One data strategy to rule them all

A comparative perspective on data strategies

Content

Executive summary

Most companies in the manufacturing and service sector are trying to get an added value from the huge amount of data they have access to and the respective insights they bring. At the same time, many enterprises are also searching for a framework for how to proceed in a structured way. And I am quite sure that you are asking yourself similar questions. How is your company positioned in terms of data and analytics (D&A) and what do you need for a successful implementation of your strategy?

This PwC study provides an 'Enterprise Data Strategy' framework for companies that are already using their data strategically or want to do so in the near future. PwC is a proven expert in the field of data and analytics. They have gained extensive expertise over many years from various projects and have generated additional insights through the interviews conducted for this study. With this study, you will get a structured framework that guides you through the most important topics that make up a successful D&A strategy and supports you in making conscious decisions about your implementation roadmap. It is aimed at decision-makers and implementation managers, not only in IT, but across all business units.

Whether you are just starting or already in the implementation phase, this study will help you classify your previous decisions on your D&A strategy and to define your future fields of action. You will learn which aspects are of strategic importance and which decisions have the biggest impact on the successful design of your strategy.

The PwC framework integrates the relevant aspects in five dimensions: What kind of strategic and organisational conditions are necessary? Which architectural decisions must be taken? Which data management tools and processes are needed? How is data security and privacy guaranteed and what are the respective consequences? What effect does a company-wide data and analytics strategy have on your corporate culture and your staff?

For a D&A strategy to be successful, the focus must be on five main topics: organisation and governance,

capability management, operational model, platform, as well as data access. The target state of a sophisticated data strategy is a future-oriented hub-and-spoke model with clearly defined governance.

The study analyses the different characteristics and stages of each of the five key dimensions and assigns the questioned companies to the respective approach. Several use cases demonstrate how a given topic was implemented – usually depending on the maturity level of the company in terms of D&A.

Based on this enterprise analysis, three data archetypes are identified, reflecting at which point of its D&A journey a company is and which level of data maturity an enterprise has reached. These archetypes have varying characteristics for each of the mentioned dimensions allowing to define a company's maturity stage.

The concluding recommendations support the companies in their development towards the target scenario. This study will show you how a D&A strategy can help your company as a whole and you will learn different measures that can help you get fit for the future and move from one level to the next, until you reach the end goal of becoming a data-driven company with a functional ecosystem.

It is now up to you to define your own company framework. I wish you great success in designing your D&A journey.

Dr. Gundula Heinatz Bürki
Managing Director
data innovation alliance

"Dear reader, when working with our clients on the definition of their data strategy and the implementation roadmap, we regularly face the question: 'How have others done it?'. In response to this, we conducted our research which led to the findings in this study. I hope that you can relate to the insights presented here and that they offer you a starting point for the journey towards your own data strategy."

Matthias Leybold, Partner, Data & Analytics,
PwC Switzerland

Introduction

In recent years, the importance of data has fundamentally changed the way we do business. We are able to collect, store and use increasingly large volumes of data. The total amount of data created in the world is predicted to grow tenfold by 2025, reaching a staggering volume of 175 zettabytes (175 trillion gigabytes). However, the power of data lies in the targeted extraction and subsequent use of valuable information, not in its sheer volume. It is estimated that in 2020 only about 0.5% of all available data has been used for analysis.

It is, therefore, no surprise that Data & Analytics (D&A) activities that focus on the systematic application of data to solve relevant business problems and generate value have rapidly gained in importance in the past few years – worldwide and across all industries. Future growth in D&A is expected to be driven by artificial intelligence, the Internet of Things (IoT) and cloud computing.

Reacting to this development, industry leaders across all regions and businesses have put significant resources into the development of D&A strategies. But the increasing investments have not necessarily led to a significant increase in measurable results from their data initiatives. After the initial hype and subsequent surge, companies have been left disillusioned with a fractured data infrastructure landscape and opportunistic D&A innovation vehicles. The underlying reasons are organisational and cultural, highlighting the need for a comprehensive and holistic organisational approach to data and analytics.

There are more than enough reasons for us to take a deeper look at the data strategy of companies across industries to find out which key factors drive the data journey, which decisions are crucial for developing and implementing a company-wide data strategy, and which are the commitment levels that determine the success or failure of the strategy.

Our research provides specific examples of the decisions that other companies have made, including the context, rationale and implications. In April and June 2020, we surveyed more than 50 companies on four different continents and interviewed more than 20 experts and leaders in the areas of digitalisation, data analytics and digital transformation – covering the areas of finance, pharma and life sciences, automotive, manufacturing, consumer goods and services, utilities and the public sector.[1]

This extensive research and outside-in perspective enabled us to identify the five key factors that drive any data strategy as well as three data strategy archetypes of companies. These three archetypes represent the company's levels of data maturity – ranging from the 'foundational, decentralised archetype' with a low level of data maturity, to the 'centralised archetype' and the 'embedded, decentralised archetype' with higher levels of data maturity.

This framework allows us to draw specific conclusions and next steps at different stages of the data journey and therefore help companies to define, develop, implement and improve their own individual data strategies to capitalise on their data in an efficient and compliant manner.

This paper provides an overview of our insights and serves as both an analysis and practical guide for your own data strategy.

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[1] 12 % of the surveyed companies have revenues of less than $1bn, 35 % generate revenues of between $1bn and $10bn, and 53 % of the companies in the study have revenues of more than $10bn. One third of the companies have fewer than 10,000 employees, 36 % have between 10,000 and 50,000, and 31 % have more than 50,000 employees.
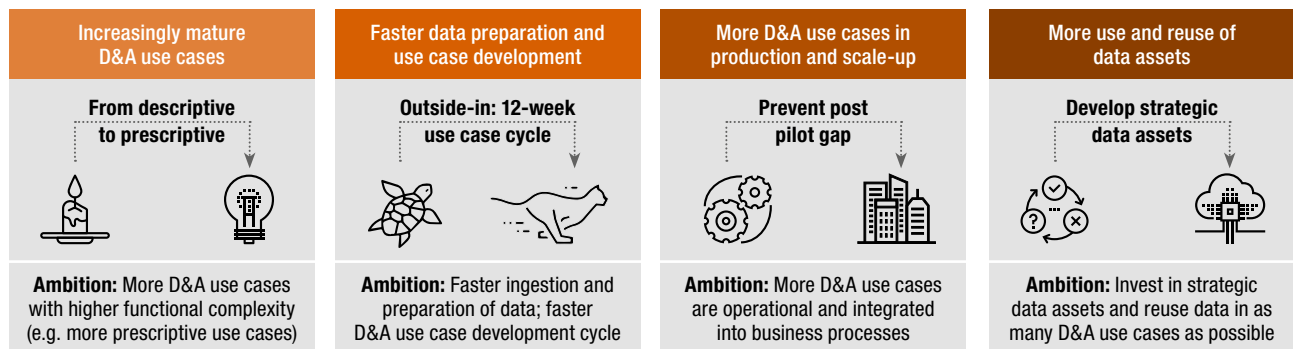
1. Enterprise data strategy and framework

The value of a compelling enterprise data strategy

A well-defined enterprise data strategy (EDS) and data governance framework enables an organisation to define guidelines and rules on data management. Enterprise data management covers all the key areas which are essential for any high-quality organisational data eco-system – and it permits organisations to take informed decisions about how to manage their data assets. Enterprise data management ensures trusted and properly governed data are used efficiently across all value chains. But this is not all. These fundamental data management activities are just the means to create real business value. They allow companies to roll out D&A use cases faster and scale more efficiently. Furthermore, advanced D&A use cases empower organisations not only to analyse the past, but also to predict the future.

Increasingly mature D&A use cases	Faster data preparation and use case development	More D&A use cases in production and scale-up	More use and reuse of data assets
From descriptive to prescriptive	**Outside-in: 12-week use case cycle**	**Prevent post pilot gap**	**Develop strategic data assets**
Ambition: More D&A use cases with higher functional complexity (e.g. more prescriptive use cases)	**Ambition:** Faster ingestion and preparation of data; faster D&A use case development cycle	**Ambition:** More D&A use cases are operational and integrated into business processes	**Ambition:** Invest in strategic data assets and reuse data in as many D&A use cases as possible

The five main dimensions

To address the complexity and variety of data, business processes and data governance requirements, PwC's EDS framework consists of five main dimensions and 27 sub-dimensions. They cover all areas and aspects that influence a company's decisions regarding data strategy and governance related to both individual business units and the whole enterprise.

The development of the EDS has its foundation in the enterprise data management framework covering five main and 27 sub-dimensions.

