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How data domains help data-driven businesses generate value

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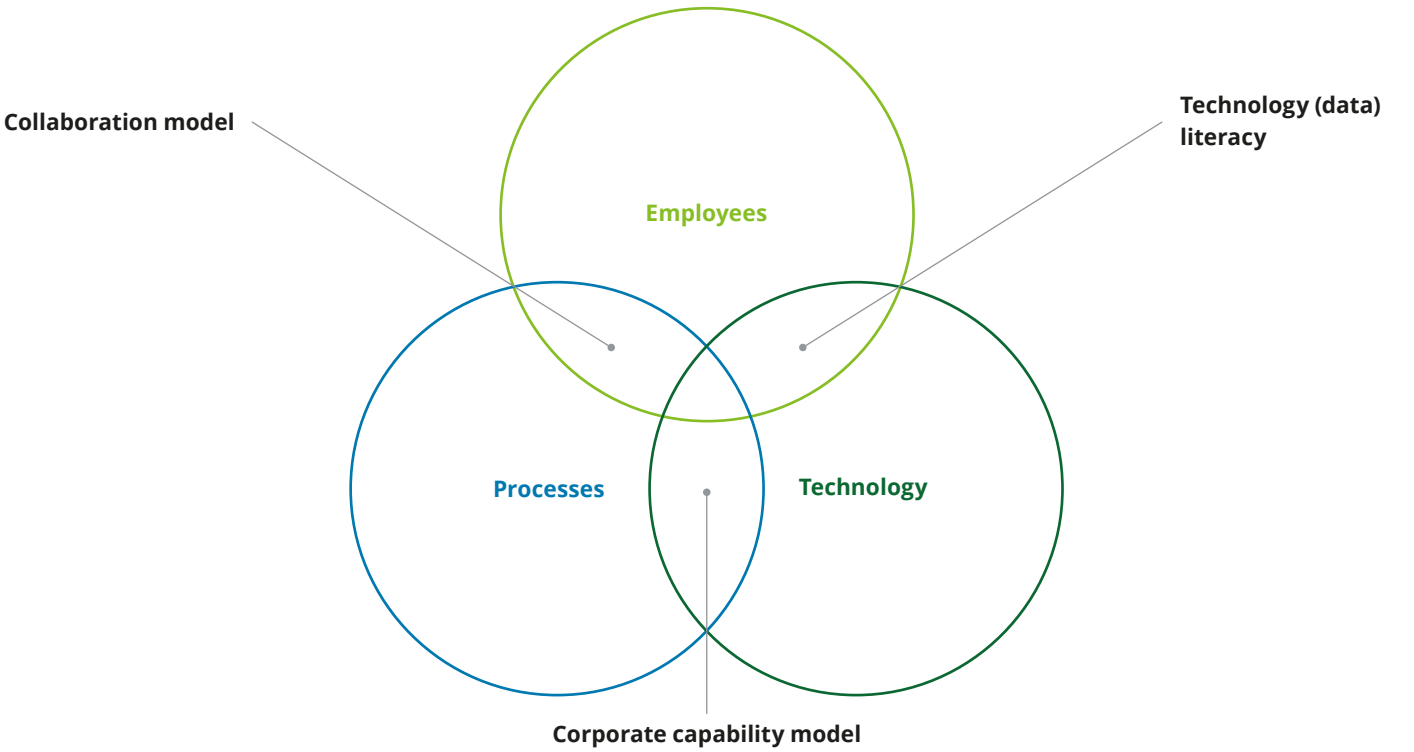
Introduction

Modern enterprises leverage data and AI to keep up with the high dynamic of an ever-changing business world. On the way to achieve that goal almost all of our clients face the same challenge: To transform their strategy, operating model and way of doing business such that data is used to drive the corporate capabilities used in processes that generate value.

One of the recent concepts of achieving this is the data mesh, that shifts responsibilities towards the business to produce data products that are standardized in their creation as well as in their access. The data mesh paradigm, however, is not a purely technological invention, but rather a socio-technological endeavor that brings together technology, employees, and corporate processes. The classical Venn diagram of these three is given below. We have added the usually omitted descriptions of the links between the adjacent pairs: Employees possessing an intuition for the capabilities and limitations of technology ("technology literacy"), the enterprise being able to use technology in processes ("capability model") and the employees working together along the process landscape ("collaboration model").



