

Information Permeability

Integrate into an information ecosystem.

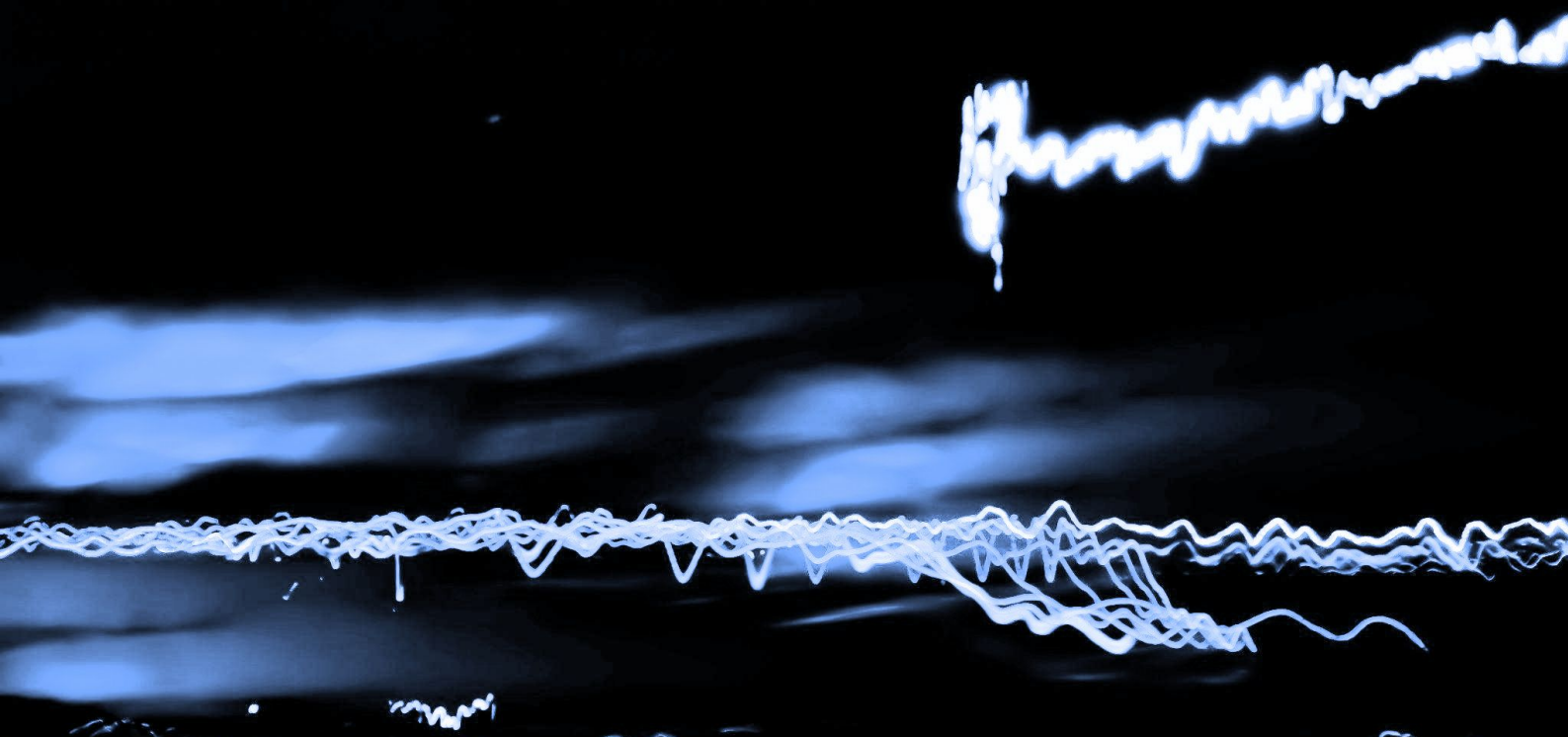
D ONE
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