

What we do

[Go to overview](#)

Customer Experience, Product and Design

Data and AI

Digital Transformation and Operations

Enterprise Modernization, Platforms and Cloud

Who we work with

[Go to overview](#)

Automotive

Healthcare and Life Sciences

Public Sector

Cleantech, Energy and Utilities

Media and Publishing

Retail and E-commerce

Financial Services and Insurance

Not-for-profit

Travel and Transport

Insights

[Go to overview](#)

Featured

Technology

An in-depth exploration of enterprise technology and engineering excellence

Business

Keep up to date with the latest business and industry insights for digital leaders

Culture

The place for career-building content and tips, and our view on social justice and inclusivity

Digital Publications and Tools

Technology Radar

An opinionated guide to technology frontiers

Perspectives

A publication for digital leaders

Digital Fluency Model

A model for prioritizing the digital capabilities needed to navigate uncertainty

Decoder

The business execs' A-Z guide to technology

Looking Glass

Bringing the tech-led business changes into focus

All Insights

Articles

Expert insights to help your business grow

Blogs

Personal perspectives from Thoughtworkers around the globe

Books

Explore our extensive library

Podcasts

Captivating conversations on the latest in business and tech

Careers

[Go to overview](#)

Application process

What to expect as you interview with us



Consultant life  
Learn what life is like as a Thoughtworker  
Grads and career changers  
Start your tech career on the right foot  
Search jobs  
Find open positions in your region  
Stay connected  
Sign up for our monthly newsletter  
Learning and development  
Explore how we support career growth  
Benefits  
See how we take care of our people  
About  
Go to overview  
Our Purpose  
Diversity, Equity and Inclusion  
Our History  
Our Leaders  
Social Change  
News  
Partnerships  
Sustainability  
Conferences and Events  
Our Brand  
Awards and Recognition  
Investors  
Contact

## Data Mesh in practice: Product thinking and development (Part III)

Our learnings from implementing Data Mesh at Roche

### < Articles

Data strategy

Product innovation

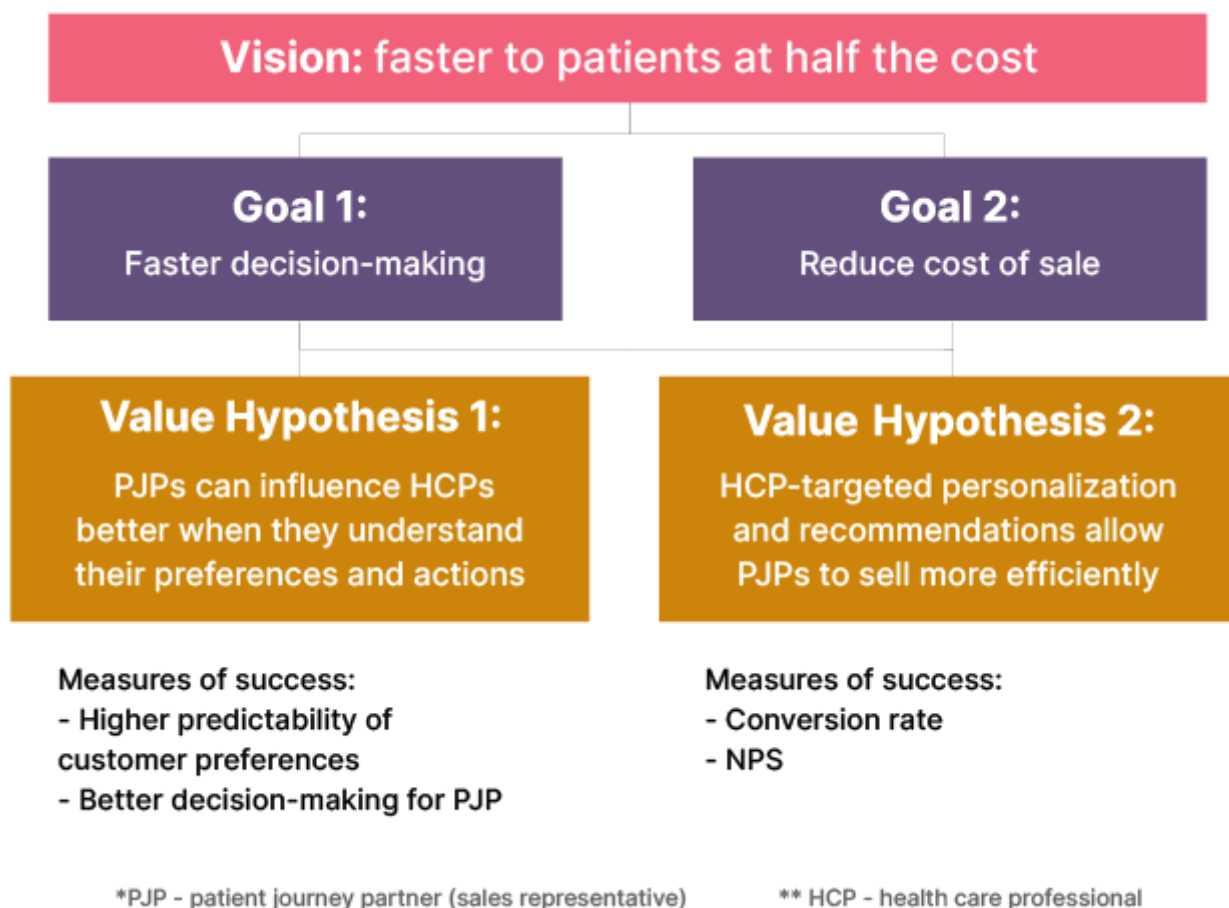
Article

By [Ammara Gafoor](#), [Ian Murdoch](#) and [Kiran Prakash](#)

Published: May 19, 2022

*This is the third article in a series exploring the key practices and principles of successful Data Mesh implementations. You can read part [one](#) and [two](#) here. The practical learnings explored herein have all come from our recent Data Mesh implementation engagement with Roche. However, the use cases and models shared have been simplified for the purposes of this article, and do not reflect the final artifacts delivered as part of that engagement.*

In our [previous article](#), we looked at the operating model changes required to support Data Mesh, and the discovery process we go through to define them using EDGE's Lean Value Tree (LVT) — ultimately leading to the creation of high value customer outcomes.