Achieving literacy, data capabilities and collaboration are at the core of a successful transformation. Here, Deloitte presents a series of papers that explain key aspects how to achieve these three along the transformation towards becoming a data driven enterprise. The series is structured into strategic, tactical and operational aspects of data driven work.

Beginning with the strategy framework we are working along, we introduce our orchestrator for the data transformation journey. As the major tactical pillars of the transformation we focus on the required governance as well as the data-centric process landscape in two further articles.

These concepts are underpinned by operational tools such as data catalogs, data quality and IT platforms which we are also covering in an article. Since these developments need to be sustained by specialized change management, a separate article is dedicated to this topic.

The journey to a data-centric enterprise is a complex transformation that continues to bring new challenges and insights. We will continue to expand and add to our series of articles.

How data domains help data-driven businesses generate value

The transformation into a data-driven business is highly individual for every enterprise. While transformation typically involves issues such as strategy, IT platforms or security – and these factors increase complexity – establishing a new way of working with data can make or break a successful transformation.

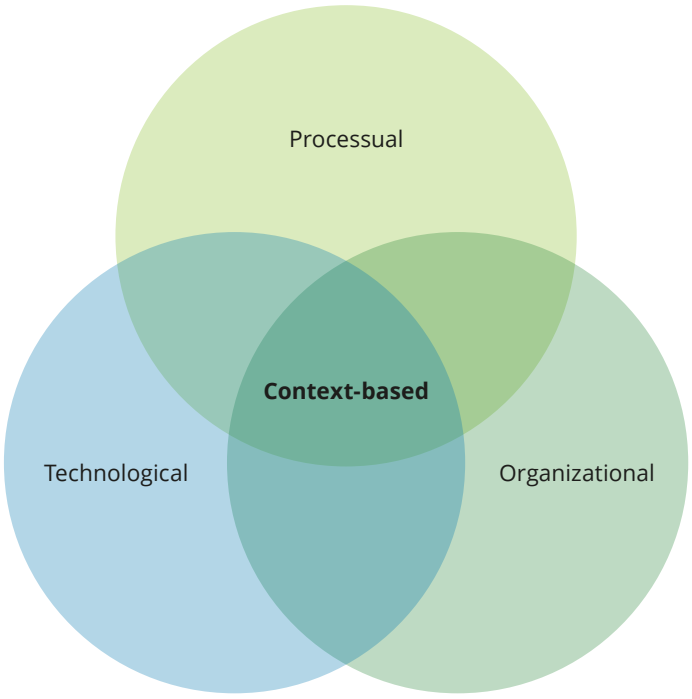
There are considerable risks when an enterprise takes a new approach to working with such a core asset. In our practice, we have found that there are two key elements to mitigating these risks. On the one hand, it is vital to take both process-related and technology-related issues into account. On the other hand, the organization as a whole will need to change as well. Deloitte's transformational *[it] depends* framework emphasizes how interdependent the factors involved in managing, coordinating and driving this change are, with a particular focus on transforming the organization. This article outlines how enterprises can make data-driven transformation a central task of the organization by introducing data domains.

A lot of employees use data in their daily business, whether it is operating CRM systems, analyzing the business via dashboards, working through Excel sheets or maintaining machines to make sure sensor values remain within a certain range. Most of these employees do not work alone; they collaborate along the value chain and generally have tasks that span several areas of the business. In these consecutive process steps, certain analyses may be repeated or even bypassed when data from a previous stage of the value chain is not available.

A simple way to solve this issue is to share high quality, trustworthy data generated in one stage of the value chain for use by stakeholders in subsequent stages. Ideally, data owners that really understand the significance of this data will supply it and package it in an easy-to-use, standardized fashion. While most companies automatically assign data ownership to the IT department, in the new paradigm various users on the business side assume responsibility for the usability of the data. That said, IT is still responsible for packaging the data and providing *data products* as a service.