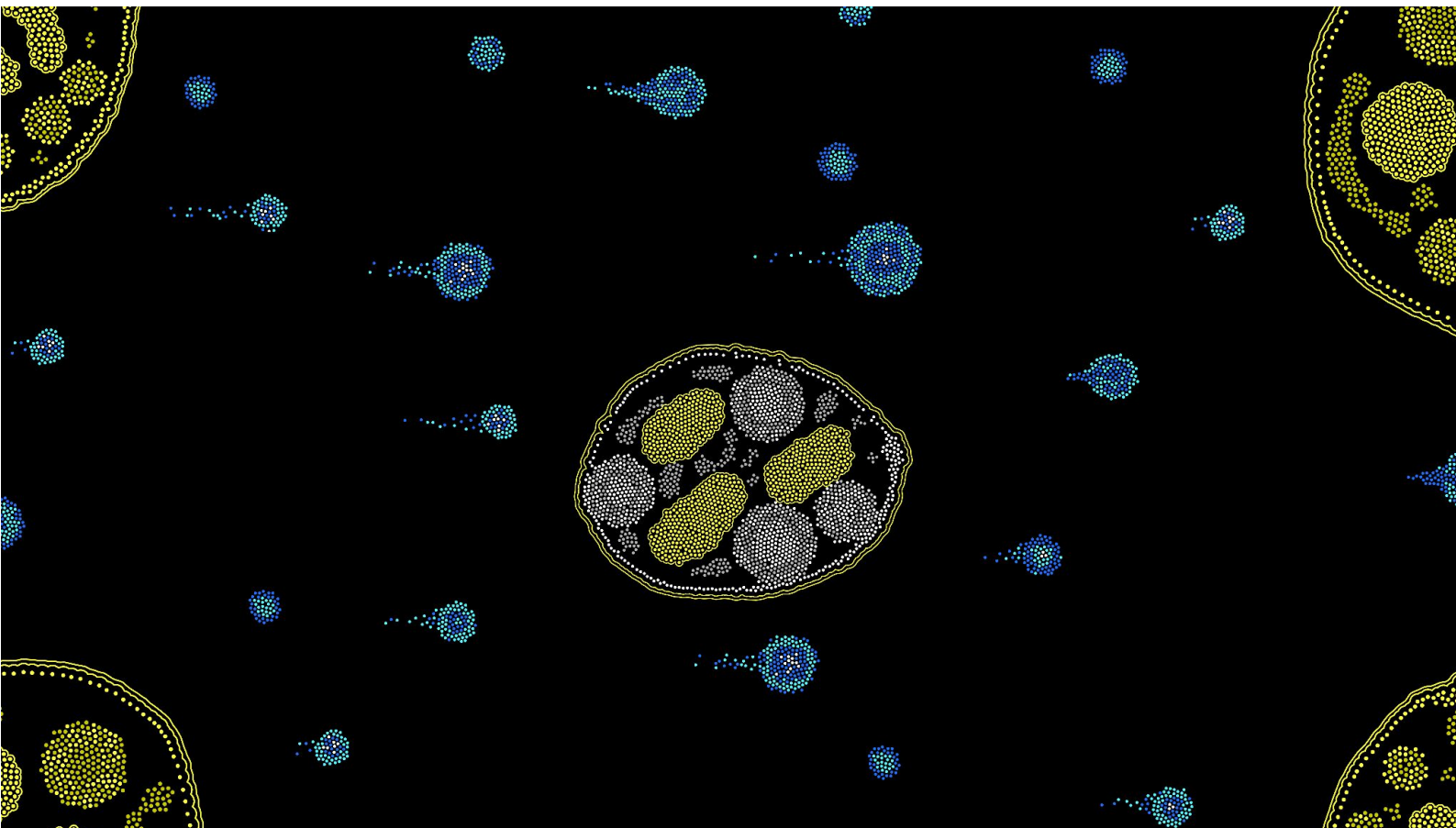
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Information Permeability