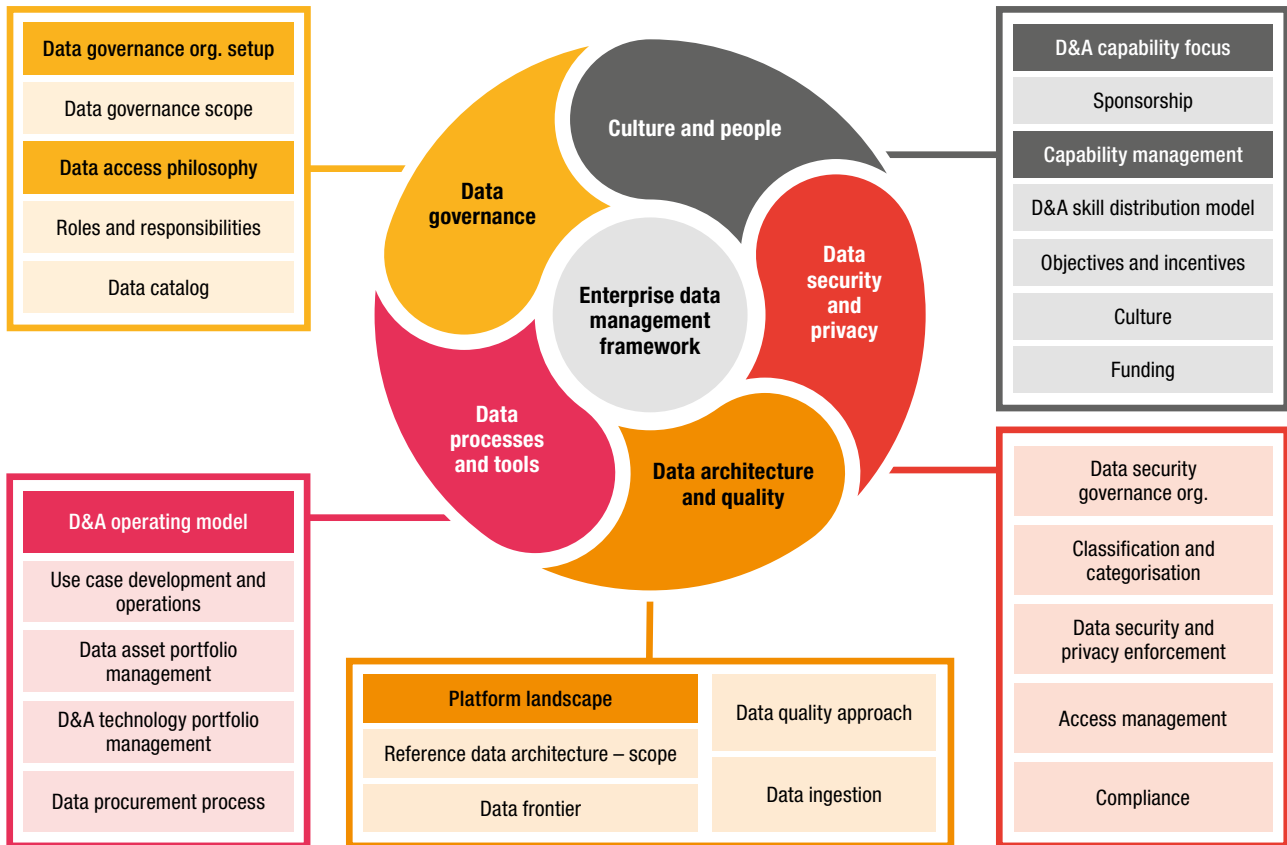The five main dimensions of our data management framework are:

- data governance
- data processes and tools
- data architecture and quality
- data security and privacy
- culture and people

Data governance covers the scope and organisational setup of data governance, the philosophy regarding access to data, the various roles and responsibilities, and the data catalogue. **Data processes and tools** defines the management of a company's various use cases, the setup of its operating model, the procurement and administration of data and the D&A technologies applied.

An organisation's **data architecture and quality** is equally important for the development and success of any data strategy. Some enterprises have one company-wide platform, while in others multiple platforms exist next to each other. Data governance is applied to data analytics only or harmonised across all data assets and uses. Data quality requirements also include how data is ingested. **Data security and privacy** deals with all aspects of organisational data security, the classification and categorisation of data, security and privacy enforcement, as well as all the respective regulatory requirements and how access to data is granted.

Last, but not least: the development and implementation of an organisation-wide data strategy stands and falls with the people involved, i.e. with **culture and people.** D&A initiatives may happen in business units or be coordinated centrally. Different functions can sponsor D&A activities; a central academy can develop and support D&A skills and career paths.

Data governance

- Data governance org. setup
- Data governance scope
- **Data access philosophy**
- Roles and responsibilities
- Data catalog

Culture and people

- **D&A capability focus**
- Sponsorship
- **Capability management**
- D&A skill distribution model
- Objectives and incentives
- Culture
- Funding

Enterprise data management framework

Data security and privacy

- Data security governance org.
- Classification and categorisation
- Data security and privacy enforcement
- Access management
- Compliance

Data processes and tools

- **D&A operating model**
- Use case development and operations
- Data asset portfolio management
- D&A technology portfolio management
- Data procurement process

Data architecture and quality

- **Platform landscape**
- Reference data architecture – scope
- Data frontier
- Data quality approach
- Data ingestion

The five priority topics

Our research revealed that – across all surveyed companies, industries and regions – certain sub-dimensions of our data management framework are of particular importance. Five decision topics emerged as foundational elements of any data strategy with influence on all subsequent data strategy decisions:

- Organisational setup and capability focus
- Capability management
- D&A operating model
- Platform landscape
- Data access philosophy

The target state of a sophisticated data strategy is a future-oriented hub-and-spoke model with clearly defined governance, which is potentially scalable beyond the area of D&A.

Exemplary target state of a mature data strategy

#	Topic	Description	
1	**Org. setup and capability focus**	Data & Analytics **initiatives** and **capabilities** are hosted in a **hub-and-spoke model** based on **central data office(s) and business-embedded spokes**	
2	**Capability management**	Best practices in data governance are gradually extended beyond D&A to **reduce risk** and **enable new business models** in a data-driven organisation	
3	**D&A operating model**	A **consistent operating model** supported by a **business-owned portfolio management process** enables **end-to-end D&A delivery** in business units	
4	**Platform landscape**	Consolidation into **one enterprise D&A platform with controlled exceptions** to **accelerate** use case delivery, increase **efficiency** and focus on **investments**	
5	**Data access philosophy**	**Foster a culture of data sharing** and **remove roadblocks** for **data** and **use case owners**	

2. The five priority topics that define your enterprise data strategy
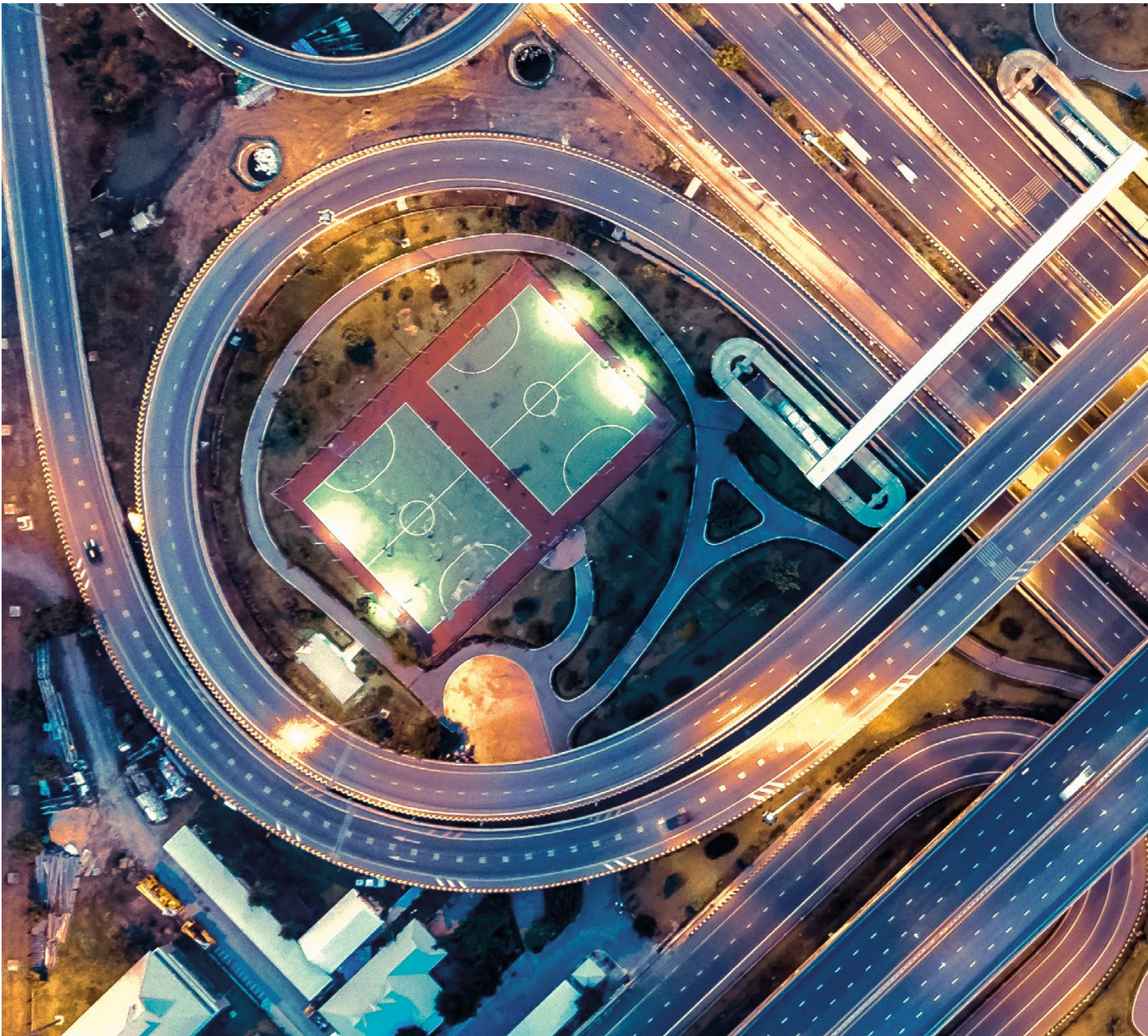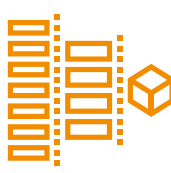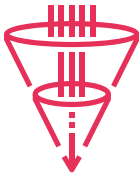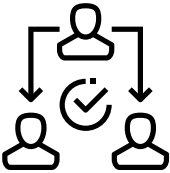
Question 3