The principles of the LVT shape how we approach and think about data products and their creation. This serves as the starting point for the Product stream of the Data Mesh Discovery process.

## 01: Accelerate

**Workshops (vision to prioritization)**



## 02: Discovery

**Operating model stream**



- > LVT (Goals)
- > Existing team structures and responsibilities
- + Prioritization
- + Governance
- + Decision-making

**Product stream**



- > Use cases to Data Product
- > Integrated DP landscape
- > DP prioritization (map DP to LVT)
- > SLOs for each prioritized DP

**Tech stream**

- > Understanding existing platform capabilities
- > Understanding existing DP architecture



## > Gap analysis for prioritized DP

When teams want to start treating data as a product, we recommend working backwards from organizational goals to identifying high-value analytical use cases, and ultimately, which data products are needed to bring the use cases to life.

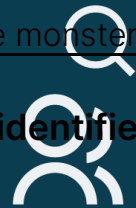
Throughout the process, relevant stakeholders prioritize their goals and hypothesized use cases, ultimately helping us make informed and value-oriented decisions about which Data Products should be built.

### Handover

This approach ensures that domain teams and their organizations make intentional, considered choices about the data products they add to the mesh — guaranteeing that teams don't end up accidentally creating something similar to a data lake monster.

**Key practice #1: Complete value-oriented templates for every identified use case**

### Review, summary of findings and recommendations on next steps/action items



For each identified use case, we take a structured approach to ensure that it can easily be mapped back to the LVT and what we ultimately want to achieve. To help us do this, we use a hypothesis use case template:

## Use case statement

We believe that:



Will help achieving:



We know we are  
getting there based on:



It's a simple framework, but it helps ensure that every hypothesized use case for data products begins with a clear view of its intended value, and a clear definition of how that value will be measured and realized, as seen in the two examples from our work with Roche below:

## Digital Engagement Dashboard

We believe that:

understanding how  
HCPs react to PJP activities  
(example F2F meeting)

Will help achieving:

better support brand  
customer interaction

We know we are  
getting there based on:

prediction of  
customer preferences

success of  
a campaign

### Example of its use in practice

As a Marketing Director, I want to evaluate the effectiveness of the last MS email campaign by comparing all relevant email metrics (e.g. opening / click / bounce rate) with previous MS campaigns.

## HCP 360 Dashboard

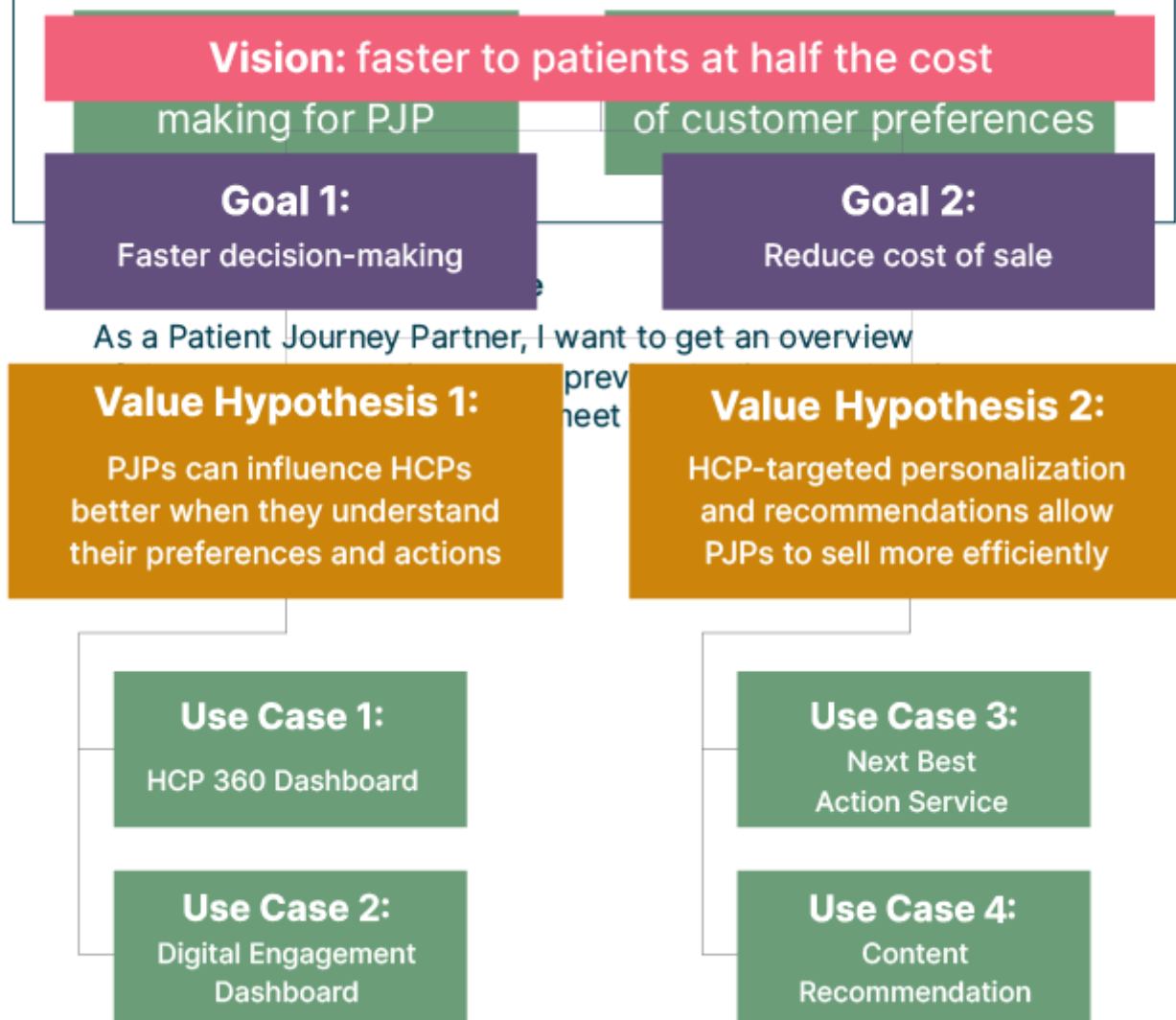
We believe that:

giving a PJP a 360  
view of a HCP

Will help achieving:

a higher success  
rate in influencing a HCP

With each use case defined within the template, we can then flow them back into our original Lean Value Tree:



From there, the outlined use cases are prioritized based on what the business wants to achieve and pursue. We use the following data use case prioritization template for this, but any similar prioritization method is equally suited for the task:



		HCP 360 dashboard	Digital customer engagement dashboard	Next best action
What potential value or negative impact to our business? (value from 0 to 5)	Business value	5	5	4
How fast does business value decrease over time? Will users wait for us or find another option? (value from 0 to 5)	Time criticality	4	5	4
What is the risk of delaying this initiative for our business? Will this initiative open / facilitate new business opportunities? (value from 0 to 5)	Risk reduction	4	5	4
How many people will be impacted by this initiative? (Consider for same period) (value from 0 to 5)	Reach	3	5	4
How much will this impact each of these people? (value from 0 to 5)	Impact	4	5	4
How confident are you about these numbers? (value from 0 to 5)	Confidence	5	5	4
How does this work compared to others? (lowest effort 5, highest effort 0)	Effort	5	4	3
SCORE = Business value + Time criticality + Risk reduction + Reach + Impact + Confidence + Effort	SCORE	30	34	27

Whichever framework you choose to follow, it's critical that the right IT and business stakeholders are involved at every stage of this prioritization process. You want to begin your journey with a complete view of what's most important to the domain, and which route is best to get there, so gathering broad input is highly valuable.

## Embracing product thinking

At this stage, it's worth noting the role that product thinking plays in the Data Mesh. Data products are named as such because that's exactly what they are — they're products, selected and valued by consumers.

To deliver its potential value, Data Mesh requires the domains building products to understand and apply the principles of product thinking. For some — especially those used to working closely with customers and responding to their needs — that may come naturally. For others, it may require enablement and upskilling.

In line with product thinking best practices, domain decision-makers joining the Data Mesh should understand principles including:

- **Knowing your customer** and understanding how they want to interact with your product — and by extension, how your product needs to be designed to align with

how they operate.

- **How product and project mindsets differ** and how products will need to continuously evolve and improve throughout their lifecycle.
- **The value of cross-domain knowledge and data sharing** and the need to not only focus on your own use cases and hypothesized benefits, but those of other domains too.
- **The value of diverse perspectives** and inputs, and where and when to create cross-functional teams to deliver specific product outputs and outcomes.

## How does a data product differ from a data asset?

A data asset can be any entity that is composed of data — such as databases or application output files.

Data products however are:

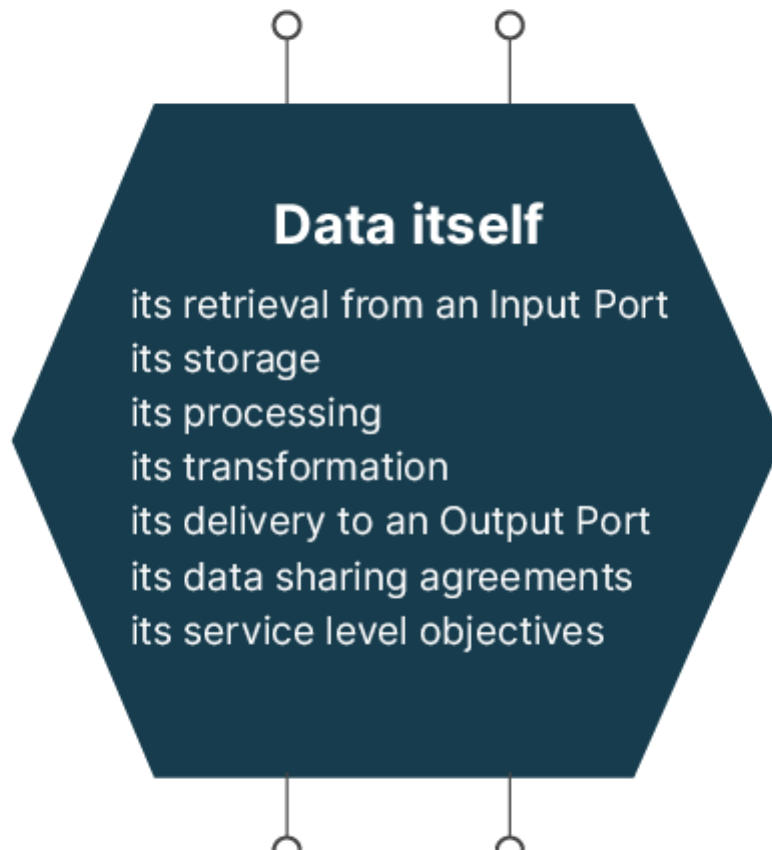
- Created to serve a specific user-driven goal as identified in your Lean Value Tree
- Subject to clearly defined SLOs
- Owned by a single domain or stakeholder and maintained by a single data product team, who are responsible for their upkeep

## What makes up a data product

## Input Ports

Input ports are receiving mechanisms.