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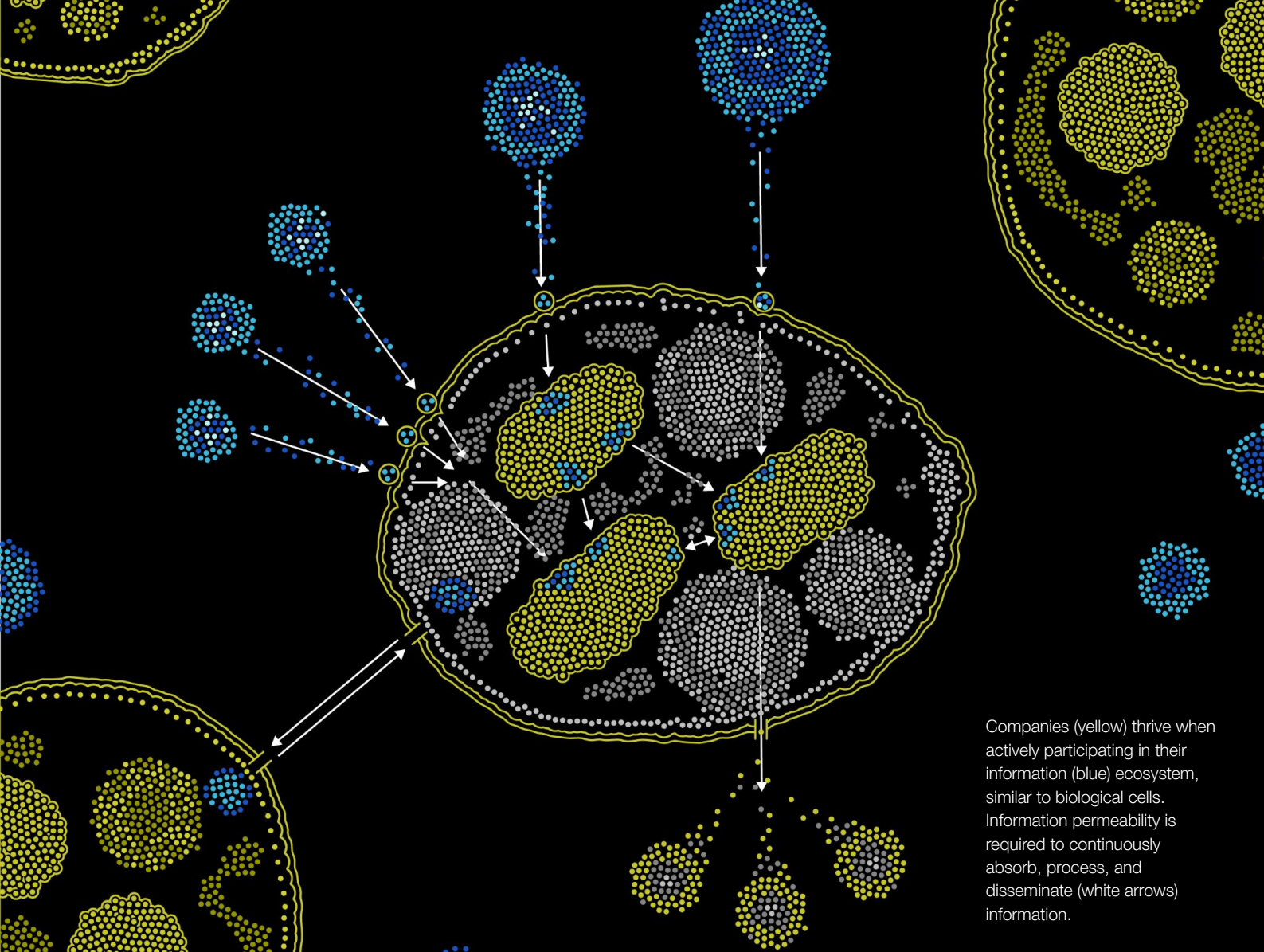
Information is one of the most essential raw materials in the pharmaceutical industry. An important part of value creation in a pharmaceutical company is converting information into products.