Are at least half of your D&A use cases reaching production stage?

To get the most value possible from your data and data strategy, and to capitalise on your considerable investment of financial and human resources, you must put your focus on the five key decisions. Our study demonstrates how, and based on which criteria, the surveyed companies have set up their data strategies, which in turn can help you understand where your own company's specific challenges and action measures lie.
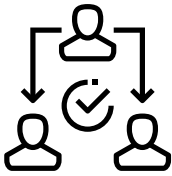
Priority topic 1 – organisational setup and capability focus
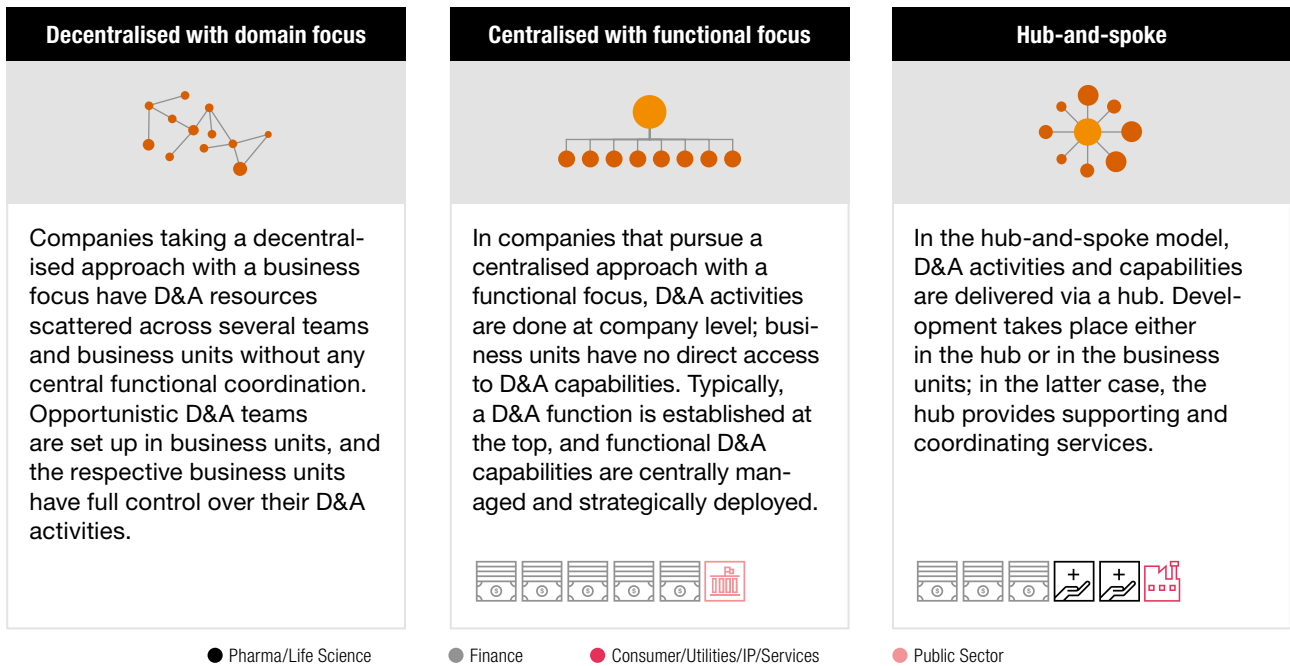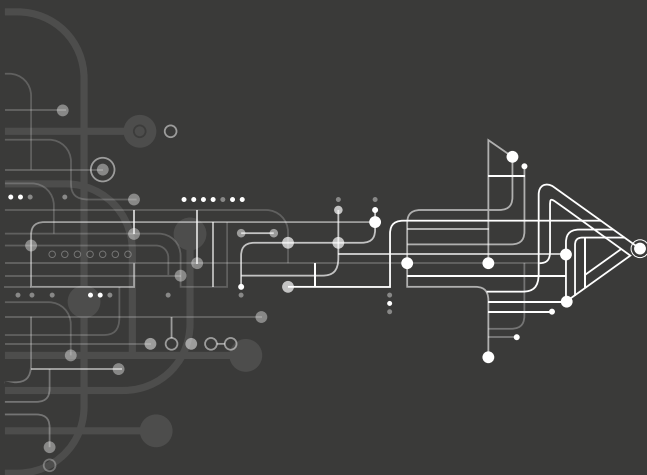
An enterprise's D&A organisation and governance shows how a company manages its D&A resources and activities, which data projects employees are working on, how they interact, and how a company's data governance is set up. Complementary, the domain of D&A governance defines a company's approach to the governance of its data and D&A activities.

An enterprise has three options when making a strategic choice about its D&A resources:

Decentralised with domain focus	Centralised with functional focus	Hub-and-spoke
Companies taking a decentralised approach with a business focus have D&A resources scattered across several teams and business units without any central functional coordination. Opportunistic D&A teams are set up in business units, and the respective business units have full control over their D&A activities.	In companies that pursue a centralised approach with a functional focus, D&A activities are done at company level; business units have no direct access to D&A capabilities. Typically, a D&A function is established at the top, and functional D&A capabilities are centrally managed and strategically deployed.	In the hub-and-spoke model, D&A activities and capabilities are delivered via a hub. Development takes place either in the hub or in the business units; in the latter case, the hub provides supporting and coordinating services.

● Pharma/Life Science   ● Finance   ● Consumer/Utilities/IP/Services   ● Public Sector

Depending on their level of D&A maturity, companies tend to follow a three-step evolution. Most companies start with a decentralised approach, without a strategic vision or any coordination, as first analytics capabilities are fostered in the businesses. In our sample, we observed that companies with a D&A strategic focus abandoned the decentralised, opportunistic approach in favour of a more coordinated approach. This mostly means a first move towards more centralisation, i.e. building up at least one central team by uniting individual D&A resources in the businesses so that different D&A specialist teams reach critical mass. Among our surveyed enterprises, at least six of them – all small with between 2,000 and 15,000 employees – followed the centralised approach as a long-term strategy. Other companies developed their D&A teams following the hub-and-spoke model. As soon as the centralised analytics function gains sufficient traction, the capabilities are again delegated to the business units. Larger financial institutions as well as medium-sized pharma and consumer companies already have a hub-and-spoke model.

Take away

As organisations mature in terms of their data strategy, they develop their data governance from being opportunistic to working at enterprise level, and they move their D&A capabilities from being decentralised to centralised and then later to a hub-and-spoke model. In companies with a hub-and-spoke model, D&A capabilities remain close to the business, the central analytics team can build up critical mass, and there is a balance between business knowledge and functional excellence.

Case studies

In our research, none of the companies followed a completely decentralised approach. The reason for this is simple. As soon as companies turn their focus to data, they move away from an opportunistic approach in favour of coordinating their D&A activities and bundling their resources.

Centralised with functional focus

Org. setup and capability focus	Decentralised with domain focus	Centralised with functional focus	Hub-and-spoke

Let's take the case of a medium-sized insurance company as an example of a company that follows a centralised approach. Over the past five years, the company has built a strong central D&A function in cooperation with a leading university. Given the medium size of the company, the central team is able to provide its D&A services to the entire company, i.e. it is responsible for developing the data strategy and D&A architecture, developing use cases, driving innovation, as well as moving the D&A architecture to the cloud.

Regarding the governance approach, the case of a multinational industrial goods company illustrates that data governance needs to strike a careful balance. To address severe issues in its data quality, the company designed and rolled out a uniform data governance frame globally. Despite having a very homogenous business model, the enforced rules were too rigid to fit the different business units. To maintain their operability, the new governance was quickly and quietly dismantled in the businesses, resulting in data quality that was measurably worse than before.