It usually requires more than one area of expertise to perform these new tasks: selecting the right set of data to offer as a data product, ensuring the data quality is high and provid-ing self-explanatory descriptions of the product. As a result, the affiliation with a certain business unit is not the main focus, but rather knowledge about a specific variety of data. The solution lies in bringing together employees that use similar data in their day-to-day operations in a dedicated team. Known as a "data domain team", they take on ownership of the data relevant to their area of interest and create roles that are responsible for expanding and maintaining the usability of this data. This principle of domain ownership helps companies establish the accountability and responsibility required to create and share data products.

The common approaches used to define data domains tend to be based on existing **processes, organizational structures** or **technology**. In on our projects, Deloitte often takes the approach one step further to create what we call **context-based** data domains. Companies usually adopt one of these four domain types depending on their distinct culture and data maturity. Engineering businesses frequently adopt process-related domains as a starting point, while those with a prior IT transformation (e.g., that have successfully launched an enterprise-wide data lake) may adopt technology-based domains. In our experience, businesses rarely use organizational domains for reasons that will become clear below.



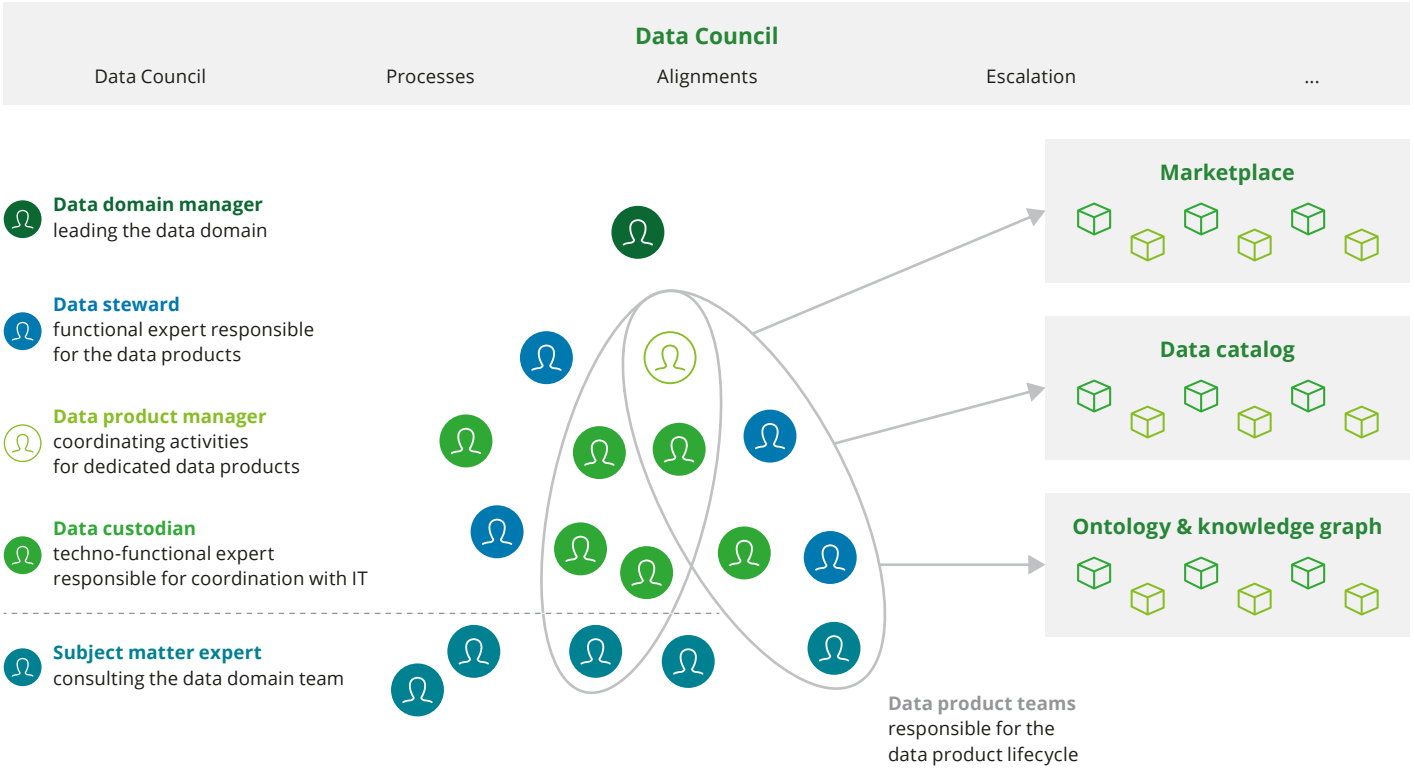
Technology-based data domains have some advantages, in that the organization likely already has expertise in the data lineage and an existing community available to take on data ownership. Technology-focused domain teams can also easily handle the structural changes associated with a new release or with data retention issues when a technology becomes obsolete. An exemplary technology-based data domain is Salesforce. As businesses often use numerous technologies in their day-to-day work, one disadvantage of technology-based data domains is the lack of functional dependencies.