Companies (yellow) are part of an ecosystem in which information (blue) is constantly flowing.

In contrast to other types of raw materials, information is omnipresent. Its successful utilization depends on identifying the important pieces of information and being able to digest it. Information is distributed, and its content can take many forms.

It is essential for companies to react quickly and efficiently to new information to stay competitive by generating knowledge and creating new products. Therefore, companies must be constantly ready to absorb and process information from many different sources, formats, and structures.

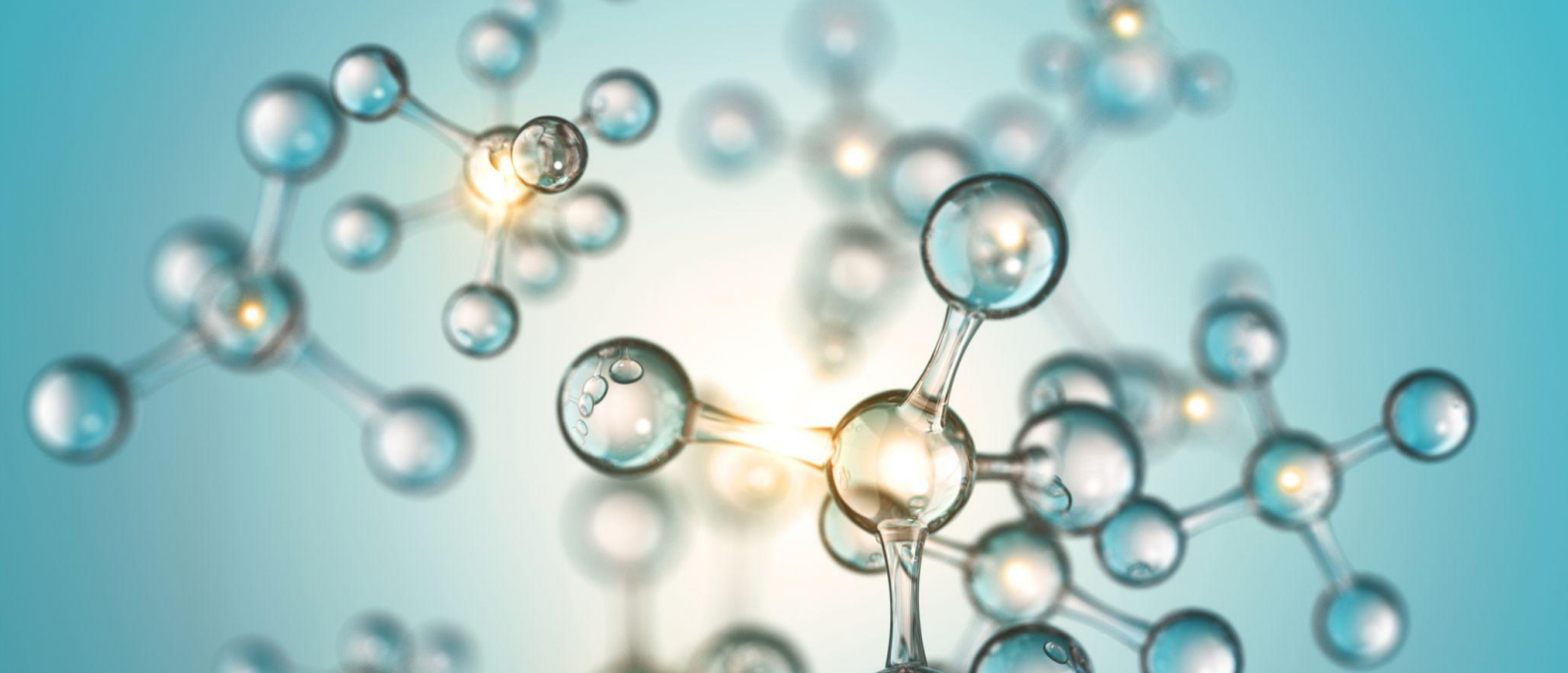


On Information Permeability

To achieve the required readiness to absorb and process information, companies need to become an integral and active part of their information ecosystem. They need to become receptive to and emissive of information to be able to react quickly to changes. We call this ability of information-driven companies to effortlessly and swiftly absorb, process, and disseminate information “Information Permeability.”

This concept is akin to the selective permeability of biological cells. Biological cells need to be in constant exchange with their environment to survive. Similarly, we see that information-driven companies need to become more permeable to the information surrounding them to thrive. Becoming a part of the constant flow of information is necessary to react to changes quickly, seize new opportunities, and create value for patients. Information Permeability is also applicable inside individual companies. There, it means the effortless movement of information across the boundaries of functional divisions or departments.

Selectively facilitating information flow across borders is an integral aspect of Information Permeability. It translates to the need for low-barrier information exchange between the company and its surroundings. This selective but low-effort information flow ensures that relevant and critical information reaches the right stakeholders promptly and efficiently, fostering an environment of open communication and collaboration.



Why is it important

For a company specializing in R&D and pharmaceutical products, integrating and interacting effectively within its environment is crucial for various reasons:

- **Innovation and Adaptation.** The pharmaceutical industry is highly dynamic, with continual advancements in science and technology. A company that effectively integrates feedback and external inputs (being receptive) and proactively communicates selected findings and updates (being emissive) can stay ahead in innovation. Such permeability allows for swift adaptation to regulatory changes and market needs and opens new collaboration opportunities.
- **Regulatory Compliance.** Pharmaceutical companies must navigate complex regulatory environments. Effective interaction with regulatory bodies, understanding and anticipating regulatory changes, and promptly adjusting operations and communications are essential to avoid costly legal issues or delays in product approvals.
- **Collaboration and Partnership.** R&D in pharmaceuticals often involves collaborations with universities, research institutes, hospitals, and other companies. A company that is receptive to new ideas, transparent, and open in sharing information is more likely to foster strong, productive partnerships, which are essential for sharing resources, knowledge, and technology. Such partnerships often lead to new discoveries serving as a basis for innovative products and therapies.
- **Market Responsiveness:** Understanding market needs and consumer feedback is vital for the success of new pharmaceutical products. A company that actively listens (receptive) and effectively communicates (emissive) can better align its product development and marketing strategies with customer expectations and healthcare trends.
- **Public Trust and Image:** The pharmaceutical industry is constantly under public scrutiny. Companies that are transparent about their research findings, product safety, and ethical considerations—and that actively engage with the public and stakeholders—are more likely to build trust. Trust is a critical asset for the acceptance of new treatments and for maintaining a positive corporate reputation.
- **Employee Engagement and Talent Attraction:** Companies that are open and communicative internally are more likely to have engaged employees motivated to contribute to the company's mission. This attracts top talent, particularly in fields like pharmaceuticals, where competition for skilled professionals is intense.