This can be user interfaces (manual input), as well as technical interfaces (APIs, extractors and many others)



## Output Ports

Output ports are delivery mechanisms.

This can be technical interfaces to other Data Products (like APIs) or consumer readable formats, e.g. dashboards, reports for analytical Data Products

## Key practice #2: Completing the data product template

Once you've got a clearly prioritized list of use cases, it's time to start identifying the data products that are best suited to satisfy and enable them.

Here we introduce a simple data product template that helps articulate exactly what a data product needs to do, and how it will do it:

The diagram shows a data product template form with the following fields and shapes:

- Data product name:** A teal hexagon.
- Domain:** A purple rectangle.
- Data product job:** An orange rectangle.
- Data product producers:** Four green rectangles arranged in a 2x2 grid.
- Data product consumers:** Three dark blue rectangles arranged in a 1x3 grid.

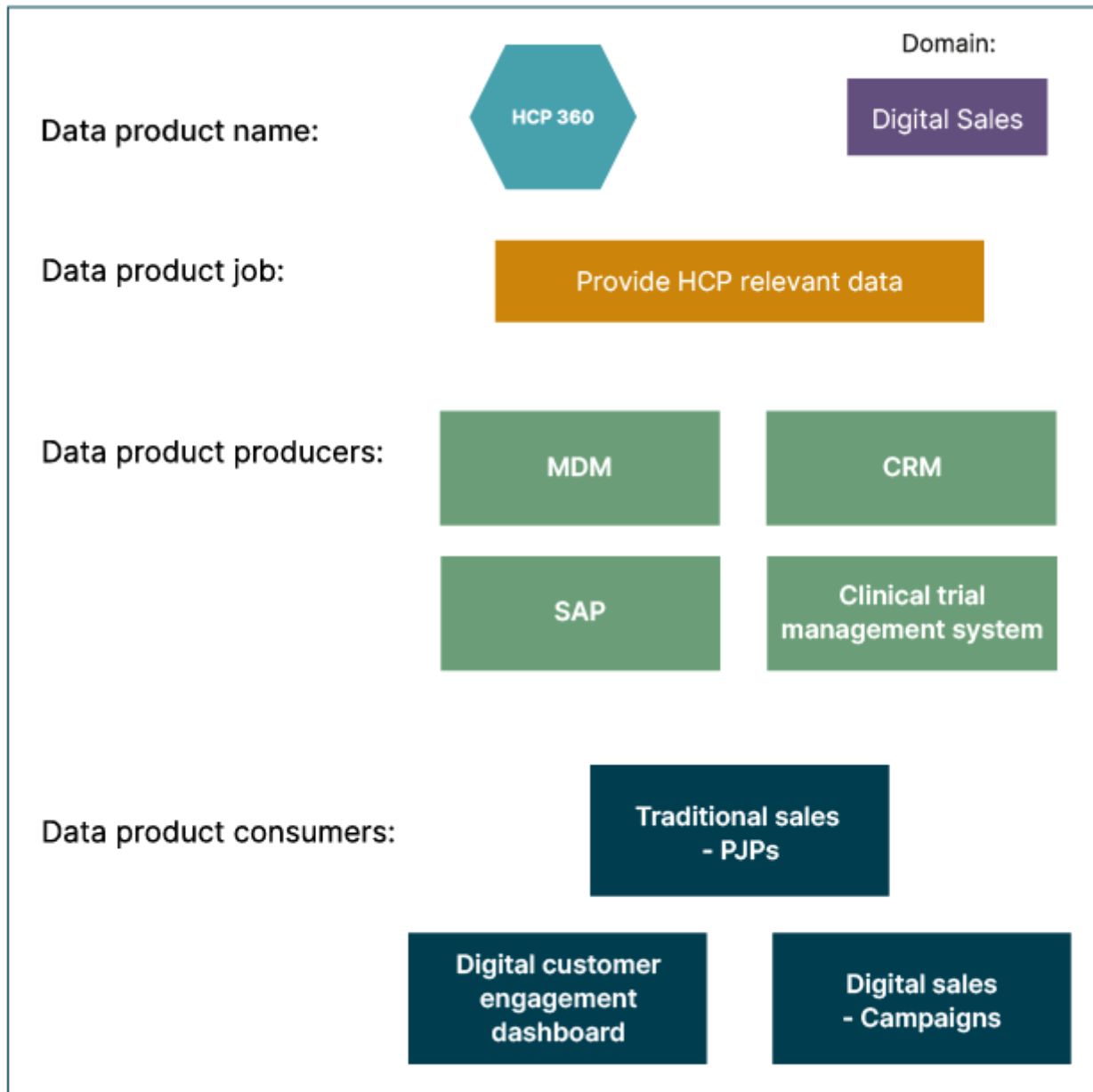
## Six questions to shape your data product template

The following six questions have helped guide the product stream of our discovery process, allowing domains to determine exactly which products they need to create, and how those products should come together to deliver maximum value.

- Who will use the data product? And which stakeholders does it most directly serve?
- If we would expose this data product, would it be valuable for consumers? And are there any other stakeholders or domains that would be interested in this data product?
- How will they consume and engage with the data product?

- Which tasks or actions will they use the data product to support, and how can we meet their consumption requirements at that point?
- How would those consumers access or consume this data product?
- Which input data is required for the data product? Or what sources will need to be used to build and maintain the data product?