Hub-and-spoke

Org. setup and capability focus	Decentralised with domain focus	Centralised with functional focus	Hub-and-spoke

Realising that its knowledge in D&A was spread across different business units, a large international pharma company created a central D&A lab to complement the D&A expertise in the units and to reduce the duplication of efforts. The primary goals of the central team are to manage information, provide templates that can be adapted and re-used across the company (e.g. data governance), and manage company assets (e.g. valuable data sets).

Similarly, a large global pharma company was challenged with democratising data assets and optimising enterprise investments in D&A capabilities, while generating tangible business outcomes. Through the establishment of a central hub, the company cultivated a cross-functional commitment to convert siloed D&A efforts into a common strategy and was able to scale its data operations, while empowering cross-functional data access.
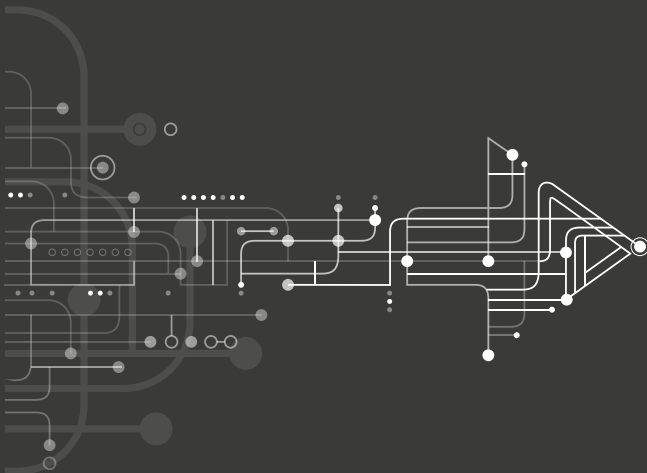
Priority topic 2 – capability management

For any transformation initiative, culture and people are key. A company's capability management defines how the organisation builds and retains access to high-profile D&A professionals. To secure sustainable access to D&A talent, knowledge and technology, companies generally pursue three strategies:

Opportunistic capability management	Capability management limited to D&A	Integrated capability management

Companies at an early stage of D&A maturity usually have not yet invested in a coordinated approach for developing and retaining D&A talent. As a result, they offer neither a D&A upskilling programme to boost the data literacy of their workforce nor a coordinated career path that would boost their attractiveness as an employer of D&A talent. In a first step towards greater maturity, companies start to strategically develop D&A capabilities. That is, they coordinate the development of D&A resources, invest in relevant and attractive training academies, and offer their D&A talent a dedicated career path that allows them to grow within the company and apply their knowledge across different business units.

Companies that have high D&A maturity also invest in the D&A upskilling of all employees. With designated D&A upskilling academies, training initiatives and awareness campaigns, mature companies strive to enable every employee to apply the mindset and tools of D&A to solve everyday business challenges.

Take away

To enable transformation towards more data-driven decision-making and an increase in D&A maturity, an integrated approach to D&A capability management is crucial. Data literacy needs to be increased across all levels and functions, and all employees should be enabled to work with D&A according to the requirements of their role in the business. Additionally, to attract D&A talent in a tight job market, companies must invest in dedicated career paths for D&A resources.

Case studies

Through the mobilisation of the entire workforce, companies improve collaboration between business and D&A experts, encourage D&A innovation in the business, and thus build the foundation for true disruption through the power of data.

Integrated capability management

Capability management	Opportunistic capability management	Capability management limited to D&A	Integrated capability management
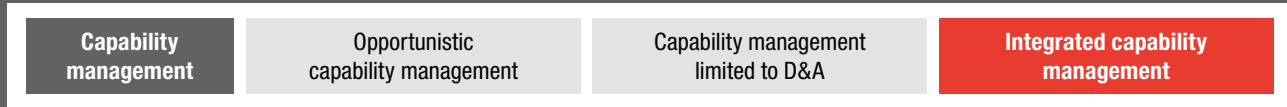
A large industrial manufacturing company headquartered in Europe already invests heavily in upskilling its workforce. In particular, it strives to enable all its employees to use simple data preparation tools such as Alteryx and derive insights through advanced visualisation, e.g. using Power BI. By making all employees aware of the power of ready-to-use D&A tools, the company encourages employees to generate ideas close to daily business and fosters innovation, e.g. the potential for process automation. Additionally, it closes the gap between D&A experts and business experts. To that end, key stakeholders are eligible for additional upskilling, thus ensuring that enterprise-led D&A innovation is on the agenda of every business unit.

A European food conglomerate is taking its first steps towards an integrated capability management approach. For now, the focus is on building up D&A capabilities in dedicated functions such as tax and legal to accelerate data-driven decision-making and intelligent automation. This is a direct response to the data-driven change that is expected to hit these functions in the near future. As the need arises, this concept of step-by-step upskilling can be transferred to other functions.

PwC developed a holistic digital upskilling programme called 'Your tomorrow' that allows both data-confident and data-distant employees to identify and realise D&A opportunities. At the core of the programme is a digital fitness app that aims to enhance broad data literacy and is designed to map users' preferences regarding their individual upskilling appetite and favourite channel. Lessons are then provided via quizzes, podcasts, videos or customer stories in shorter or longer sessions to fit into the users' schedules. In selected regions, almost all employees were trained on automation tools like Alteryx and RPA solutions to foster greater use in all types of engagements.
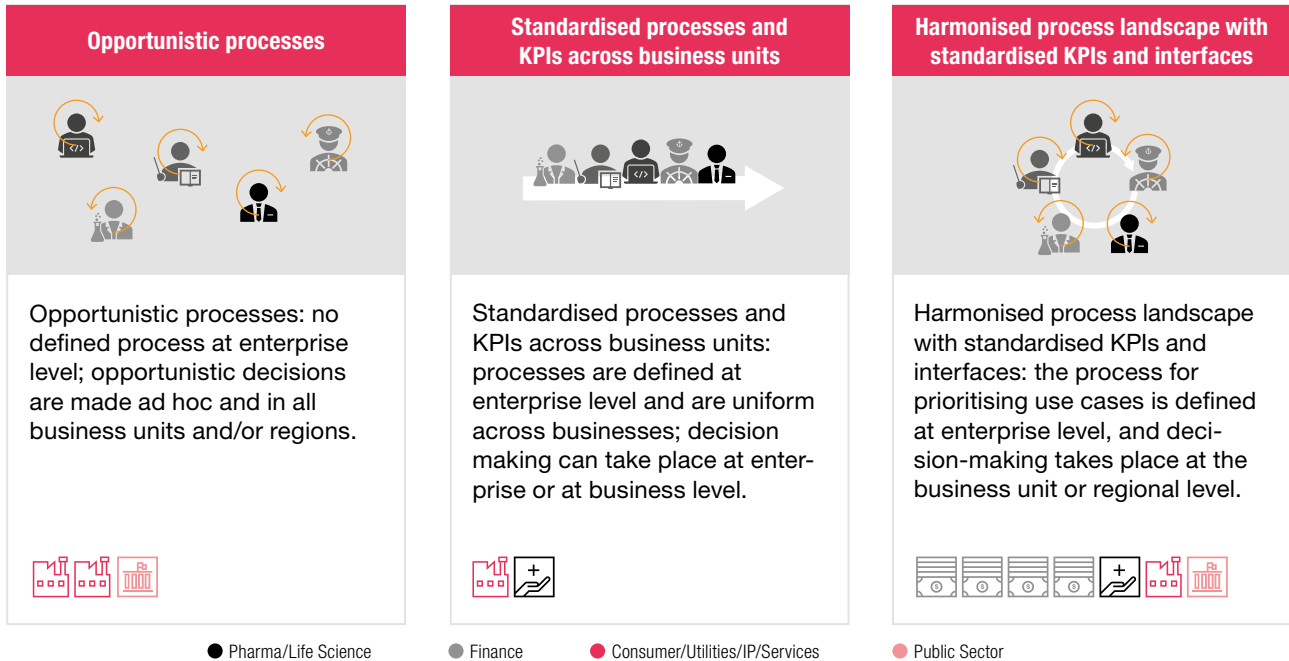
Question 4

Do you use your strategic data assets at least five times on average?
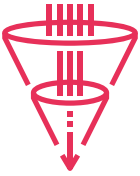
Priority topic 3 – D&A operating model

How D&A use cases and initiatives are managed within a company is largely defined by its operating model. Crucial questions concern the overview of use cases, the potential for consolidation and the development of templates. The goal is to share and manage knowledge and to decide which use cases should be implemented. As this final decision is made in the business unit, the name of the game is harmonisation, but not complete centralisation.

In our research, three categories of D&A operating models emerged:

Opportunistic processes	Standardised processes and KPIs across business units	Harmonised process landscape with standardised KPIs and interfaces
Opportunistic processes: no defined process at enterprise level; opportunistic decisions are made ad hoc and in all business units and/or regions.	Standardised processes and KPIs across business units: processes are defined at enterprise level and are uniform across businesses; decision making can take place at enterprise or at business level.	Harmonised process landscape with standardised KPIs and interfaces: the process for prioritising use cases is defined at enterprise level, and decision-making takes place at the business unit or regional level.

