exercise. The following **best practices** will help along the way. The first step is to apply the strategic best practices during the first two steps of the definition process.

1

Start with the challenges your organisation is addressing

Understand the business context and the solutions that your organisation is offering to your customers. Identify the key KPIs and integral data sets for your business model. Combine these insights with your data strategy and derive potential data products.

2

Those creating the data must be responsible for it

To ensure high quality data, we must ensure awareness and ownership at the beginning of the life cycle. Assuring buy-in from those responsible for operational processes, creating the raw data, is crucial as they usually have the highest impact on the quality.

3

Envision data domains as collaboration space

Data domains drive the data journey by acting as units that operationalize data governance and offer the technological capabilities. Roles should be appointed within the context of a domain and the infrastructure should be tailored to address the specific business problems of them.

4

Strike the balance between existing structures and the needs of data

Data flows along value streams and it is critical to ensure clear end-to-end responsibilities across these. Replicating existing organisational structures not only replicates silos but also gives a false impression of ease when introducing data domains. Ensure that domains have end to end authority over their data and dare to create new stakeholder groups to adhere to the flow of data.

5

Central infrastructure, federated development

A domain's infrastructure should be provisioned and maintained by a central team while the architecture and development resources should be located within the domain. It is acceptable for resources to specialize in more than one domain as long as these resources build up domain specific know-how.



Making things come to life

When the strategic frame is in place and things are materializing, the key is to progress fast and track the progress that is being made. This is essential to create a momentum and ensure

stakeholder buy-in. Don't be afraid to make mistakes and re-iterate. Be sure to communicate success stories, as with any change or transformation project.

6

Apply a Data Domain Maturity Model for strategic guidance and progress tracking

Building momentum within the organisation requires transparency on the maturity and availability of individual data domains and the products they offer. Defining a set of metrics to measure the key components of domains within your organisation is a must to create transparency and communicate the maturity of different domains within the organisation.

7

Data journeys are as much about organisational as technological change

Without adoption and the right culture any data journey will fail. Ensure that change management is in place to generate buy-in and balance demand and supply for data within your organisation.

8

Data domains are living entities

Don't expect the definition of data domains and their products to be a one-time exercise. The introduction of this new capability will allow your enterprise to quickly adapt and react to business challenges but may require re-defining products and domains from time to time.

9

Don't over model, work fast and agile

Focus should be laid on minimizing time to market and quick product iterations rather than planning and modelling activities. Light-weight class diagrams can be used as documentation and basis for a common language, but extensive data modelling should be avoided.

Data products as asset

From a data perspective, the goal is to ensure that **high quality, trustworthy data products** can support data and analytics services to enable the organisation to make better decisions and drive business outcomes. A large part of the journey is solely devoted to this purpose. Smooth data

product management requires demand processes, SLAs, quality and documentation standards to be enforced. It is through these processes and practices that data masters ensure that data is treated as an asset and scales throughout the organisation.



10

Identify data sets with unclear ownership and define SLAs for inter domain dependencies

When identifying data sets, keep track of those with unclear ownership. These must be documented and discussed with the domain owners, subsequently a decision must be made on who owns these data sets. For inter-domain dependencies, service level agreements must be put in place so that downstream domains will receive trustworthy data products.

11

Develop a global demand management process for data products

Demand for data products may arise anywhere in the enterprise. A funnel management mechanism must be put in place, that allows anyone to raise a demand for new data products. The demand is then evaluated and added to the corresponding data domain's product funnel.

12

Develop a data product portfolio and determine data value

When adopting a product thinking approach, it follows that prioritization occurs according to the market demand. During demand management, the value and feasibility of data products must be assessed, and the delivery prioritized accordingly. If no value framework to calculate monetary value is in place, one needs to be devised.

13

Documentation and transparency

Domains must offer the necessary documentation in order to ensure transparency, thereby creating trust. Ideally, terminology is stored in a business glossary and the technical details are documented in a data catalogue. Typically, these tools are provided by a central team and the domain is responsible for the domain's content.

To conclude

Organisations in all industries continue to invest into their data capabilities in order to become data masters. While the majority falls short, a few companies are able to increase their maturity. These masters enjoy a vast number of financial and organisational benefits and reap the full benefit of data and analytics. A continued investment is imperative, as only those with strong data capabilities are able to profit from AI, fulfill their ESG goals and build a sustainable competitive advantage.

While there are many barriers to becoming data powered, the essence is that organisational data undergoes a life cycle through a multitude of systems. This leads to a situation where ownership, responsibilities and the use of data is frequently unclear. The result is an environment of hyper-complexity that stifles the chief data officer's role of driving data maturity at scale.

Through collaborative data domains, this complexity is resolved and the CDO can enable the organization to become truly data and AI powered.



About the Author



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Sebastian has a cross-industry background in guiding organisations along their data journeys towards a data driven future. Through his experience in enterprise-wide data transformations and end-to-end implementation projects, he has gained deep expertise in both strategizing and operationalizing data journeys at scale.

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