Organizational data domains, by contrast, own all of the data used by a specific business unit independent of the underlying technology. This approach allows users to leverage the existing organizational structures and personal networks to define data domains that speed up transformation. A data domain for marketing and sales data is one example of an organizational data domain. However, such domains fail to break up the silos many companies have, impeding communication and contradicting the original goal of bringing together employees of different expertise.

As most business do not generate value within a single organizational unit but rather through various business processes, **process-related data domains** provide valuable support for growing the business. Data generally flows through various departments as part of a business process, which means that process-related data domains would break up existing silos and help users better understand the data lineage and the value of the data within the domain. Data used in the order-to-cash process is an example of a process-related domain. By its nature, a process usually covers a large area, which means process-related data domains can quickly become very complex as data owners have to manage many stakeholders from end to end. What is more, the data may also be used in multiple processes, which makes it difficult to clearly define which domain owns the data.

Context-based data domains offer an evolutionary approach to setting up data domains, allowing for flexible combinations of technological, organizational and process-related factors. The business context of the data in question covers the previously discussed dimensions of technology, organization and process. This ensures that the process involves the right employees for a specific context while reducing the complexity and resolving the conflict of data-ownership of process-related data domains. Sales funnel or order management data are tangible examples of contextual data domains. This type of domain implies that the core data domain team may be associated with a specific context, while some of its members may work on different teams because of their particular expertise. Consequently, it is more suited to a particularly mature organization.

In any of the four types of data domains, there will be uncertainty as to which data to associate with which domain (e.g., does customer data reside in the domain of finance, as they handle invoicing, in the domain of the supply chain, as they are responsible for delivery, or in a separate 'customer data' domain?). Such discrepancies are discussed in the **Data Council** that consists of all data domain leads, usually called **data domain managers**. The council issues guidelines that define the way data owners work and align cross-domain dependencies, while also acting as an escalation point for cross-domain conflict.



Regardless of the domain approach that suits a company's individual requirements and maturity level, the teams themselves will need to appoint certain domain roles. This includes naming a data domain manager when the domain takes on ownership of data and the team becomes accountable and responsible for these data products. Within each data domain, it is the data domain manager that is responsible for steering, prioritizing and aligning all domain initiatives and activities. He or she also serves as an escalation point for the domain and handles all communication with senior management.

Within each data domain, the **domain team** is responsible for enriching the data they own with contextual information (metadata) in a corporate data catalog and for structuring the domain knowledge in an ontology tool. The team is also responsible for registering their data products in the data product marketplace and making them discoverable, accessible and reusable within the enterprise. Over time, the knowledge exchange and knowledge retention will improve as the implicit knowledge of the various functional experts is made explicit in the ontology tool. To perform these activities, the domain team must have the following roles:

- The **data steward** is a functional expert who provides contextual information about data and is responsible for identifying data sources, maintaining metadata in the data catalog as well as modelling domain knowledge in the ontology. He or she may also take on ownership of a data product and act as the product manager.

- The **data product manager** is the go-to person within the company for a particular data product that has been published. The product manager coordinates all activities across the data product lifecycle, both evaluating and approving data consumers' requests to access the data products.