● Pharma/Life Science ● Finance ● Consumer/Utilities/IP/Services ● Public Sector

Our research showed that companies at an early stage in their data journey tend to have no or limited standardisation of their D&A processes. Over time, business units move forward to establish their own use case management processes. The highest degree of D&A maturity is finally reached by harmonising the process landscape and introducing standardised KPIs and interfaces. In this case, the use cases are prioritised at enterprise level, while the business units or regions still take the decisions.

Defining processes to prioritise use cases at enterprise level and making decisions at the business unit or regional level provides transparency, prevents duplication of work and makes it possible to leverage D&A activities across businesses and regions. However, elevating decisions to the enterprise level as well is usually not sensible since decisions typically rest with the budget owner, which is the business unit.
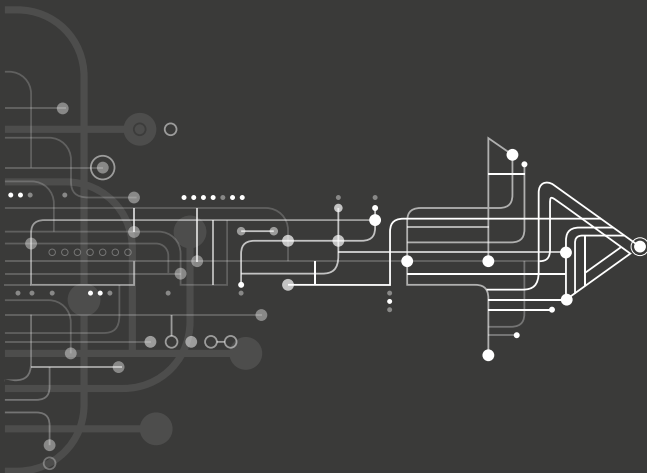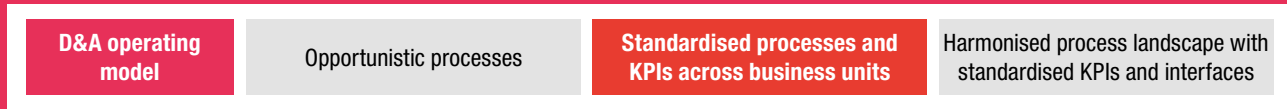
Take away

A consistent operating model supported by a business-owned portfolio management process enables end-to-end D&A delivery in businesses. Companies with harmonised use case management processes can better coordinate and leverage D&A activities, prevent duplication of work, effectively allocate resources and establish 'checks and balances'. Responsibility, decision-making and budgeting need to be in the business units. Giving decision-making power to the business units ensures alignment with the business strategy.

Case studies

Among our surveyed companies, most have installed enterprise-level processes, but make decentralised decisions. Nevertheless, quite a few have no standardised processes at all.

Standardised processes and KPIs across business units

D&A operating model	Opportunistic processes	Standardised processes and KPIs across business units	Harmonised process landscape with standardised KPIs and interfaces

A multinational manufacturer headquartered in Europe built its organisational structure following a hub-and-spoke approach with a central accelerator lab. Despite the streamlined setup, processes are still owned by the individual business units, which also define and measure their individual set of KPIs. The main reason for this was an inability to find a consensus and a shared approach to processes and KPIs.

Harmonised process landscape with standardised KPIs and interfaces

| D&A operating model	Opportunistic processes	Standardised processes and KPIs across business units	Harmonised process landscape with standardised KPIs and interfaces
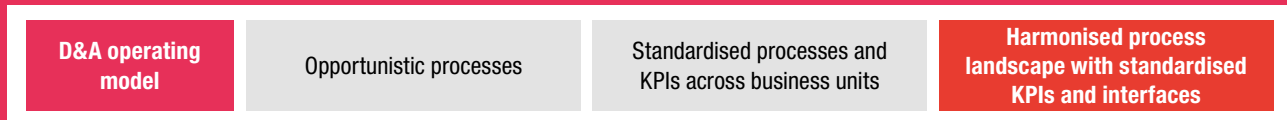
A multinational science and technology company based in Europe developed an enterprise-wide operating model with harmonised processes and standardised KPIs. To ensure transparency over the organisation's use case portfolio, a common set of KPIs is used in all business units. Budgeting and prioritisation of use cases are within the purview of the business to ensure close alignment with the business strategy. Harmonised processes for use case delivery and resource allocation ensure effective collaboration across different organisational units and are designed to enable a smooth transition from pilots into production.
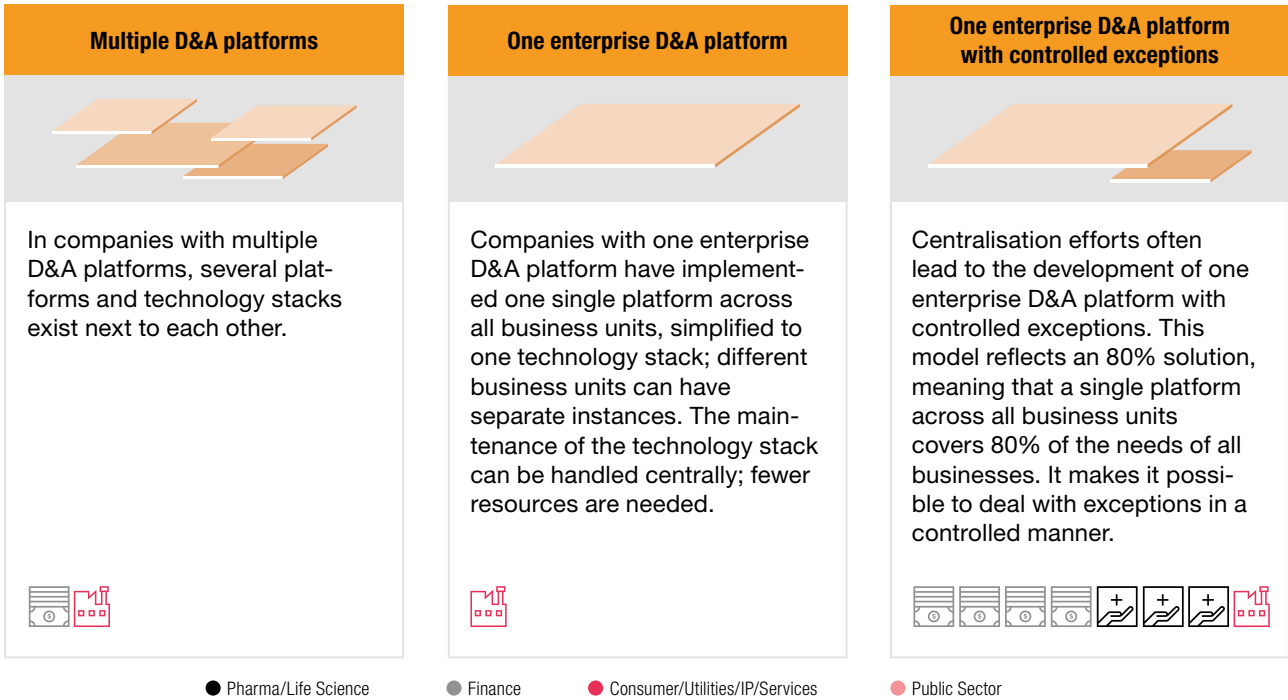
Question 5

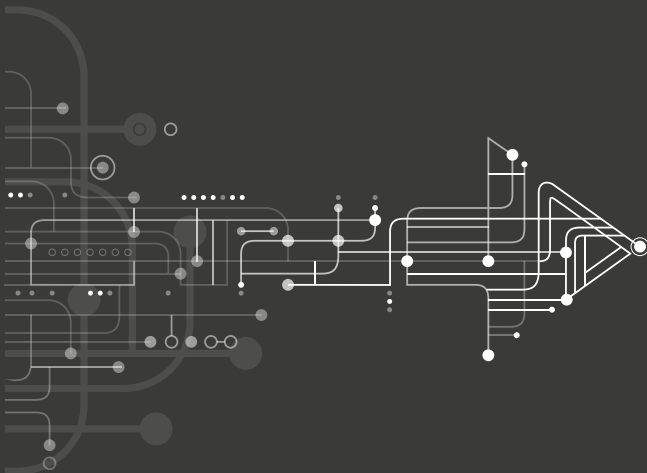Are you using KPIs and hard decision gates to prioritise your D&A use cases?
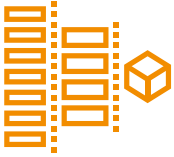
Priority topic 4 – platform landscape

On their data journey, companies usually start with a variety of data platforms, driven by single business units' D&A initiatives and initial implementation. As D&A activities mature, a trend towards consolidation can be observed, as scattered platforms create costs in terms of maintenance, fees, interfaces, compliance and talent. The gold standard is to have one data catalogue – and one technology stack – for the enterprise and all business units – and giving business units the leeway to develop their own instance within the catalogue. However, legacy platforms can represent a major obstacle in setting up an enterprise-wide, efficient and effective solution.