Together, the answers to those questions enable us to fill out our Data Product template as follows:

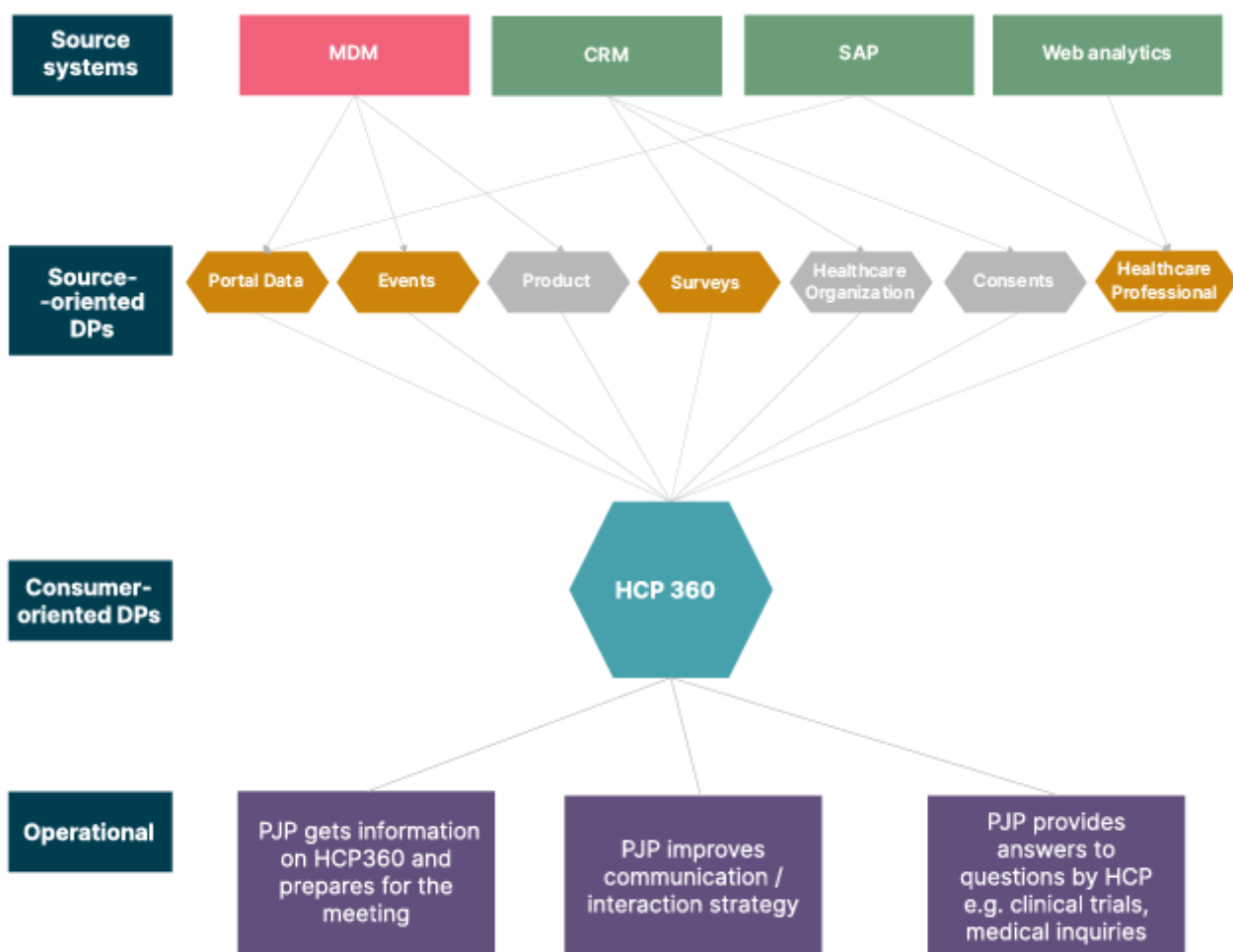


In this article, we intentionally choose a 360-degree view data product because we encounter 360-degree data solutions very frequently. In this case, the HCP 360 Data product isn't just created by pulling together all data that's relevant to HCPs — every input is carefully considered and intentionally added to best meet the needs of our defined consumers.

For example, the first iteration of the product only included data on how HCPs responded to digital engagements, while the second iteration added vital information about recommendations and next steps. This iterative approach helped us build up a product that was extremely relevant and valuable for consumers, and served them with what they really needed.

## Key artifact: The data product interaction map

Once you've identified a collection of data products using the input templates, you can then start to draw out a data product interaction map, as shown below:



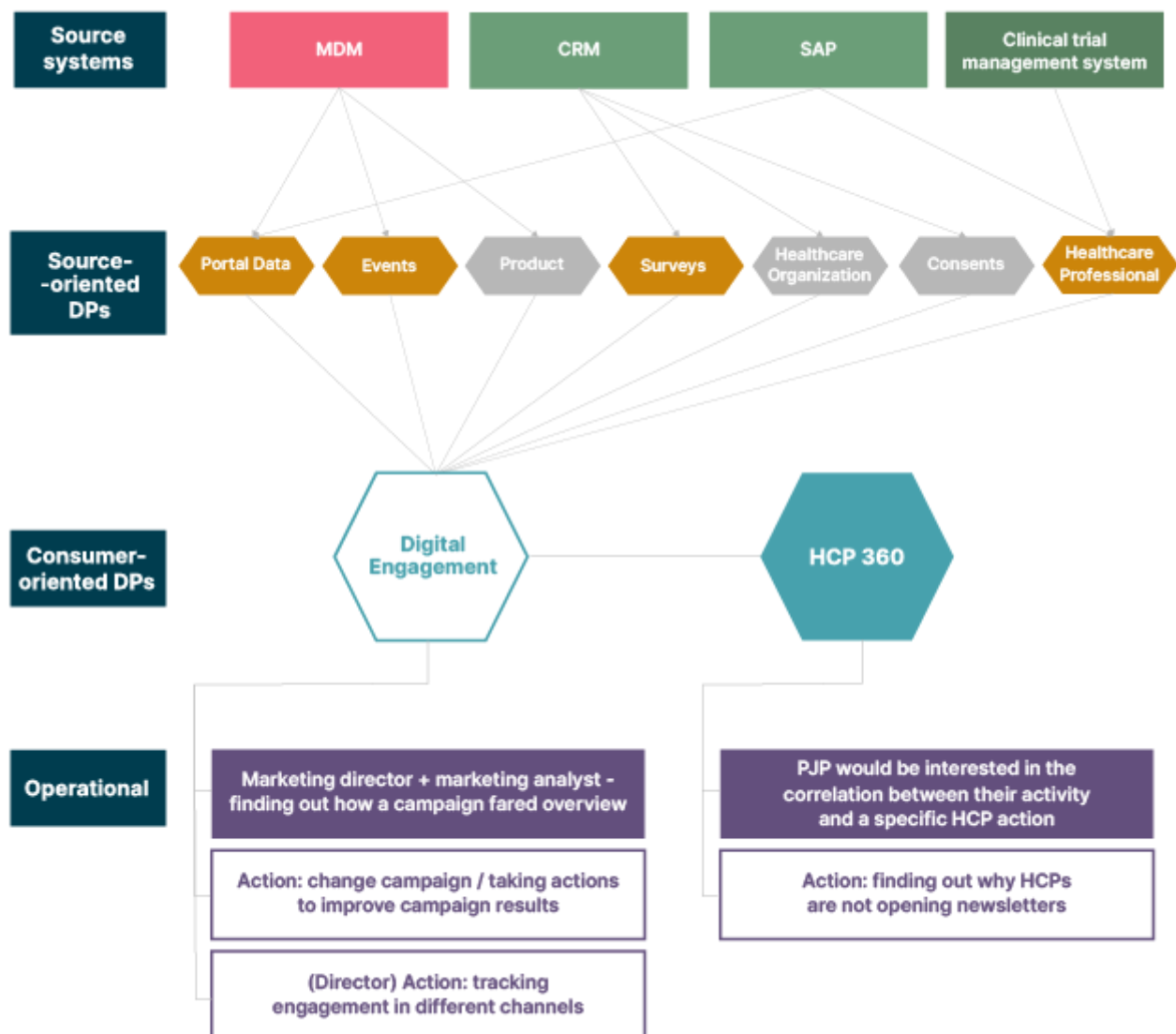
\*PJP - patient journey partner (sales representative)

\*\* HCP - health care professional

The data product interaction map clearly shows how data sources and integration sources feed into both source-oriented and consumer-oriented data products. But the most valuable aspect this map helps teams do is start to identify overlapping areas of data usage between prioritized data products.

Identifying this can help teams adjust the boundaries of their data products and make sure effort isn't needlessly duplicated, or even devise ways to unite potential data products to serve multiple, closely-linked needs.

Over time, multiple interaction maps, that feed into one another, can be brought together to create a single integrated data product landscape for a domain, as pictured below:



Here the HCP 360 data product is used as an input for the Digital Engagement Data Product. Using the integrated view we identified four data products (in yellow), that serve both use cases and whose boundaries can be logically merged.

The integrated data product interaction map provides us with an overview of all the foundational data products within a given domain. The map will evolve as new use cases are prioritized and onboarded into the Data Mesh, continuously giving teams a clear view

of their data product landscape that they can use to make informed decisions about data product development or evolution.

### **Key practice #3: Defining clear SLIs and SLOs**

In our experience, one of the most common reasons behind low data reusability is data simply not being available in the format different teams or use cases need. When we treat data as a product, we make conscious decisions based on how the data product will be used for each use case it serves, enabling high interoperability and reusability.

Before going any further, let's first break down a few key terms:

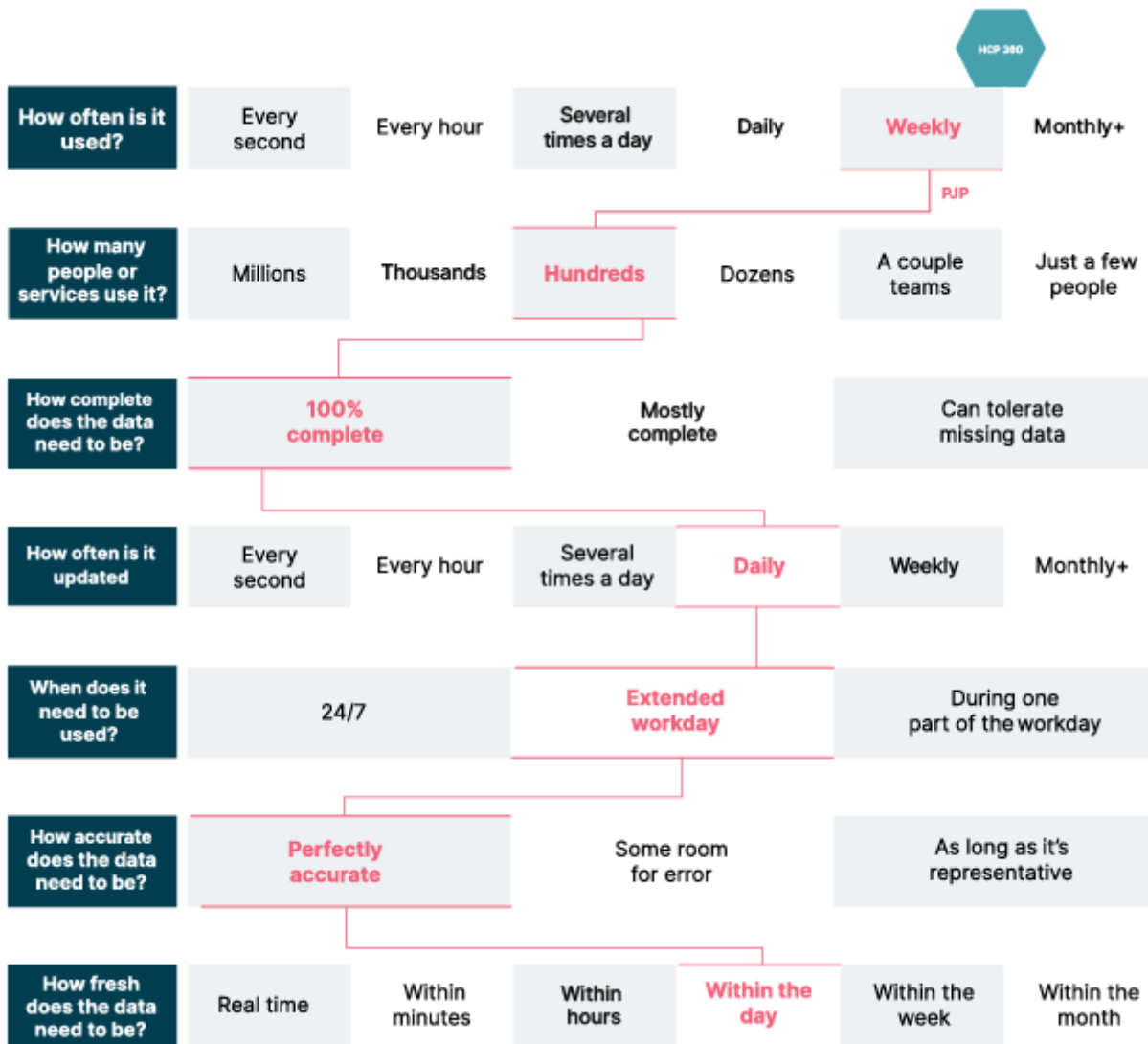
- Service-level objectives (SLOs) are the targeted levels of service, measured by SLIs. They are typically expressed as a percentage over a period of time. Eg. 99% availability over a three-month period
- Service-level indicators (SLIs) are the metrics used to measure the level of service provided to end users (e.g., availability, latency, accuracy)
- Error budgets are the acceptable levels of unreliability for a service before it falls out of compliance with an SLO