- The **data custodian** is responsible for making the data accessible. Although it is helpful to have a technical background and a good understanding of the systems and interfaces involved at the operational level, the custodian works on the business side of the enterprise. His or her knowledge is vital for maintaining data lineage in the enterprise data catalog. The data custodian also coordinates activities with the IT department.

Finally, two additional roles round out the team working on a data product, without either of them necessarily being a member of the data domain team:

- A **subject matter expert** has specific business or IT knowledge that is relevant for defining or operationalizing a data product, clarifying business requirements or identifying risks and mitigation strategies, among other things. He or she is selectively involved in data product development.

- **Data consumers** will most likely be the biggest group of employees. This role describes employees that work with data. Based on their work, these users are particularly suitable to identify potential for improvements, e.g., quality issues. They may also be most likely to assert a demand for new data products and actively use the data catalog or marketplace solutions, once available.

As you can see from these multiple roles, individual employees are extremely important for the success of a transformation. There is no explicit interest in breaking up the communities, where employees have been working for years and enjoy a lively exchange about their current activities or identify relevant synergies and dependencies. The new groups created for a specific data product can either come from different data domains or act as a sub-group of a particular domain. For coherence and continuity, senior management has an interest in keeping these relationships intact. These new communities do not require specific roles and responsibilities. In fact, Deloitte expressly encourages companies to establish communities within the new governance model once they have set up the context-dependent domains. That way, we can be sure they will keep working on data relevant to specific processes, organizational units or technology.

The list of roles here is not meant to be exhaustive – each individual business may have additional demands that require further roles within and outside of the data domain. To leverage the full power of data domains and establish the roles in the business as part of a company's transformation strategy, it is crucial to formalize this new way of working with data. Change management is essential on this journey, using proven methods to support employees through a transformation such as this.

Ultimately, the primary role of a data domain is to add value across the enterprise by delivering consistent data products that drive novel use cases. The use cases then support business performance through data – regardless of the types of domains an enterprise chooses. In the end, becoming a data-driven company is at least as much about people as it is about technology.

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Frank is a Director in Deloitte's AI & Data offering with a focus on Data-Strategy, Data-Transformation and Data-Management. He designs and implements data-driven-transformations with an objective on data-value-creation with a holistic and comprehensive approach. In his opinion, data transformation is a team sport.

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Christoph is a data strategy consultant and data scientist, combining the two in his endeavor to help enterprises transform into data-ready organizations. He has a particular focus on the CEO and CDO organization's operating model design, data / machine learning governance, collaboration models and data literacy. In his opinion, data is a people business - technology is more readily available.

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Jan is a highly skilled data strategist with 8 years experience in designing & transforming companies to become value-data-driven. He is an expert in Data Governance & Operating Models. Jan's project background is in a variety of AI & Data Strategy and Data Science projects at different maturity levels (PoC, PoV, MVP, MMP) including the design of cloud architecture and data operation units.

Glossary

Data Mesh
The data mesh is a domain-driven socio-technological approach for creating decentralized data architectures. It is based on decentral governance structures as a foundation for generating sustainable business value using standardized and re-usable data products. It relies on a flexible collaboration model accross the entire enterprise.

Data Product
A data product is a set of data that is made available for the usage of employees or systems via a standardized API on a marketplace. Its purpose is to realize use cases and therefore to enable the implementation of data-driven services.

Data as a product
Synonymous to Data Product.

Use Case
A use case creates business value by fulfilling an explicit objective. Use cases are based on existing Data Products.

Data Catalog
A data catalog is the central inventory for all data assets within the company. It is made understandable via a glossary of frequently used terms and by highlighting the technical and business data lineage as well as transformation logic.

Data Governance
Data Governance is the discipline that connects data processes, and corresponding roles and responsibilities by formulating binding enterprise-wide policies.

Ontology
Ontologies are formalized descriptions that capture relations between business entities and their ab-stract realization as data.

Data Domain
A data domain takes ownership of data relevant to a common area of interest and implements roles that are responsible for expanding and maintaining the usability of this data.

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