We have observed three kinds of platform landscapes:

Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions
In companies with multiple D&A platforms, several platforms and technology stacks exist next to each other.	Companies with one enterprise D&A platform have implemented one single platform across all business units, simplified to one technology stack; different business units can have separate instances. The maintenance of the technology stack can be handled centrally; fewer resources are needed.	Centralisation efforts often lead to the development of one enterprise D&A platform with controlled exceptions. This model reflects an 80% solution, meaning that a single platform across all business units covers 80% of the needs of all businesses. It makes it possible to deal with exceptions in a controlled manner.

● Pharma/Life Science　　● Finance　　● Consumer/Utilities/IP/Services　　● Public Sector

Multiple D&A platforms with no shared maintenance are resource-intensive. They usually appear at an early stage of D&A maturity and are often pushed by technology vendors. With an 80% solution, a large part of the maintenance can be handled centrally and solutions for special needs can be rolled out across all businesses or individually. This landscape is often seen among pioneers who adopted several platforms and are now trying to consolidate them into a single stack, but struggling with the legacy environment. Companies working in the ideal case with one single D&A platform are either very advanced and mature in their data endeavours, or they are just starting their D&A journey now, unencumbered by legacy systems and able to roll out a uniform technology.

Take away

To reduce costs, achieve compliance and take advantage of economies of scale, companies are moving towards having one D&A platform to accelerate use case delivery, increase efficiency and focus on investments. Early adopters of technology solutions tend to be spread across several platforms and struggle to leave legacy systems behind. Companies that missed the pioneering phase are in a good position to go for a single platform from the start.

Case studies

In our sample, only one medium-sized industrial company has a single enterprise-wide D&A platform. Most companies play in the middle, and some very large and well-known multinationals have not yet implemented any platform strategy at all.
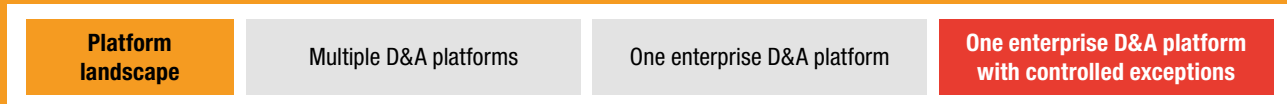
Multiple D&A platforms

Platform landscape	Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions

Companies that pioneered the adoption of D&A in business are currently struggling with being spread across different D&A platforms. Influenced by technology companies that pushed their D&A solutions into the market a few years ago, many of them acquired and developed several D&A stacks simultaneously. As a multinational banking and financial services company (headquartered in Europe) is currently figuring out, catering to several platforms is neither economical nor does it allow for the centralisation of resources and capabilities needed to find a coordinated D&A strategy. The bank struggles to switch off one or more of its D&A systems due to the involvement of numerous stakeholders across the company.

One enterprise D&A platform

Platform landscape	Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions
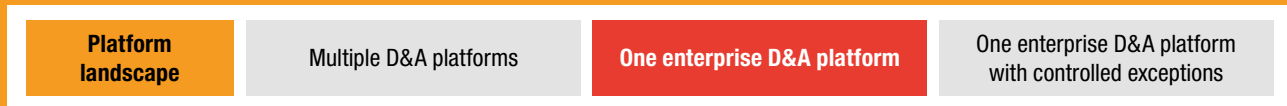
An industrial engineering and manufacturing firm headquartered in Europe is only now turning to D&A. While the company is far behind the maturity of D&A pioneering companies, it is in the comfortable position of being able to select and develop a single D&A stack for the entire organisation without the hassle of dealing with legacy systems and conflicting vendor loyalties in its own ranks.

One enterprise D&A platform with controlled exceptions

Platform landscape	Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions

An American multinational pharmaceutical corporation resolved the issue of too many D&A platforms with a consistent top-down push. A single enterprise architecture was selected and sponsored by the CEO. It set the standard for the entire organisation and is considered the go-to D&A solution unless a business unit has an irrefutable reason to use an alternative system.
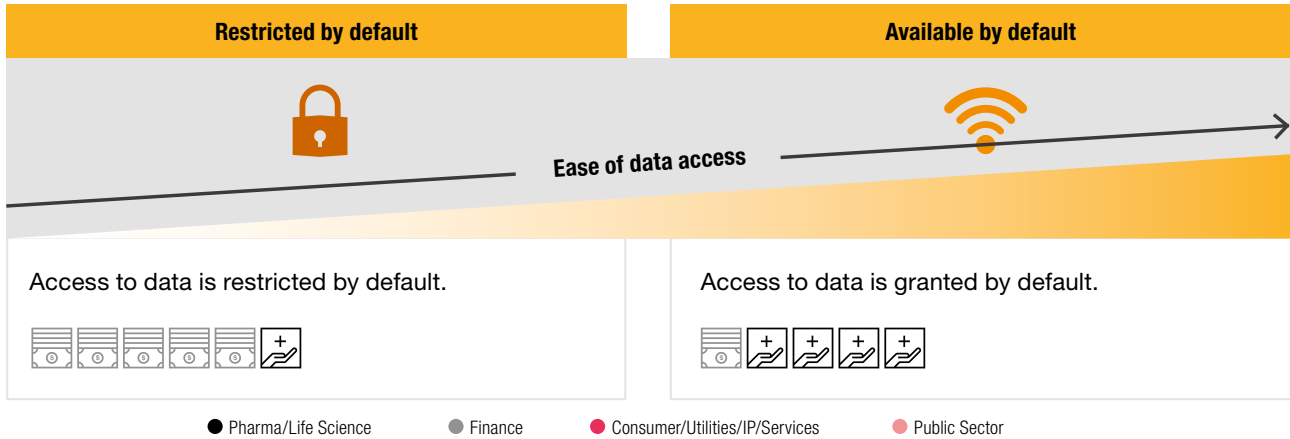
Similarly, another large pharmaceutical company made the move to a single D&A stack from different platforms and systems. It required a four-year journey and an investment north of US$60 million, the major aim of which was to create the basis for a holistic view and use of the company's data. After more than five years, the company executives have managed to switch off most of their legacy systems and have recouped their investment through innovation made possible by an improved view and use of their data.

## Priority topic 5 – data access philosophy

A company's data access philosophy is a mirror of some of its more fundamental data strategy reflections. Is data basically available to 'everyone', or is data generally restricted? But it is not only about asking for permission or refusing access to data. It is also about what a company wants to do and achieve with D&A, and about finding out what is possible today that was not possible ten years ago. Finally, data access is also about getting the most out of your data while protecting it.

The handling of access to data has two (extreme) dimensions.

Restricted by default	Available by default
Ease of data access	
Access to data is restricted by default.	Access to data is granted by default.

● Pharma/Life Science   ● Finance   ● Consumer/Utilities/IP/Services   ● Public Sector

Although nuanced in the detailed implementation, the philosophy of data access in general is characterised by two basic principles: data is either restricted by default, or it is available by default. Restricted by default means that if access to data is requested, adequate justification must be provided. Available by default means that if access to data should be denied, adequate justification has to be provided, e.g. according to specific regulations. Such regulations dictate the level of restrictions to data access, and there are different access policies for specific data classes and categories.

According to our research, one significant consequence of 'restricted by default' is that the power to grant data access rests with the data owners; furthermore, different motivations can hamper the realisation of use cases. Industries that are strictly regulated and sensitive to personal data, such as the financial industry, tend to deal more restrictively with data access; data restriction is also observed in companies with little intention of sharing data across businesses and regions. On the other hand, as companies recognise the value of sharing data, many push for more data access. However, to meet all regulatory requirements, companies in regulated markets can grant access only within limits, and they need to implement respective tools and procedures, such as classification of data and clearance levels for employees.
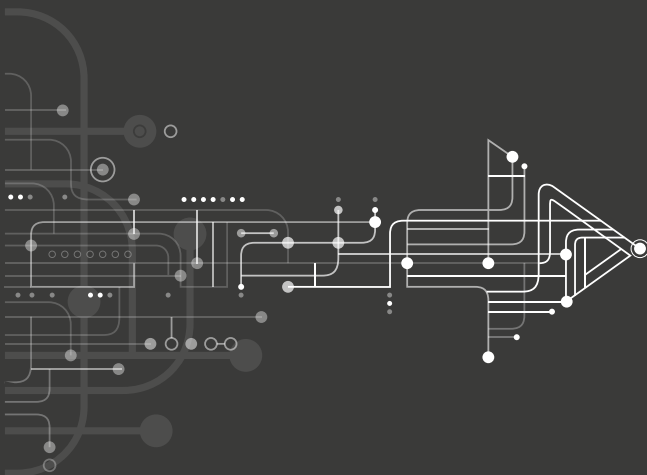
Take away

To meet all regulatory requirements, companies in regulated markets can grant access within limits only. Respective tools and procedures need to be implemented, such as classification of data and clearance levels for employees. While restricting access where required by regulations, companies are moving towards making data available as a default. In line with an overall observation of 'open data' and similar initiatives, companies are starting to cross-leverage data assets.