In Data Mesh, we use SLOs to make sure that individual data products work as expected. If outages or disruptions exceed the defined error budgets, that forces the product teams to check the backlog to improve the reliability or stability of the data product.

For example, an SLO of "99.5% of the transactions from previous day shall be processed before 9am every day" has an error budget of "0.5% of transactions missed to be processed per day" and this error budget can for example be set at, "2% of transaction missed per month". Should the error budget be exceeded or used up, it amounts to a violation of the SLO.

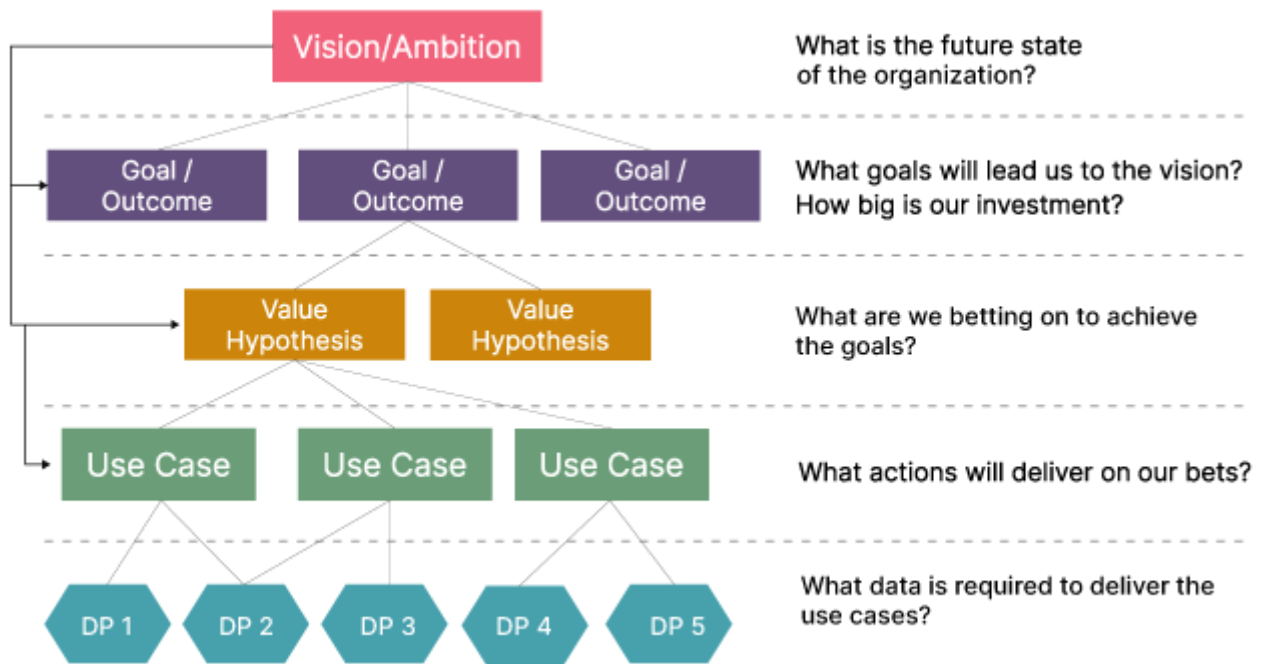
We use a discovery exercise called Product Usage Patterns to collectively brainstorm and understand how stakeholders wish to use a data product, and what their key expectations are for it. This enables us to determine the SLOs that need to be set for individual data products.