In summary, being both receptive and emissive, i.e., permeable, allows a pharmaceutical R&D company to be more agile, ethical, compliant, and competitive, ultimately leading to better business outcomes and improved patient health.

Where to start

While we think information permeability is an essential aspect of a modern (data) integration strategy, especially within research and development, its holistic approach requires it to be part of a broader enterprise-wide integration strategy.

Becoming more permeable for information requires companies to take a broader perspective on their data and application integration strategies. Internal and external data flows are equally important for a successful integration strategy.

A good starting point is to focus on the overall “Information to Product” value chain and to adopt systems thinking. Since the value chain starts and ends outside the company, the scope of the system under consideration is the larger ecosystem and not the company alone.

Extending the scope beyond the company's boundaries means treating business domains within the company and external players on an equal footing. Apart from the advantages of dealing with organizational changes (restructuring, divestment, M&A, etc.), the impact on architectural aspects is particularly interesting.

How to architect

Companies that treat data as a product and apply more decentralized governance can easily include external data providers as additional producers (additional security and quality checks might be necessary to ensure safe consumption by end users). Enterprise-wide data platforms need to provide the necessary technical means to make it easy to host external data products.

Many companies have already adopted a modern API-based architecture for modular and scalable application integration. Extending the scope to the entire ecosystem means exposing internal data through secure and controlled APIs. This unifies data dissemination, makes it easier to govern, and reduces the maintenance effort compared to numerous individual point-to-point integrations.

Ready-to-use interaction points in the ecosystem lower the barrier for the other actors to include external data sources. They significantly reduce the waiting time to start new collaborations. These interaction points also help to decouple internal from external technology so that tapping into new information sources is not detained by sensitive internal processes.



Examples for elements of the pharmaceutical information ecosystem.





What is important for processing

Information permeability encompasses not only the intake and output of data but also its swift and accurate processing within the company. Internal data processing practices need to be aligned with the principles of information permeability.

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Being able to quickly integrate new external information sources (i.e., new collaborators) requires automated, modular, and flexible data processing. Aligning the semantics of external and internal data through mappings ensures that it can be easily used to augment internally available information.

Additionally, ensuring the security and accuracy of data is paramount. Quality control measures must be built into the data pipelines to verify incoming data, prepare it for downstream usage, and ensure that only verified and cleared information is disseminated.

Last but not least, adapting internal data flows to widely accepted data standards (structures and formats) for internal processes simplifies the processing of external data and interoperability with future partners.

First steps

1. Assess your company's permeability for information and make it measurable. A few helpful questions are the following:
How long does it take to onboard new partners?
How many steps are needed to incorporate new data sources into existing processes?
How easy is it to commercialize your internal data?
2. Identify which business domain suffers the most from the slow absorption of new information sources or is most affected by maintaining many point-to-point connections for data exchange.
3. Start small. Within the identified business domain, select a few critical information flows as a pilot to show value quickly. Make sure your data platform offers standardized and ready-to-use endpoints for data exchange.

Get in contact with us for guidance along the journey to become permeable for information – and leverage the full potential of your ecosystem.





Key takeaways

Data integration strategies should incorporate the main characteristics of Information Permeability: being ready to absorb, process, and disseminate information quickly. Being more permeable for information is necessary for a full integration into the surrounding information ecosystem.

Be ready to react fast: proactively build interaction points for future partners, collaborators, and information sources. Lower the barrier to information exchange by providing ready-to-use integration/ collaboration platforms supporting widespread standards and technologies.

Align internal and external data flows while decoupling them technologically (e.g., take a decentralized data management approach and treat external partners like internal business domains).

Contacts



Dr. Moritz Haag
Managing Consultant D ONE

moritz.haag@d-one.ai



Dr. Andrei Dmitrenko
Senior Consultant D ONE

andrei.dmitrenko@d-one.ai

About D ONE

D ONE is the leading Swiss company for data, machine learning and artificial intelligence with national and international customers and a team of experts for data driven value creation. D ONE designs and implements projects which create value from data, acts as a guide on the journey to a data driven enterprise, and helps companies to shape processes, organizational structure, and company culture, leveraging the hands-on know-how along the entire value chain.



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