Case studies

Among our surveyed companies, some smaller and medium-sized financials restrict data by default, whereas several large pharma companies' data is available by default.

Restricted by default

Data access philosophy	Restricted by default	Available by default

Restricting access to data is the traditional approach to data handling – and it is still the default approach in many companies. We often observe that highly regulated industries, such as banking and financial services, still heavily restrict access to data. This is partly motivated by the strict regulations they face, but also by entrenched ideas regarding data sharing vs. keeping data safe.

More available

Data access philosophy	Restricted by default	Available by default

Given the value of data, companies are increasingly willing to consider granting data access in order to enable D&A in their organisation. The case of an American pharmaceutical company illustrates that this step, while important, must be handled with care. To benefit from more data democratisation, the company granted access to data across different teams without establishing the proper governance, resulting in a serious data breach. So, while the benefits of data democratisation are obvious, necessary security measures must be implemented at the same time.

# 3. The three data archetypes

Our extensive outside-in analysis allowed us to identify three archetypes of data strategies that companies typically pursue. These three archetypes reflect clearly at which point of its D&A journey a company is and which level of data maturity an enterprise has reached.

Archetype 1 represents a low level of data maturity, type 2 shows a medium level and archetype 3 reflects a high level of data maturity. The different archetypes have varying characteristics and interdependencies between data management decisions.

Our outside-in perspective reveals three archetypes at different stages of data strategy development.

"Companies find themselves at different starting points, often even within their own organisation. What unites them is their desire to effectively unlock the value of data, and almost all companies strive to achieve a higher level of data maturity with a multi-year journey."

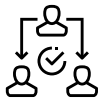Matthias Leybold, Partner, Data & Analytics, PwC Switzerland
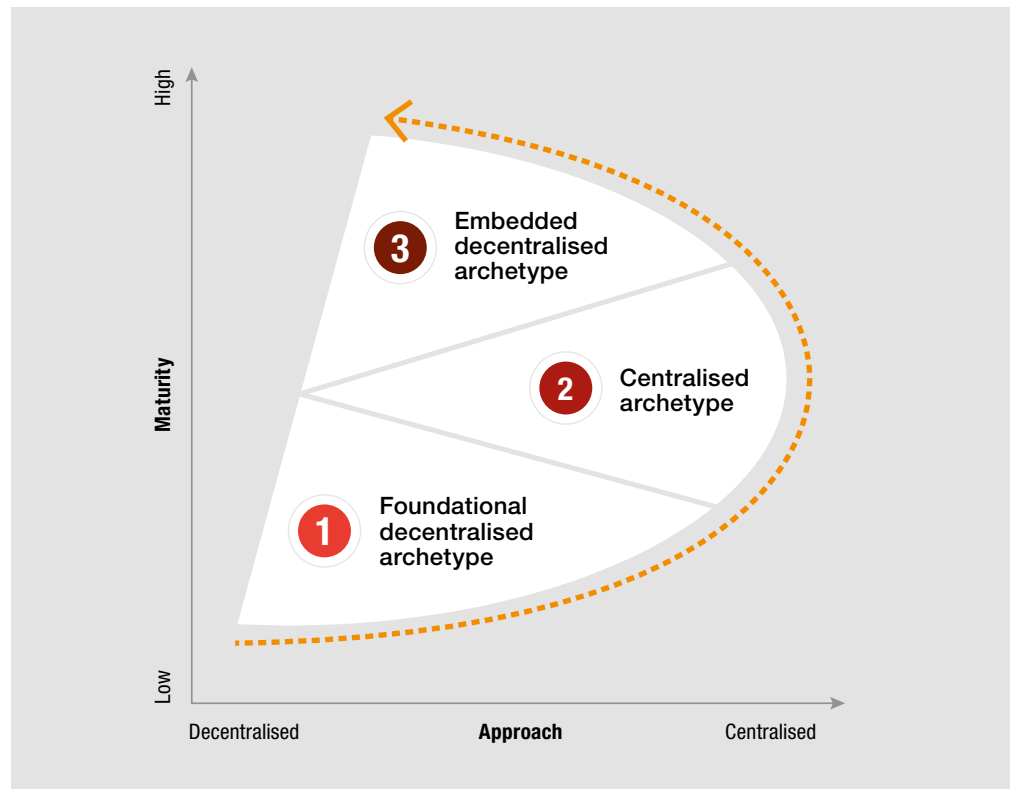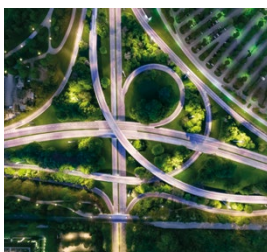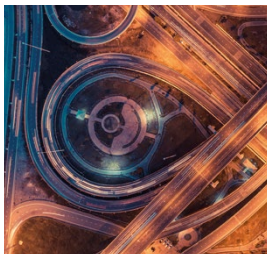
Archetype 1 – foundational and decentralised

The foundational, decentralised archetype represents companies and organisations that are either at the beginning of their data journey or have not yet developed or implemented an overall vision of what their D&A capabilities must include, what they want to achieve with their data initiatives, and what their data-driven business model of the future should look like.

Such companies typically show a low level of data maturity. They are in an organic default position with decentralised and scattered data governance. They have not yet harmonised their principles; their tools and D&A activities are not coordinated.

Archetype 1 – Companies in an organic default position with decentralised and scattered governance (or none)

1	Foundational decentralised archetype		
Org. setup and capability focus	Decentralised with domain focus	Centralised with functional focus	Hub-and-spoke
Capability management	Opportunistic capability management	Capability management limited to D&A	Integrated capability management
D&A operating model	Opportunistic processes	Standardised processes and KPIs across business units	Harmonised process landscape with standardised KPIs and interfaces
Platform landscape	Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions
Data access philosophy	Restricted by default		Available by default

Org. setup and capability focus: D&A activities and governance are not coordinated. Teams are created and people are hired independently by business units. Each business unit develops the use cases, skills and tools it deems most necessary for its business. Teams of data scientists are scattered across the organisation. No standardised data governance.

Capability management: Ad hoc development of D&A skills in business units with no or only little central guidance. No coordinated career path for data scientists.

D&A operating model: Every team and/or business unit has its own use case portfolio management process. No standardisation across the scattered D&A teams. No overview of the D&A use cases that are being developed across the company.

Platform landscape: Many different platforms are likely to be in use, as the different teams follow their own, unique D&A journey in line with their individual business agenda. This is resource-intensive and often promoted by technology vendors to companies that are at an early stage of D&A maturity.

Data access philosophy: Data access restricted by default.

Archetype 2 – centralised

The centralised archetype 2 represents companies and organisations that choose a uniform approach to governance for standardised processes. Archetype 2 companies typically follow uniform principles and have strong regulations for common tools and platforms. Their D&A activities are centralised. Such companies develop a strategic vision and put strong emphasis on harmonisation. They exhibit a more advanced and more conscious level of data maturity than archetype 1 companies.
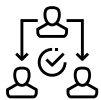
Archetype 2 – Companies choose a uniform approach to governance for standardised processes

2	Centralised archetype		
Org. setup and capability focus	Decentralised with domain focus	Centralised with functional focus	Hub-and-spoke
Capability management	Opportunistic capability management	Capability management limited to D&A	Integrated capability management
D&A operating model	Opportunistic processes	Standardised processes and KPIs across business units	Harmonised process landscape with standardised KPIs and interfaces
Platform landscape	Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions
Data access philosophy	Restricted by default		Available by default

Org. setup and capability focus: Organisational data governance is set up at enterprise level, with a functional focus. Strongly harmonised data governance, to the point that the flexibility of the business units is impeded at times. Much improved data quality. One central D&A team serves all business units.

Capability management: Focus on organic growth to build D&A capabilities in-house. Support from a central academy with business-specific D&A upskilling modules.

D&A operating model: The operating model is standardised across business units. Each business unit manages its own use cases.

Platform landscape: Only one standardised D&A platform.

Data access philosophy: Data access is open or restricted by default, depending on the industry and other circumstances, mainly regulations.

Archetype 3 – embedded and decentralised

The embedded, decentralised archetype 3 represents enterprises that have a high level of data maturity. These companies tend to have harmonised governance, while keeping flexibility in the individual business units. They have templates and a knowledge library for principles, tools and D&A activities. At the same time, they are flexible in their use and application. Archetype 3 companies have a developed strategic vision, characterised by a balance of harmonisation and flexibility.
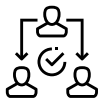
Archetype 3 – Companies tend to have harmonised governance, while keeping flexibility in businesses units

3	Embedded decentralised archetype		
Org. setup and capability focus	Decentralised with domain focus	Centralised with functional focus	Hub-and-spoke
Capability management	Opportunistic capability management	Capability management limited to D&A	Integrated capability management
D&A operating model	Opportunistic processes	Standardised processes and KPIs across business units	Harmonised process landscape with standardised KPIs and interfaces
Platform landscape	Multiple D&A platforms	One enterprise D&A platform	One enterprise D&A platform with controlled exceptions
Data access philosophy	Restricted by default		Available by default

Org. setup and capability focus: Hub-and-spoke model. As soon as the centralised analytics function has gained sufficient traction, capabilities are again delegated to the business units. The central team defines templates and guiding principles, while business units can make business-friendly adaptations in line with these guidelines.