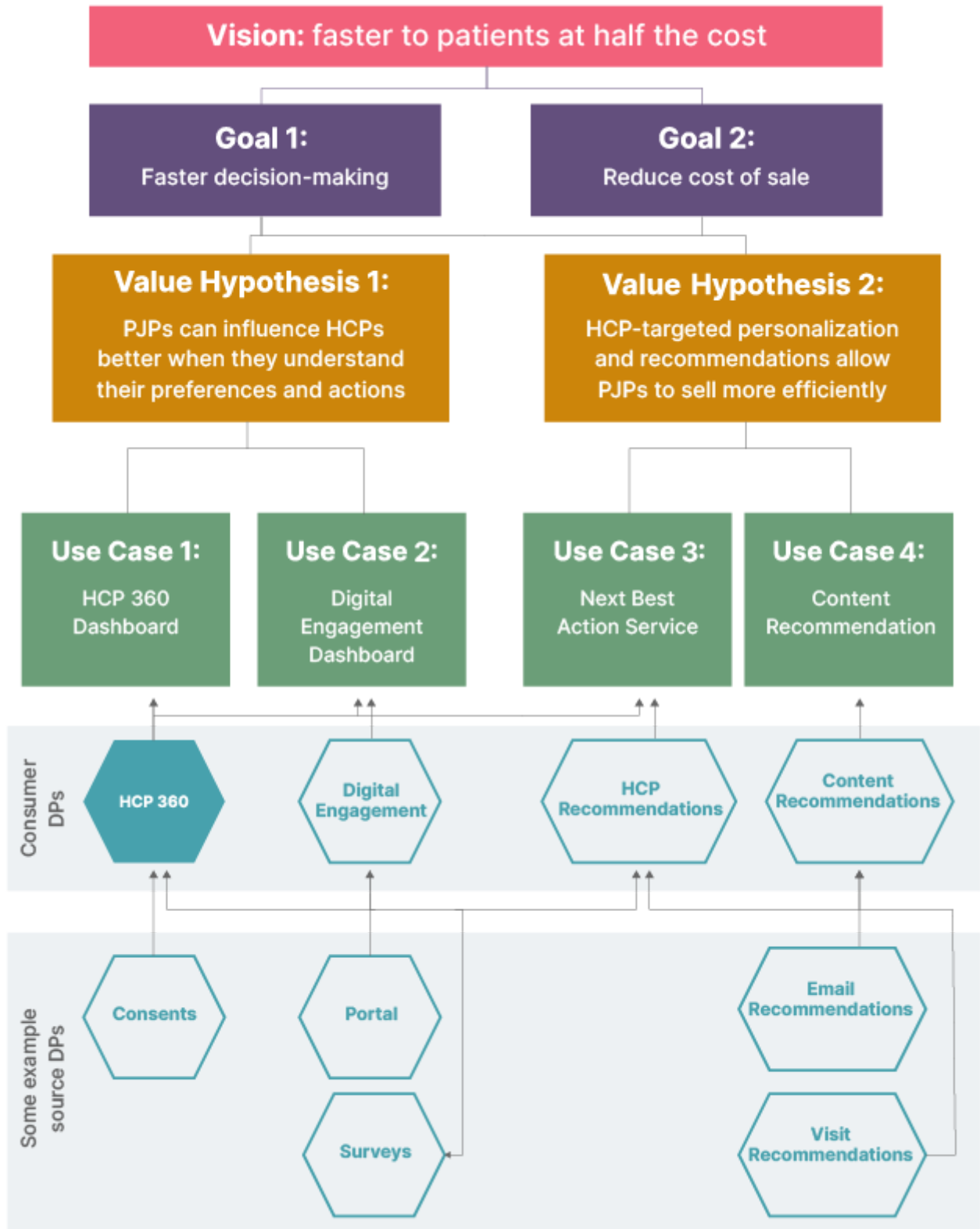


## Key Practice #4 Mapping everything together - The Data Mesh LVT

As a final step, we mapped Roche's identified data products to the domain LVT using the following Data Mesh Template:



For Roche, that looked like this:



\*PJP - patient journey partner (sales representative)

\*\* HCP - health care professional

In terms of change management for Data Mesh, this is our most value creating and critical step. This tangible association of the data to one or more business goals, is what turns data into a data product - justifying its existence and clearly showing how it supports the domain and the wider business. Within this definition, it has measures of success, an owner, and a future roadmap. At this stage everyone is clear about the expected business outcome and their role in achieving it.

Depending on the goals of the domain, business decision makers can make a conscious decision about which goals they want to achieve, thereby helping them prioritize which data products to build.

## The Data Product MVP Checklist

In addition to their hypothesized value and business purpose, for each data product, we clearly define the following criteria, to help everyone understand their purpose and value:

### Minimum requirements for Data Products

Mandatory:

- **Owner / Steward** (first point of contact for the data product, approver of access)
- **Data Product name** (unique to the data domain)
- **Description** of the Data Product
- **Data sharing agreement** (published on a common marketplace catalog (e.g. Collibra))
  - "Open Access" or "Access Approval Required" (approval granted by DP Owner)
  - Published Data Access Policy: Define who is/isn't allowed access to the data
  - Distribution rights: Whether modified (aggregated, filtered, merged) or unmodified data can be distributed to third parties by the consumer
  - SLO
- **Port** (a delivery mechanism for the Data Product)
- Data Product **type** (consumer-oriented or source-oriented)
- **Business Domain** (Business Function)
- Data Privacy, Classification and compliance (\*mandatory only for regulated industries such as healthcare, banking etc.)

With the LVT, the Data Product Interaction map and the Data Product checklist all created, domains can move onto the final aspect of our discovery, and start making informed technology and architecture decisions.

In the fourth and final article in this series, we'll look at those decisions, and walk you through some of the ways Data Mesh has helped organizations build a strong technical and architectural foundation for their Data Mesh operations.

## More from this series

 Data Mesh in practice: Getting off to the right start

Article

### Data Mesh in practice: Getting off to the right start (Part I)

Read now [>](#)

Article

Article

## Data Mesh in practice: Organizational operating model (Part II)

**Read now** >



Data Mesh in practice: Technology and the architecture

Article

## Data Mesh in practice: Technology and the architecture (Part IV)

**Read now** >

Company



Insights



Site info



Connect with us



© 2022 Thoughtworks, Inc.