Capability management: D&A capabilities are centrally administered with a focus on organic growth and external partnerships. Central academy for D&A skill development. Central development of D&A career path.

D&A operating model: One harmonised use case portfolio management process for the entire company. Central view on use cases that are being developed.

Platform landscape: One enterprise platform with controlled exceptions.

Data access philosophy: Data access is open or restricted by default, depending on the industry and other circumstances, mainly regulations.
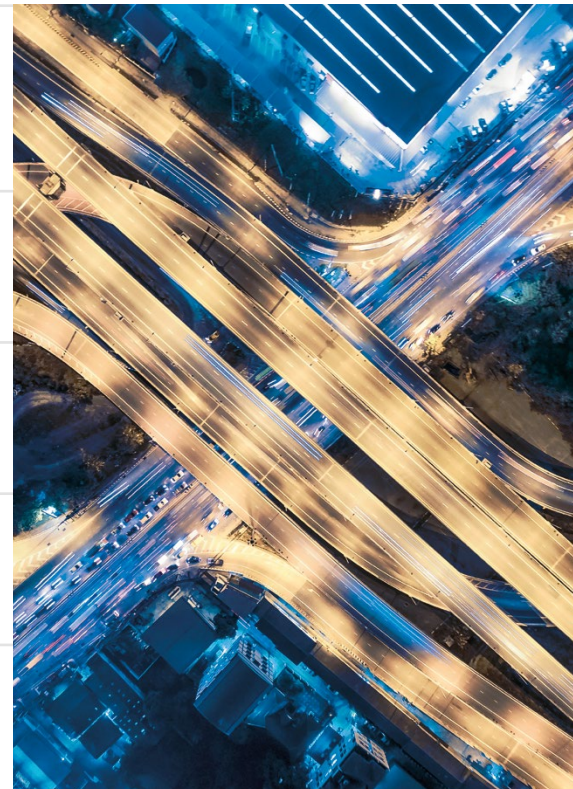
4. How to reach the next level

Now you know which data strategy archetype best represents your company. And you know that there is room for improvement. But what exactly should you do to reach the next level of data maturity?

Each company is at a certain point and stage of its D&A journey. A differentiated stock-take is necessary to determine along which dimension and at which level action is needed. Questions must be answered. Do you want to generate more value from your use cases, increase revenues and implement new business models? Would you like to increase efficiency, automate processes and achieve higher product quality? And, at the same time, mitigate risks and address regulatory challenges?

No matter which data maturity level you have already reached, there are three steps you should consider. Your data journey through all stages could look as follows:

"Every day we are flooded with more and more information through news and conversations. Enterprises need to have a strategy and the ability to analyse this information to establish which is relevant and which not – they must develop a conscious approach to handling information and data."

Moritz Mark, Senior Manager, Data & Analytics Strategy Lead, PwC Switzerland

1) Define and lead	2) Consolidate and upskill	3) Measure and share	**From low to medium**

From medium to high	1) Get close to the business	2) Take responsibility	3) Establish leadership

From high to higher	1) From product to service	2) Personal and forward-looking	3) Build your own ecosystem

From low to medium

Step 1: define and lead

Your company follows an opportunistic approach and most likely qualifies as archetype 1. As a first step, it is most important to define a single, unified vision of where your organisation's data journey should lead. This is more a political issue than a content-related one, and it is a topic that needs to be addressed from the top down. Therefore, the starting point of any data journey is to put it at the top of your leadership's agenda.

Step 2: consolidate and upskill

D&A activities focus on pulling forces together and gaining critical mass. Therefore, they must be consolidated and centralised. There must be an awareness that activities and use cases happen in many different places and across business units. Change management teams need to have a basic knowledge of D&A and be able to upskill the whole company. For each new use case, you should be able to talk to the company's internal experts. Get out of your silo and increase your employees' data literacy.

Step 3: measure and share

Can you calculate your D&A initiatives' NPV? And, more importantly, what measures and actions can you derive from this? To quantify results in monetary terms is difficult, but a qualitative description is a good start. It is important to take stock of all use cases within an organisation to both evolve and communicate. What a pity if success stories and exciting use cases are not shared within the company.

From medium to high

Step 1: get close to the business

Your company has already reached a certain data maturity level. Some data processes and guidelines have been set up and first use cases are generating value. But you want more. It is now crucial to define which capabilities must be dealt with in the business units, and which skills must be offered centrally. Central hubs must step in with support when D&A projects are of strategic relevance and whenever critical mass is needed.

Step 2: take responsibility

Selecting and implementing use cases must be the responsibility of the business units – in stark contrast to exciting use cases from a central innovation hub that provide little value to the individual units. Business units must take responsibility for and ownership of their data projects. Of course, some cases may be cross-divisional, but the participants need to evaluate and decide for themselves whether they want to join the project or not.

Step 3: establish leadership

It is not enough to have D&A initiatives on your leadership's agenda. Leadership must be established and institutionalised from the top to drive the overall data strategy and lead the central team: the function of a Chief Data Analytics Officer (CDAO) must be established. The CDAO not only represents the company's vision and values, but also motivates and supports the D&A teams and staff in general. The CDAO promotes a culture of data sharing and innovation that recognises data as a strategic asset. At best, the CEO assumes this role.

From high to higher

Step 1: from product to service

At this stage of D&A maturity, it is time to fully capitalise on your strategic data assets. Based on your D&A capabilities, processes and business models can be refined; additional products and services can be developed and offered. Using the data you own, you are able to know when to wait, when to adjust and when to act. Elevate your business to a new level and provide your customers not only with your well-known products, but also with entirely new services around those products.

Step 2: personal and forward-looking

Products and services are not enough. Improve and enhance your product and service range with tailor-made solutions. Create unique customer experience journeys and increase the loyalty of your customers and business partners. Adjust and calibrate your operating model even more. D&A enables you to find out where, when and how you can create the most added value. And it tells you which new trends you need to tackle for your further development.

Step 3: build your own ecosystem

Do you want to develop the D&A capabilities needed for the future in-house, or should you enter external partnerships? The answer certainly depends on the respective topic and its strategic relevance. However, in many cases it might make a lot of sense to pool resources and share knowledge. You probably do not want to build your own blockchain, but you might seek access to strategic knowledge. Such partnerships may include other industries, research labs, universities and even competitors.

5. How implementing an enterprise data strategy benefits your organisation

Substantial investments in D&A technology and infrastructure have left many companies frustrated as they are not able to capitalise on their spent resources. Results do not meet expectations. Organisations are struggling to capture value from these efforts for organisational and cultural reasons. Our research shows that a comprehensive and holistic organisational approach to D&A is needed to profit from D&A initiatives fully and efficiently.

Not only the lack of a purposeful topical focus, but also organisational deficiencies jeopardise D&A projects – D&A capabilities frequently do not reach critical mass and therefore limit the ability to scale up D&A activities. This is the case, for instance, if smaller and larger D&A teams are scattered across different levels and functions of the organisation, which may lead to limited coordination and collaboration, a duplication of efforts and suboptimal staffing of functional capabilities. On the other hand, a decentralised setup can benefit from knowledge exchange and take individual business requirements into account.

In general, companies tend to follow a three-step evolution. Starting with uncoordinated D&A activities, opportunistic data governance and scattered teams and use cases, organisations move towards centralisation and standardised processes and decision-making – thereby curtailing the flexibility of business units. The most mature data strategy archetype is an evolution back to the business units: standardised data governance and operating models, with each business unit managing its own use cases. Companies that have successfully implemented a comprehensive data strategy typically share certain characteristics and experiences:

- D&A strategies and corresponding initiatives must be driven and supported from the top

- a successful D&A strategy is based on a tangible vision of what should be achieved

- a clearly defined operating model and use case management are mandatory

- centralisation is good to capitalise on knowledge and to reach critical mass – but business units must mandate skills and decision-making authority

- D&A is not only about science and technology, it is also about culture

- data literacy and capabilities across all levels and functions must be ensured

EDS implementation enables more D&A innovation – at a higher pace and at lower cost. A well-defined enterprise data system covers all the key areas that are essential for a high-quality and high-yield organisational data ecosystem. It allows a company to implement more mature and forward-oriented use cases, to accelerate the use case development cycle, to increase the number of use cases in production and to re-use strategic data assets several times

Question 10

How does your organisation grant access to data?

"Do not get lost in the data jungle. See the big picture. Data and analytics – in particular, the insights you gain from your D&A initiatives – is the most important topic that defines your company's future success and relevance. D&A not only shapes your future, it is also at the core of your business model."

Matthias Leybold, Moritz Mark and Corinne Knoepfel.

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