

# bytΞM

**Scaling to global Data Exchange & Management**

**LIBΞRBYTΞ**  
FREE YOUR DATA

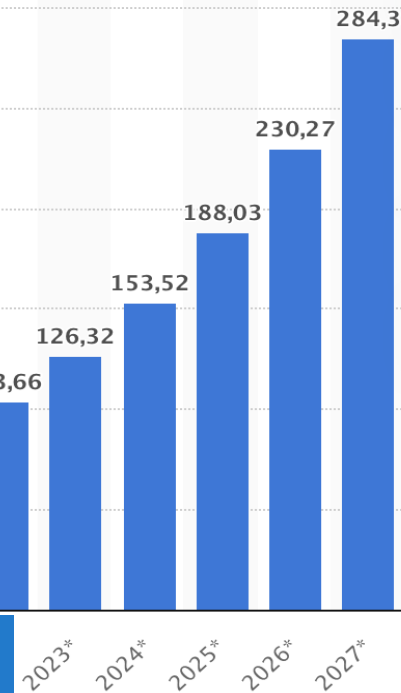
Oct 2025

## Exponential $x^2$ growth in global data volumes creates various problems:

- Identifying (suitable) data is increasingly difficult
- Search engines finds fraction (<5%) of the web
- >85% of new data is unstructured
- No (business) metadata standards
- Data stored & “worthless” in silos
- Transferring large volumes inefficient
- AI repeat of “fractioned app” landscape
- Growing DWHs\* or LLMs not a solution

Global data volumes in Zettabyte\*

Data hidden is data wasted. That's information asymmetry.



Organisations have simply no or wrong Approach on data products & value extraction, for example:

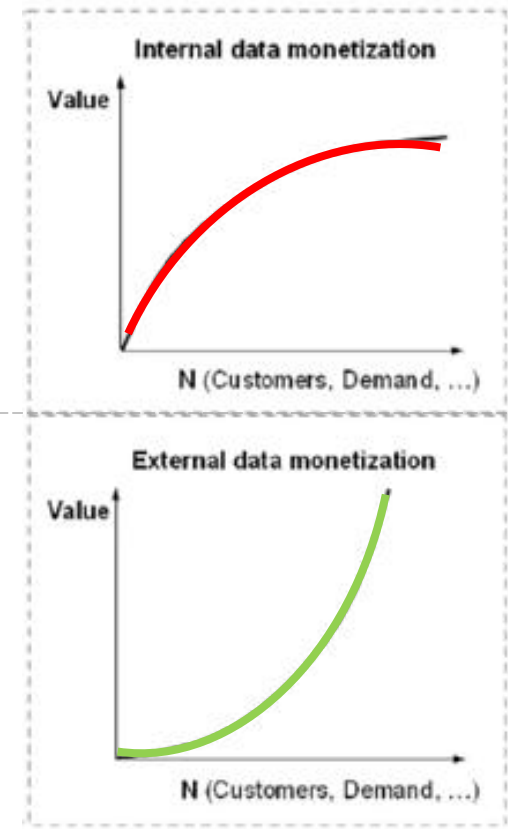
- indirect **internal approach**

providing *diminishing* returns

instead

- indirect **external approach**,
- **direct external approach**

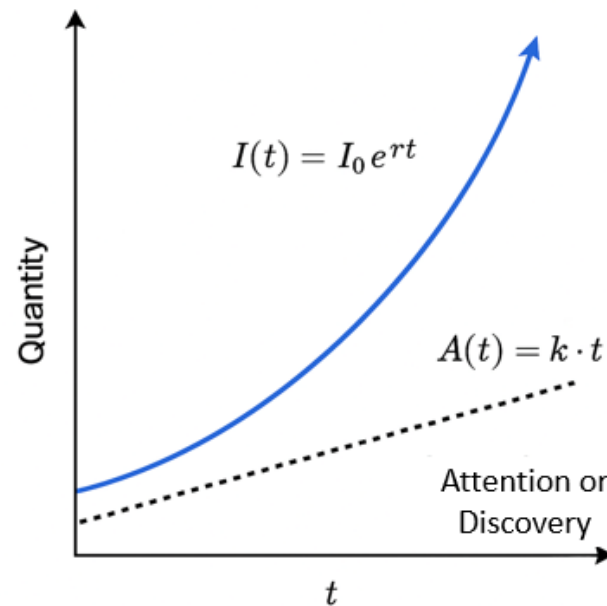
which provide *increasing* returns



Data exchange capabilities enable demand driven value extraction

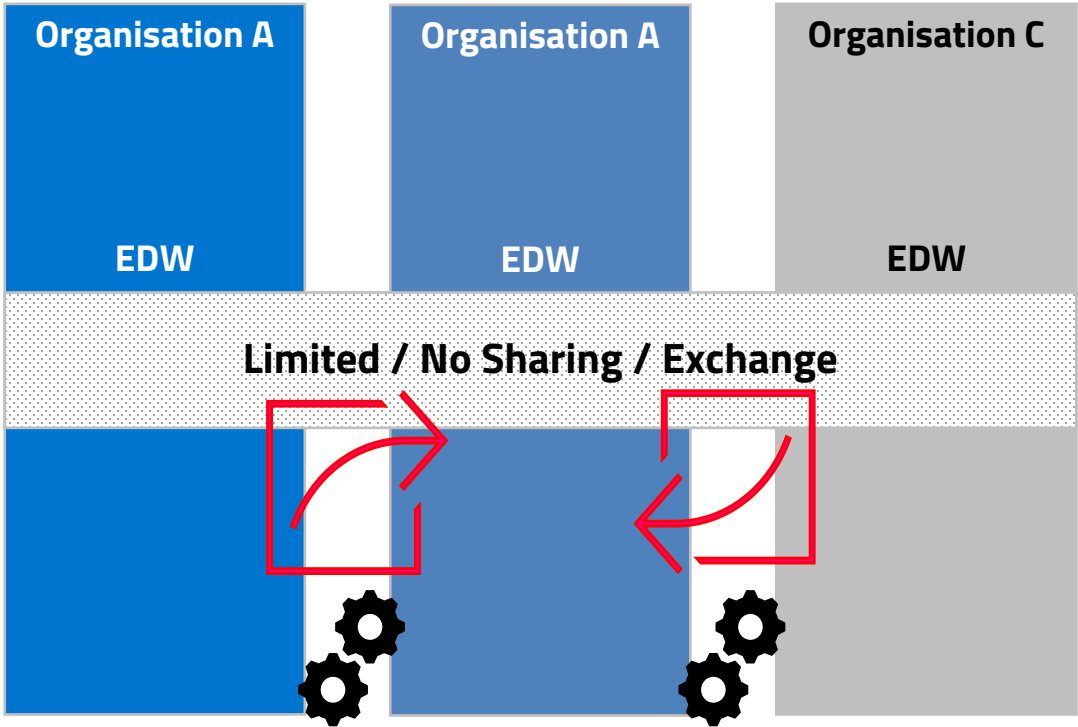
**“Asymmetric information creates inefficiencies that markets strive to overcome.”**

— George A. Akerlof, *The Market for Lemons* (1970)



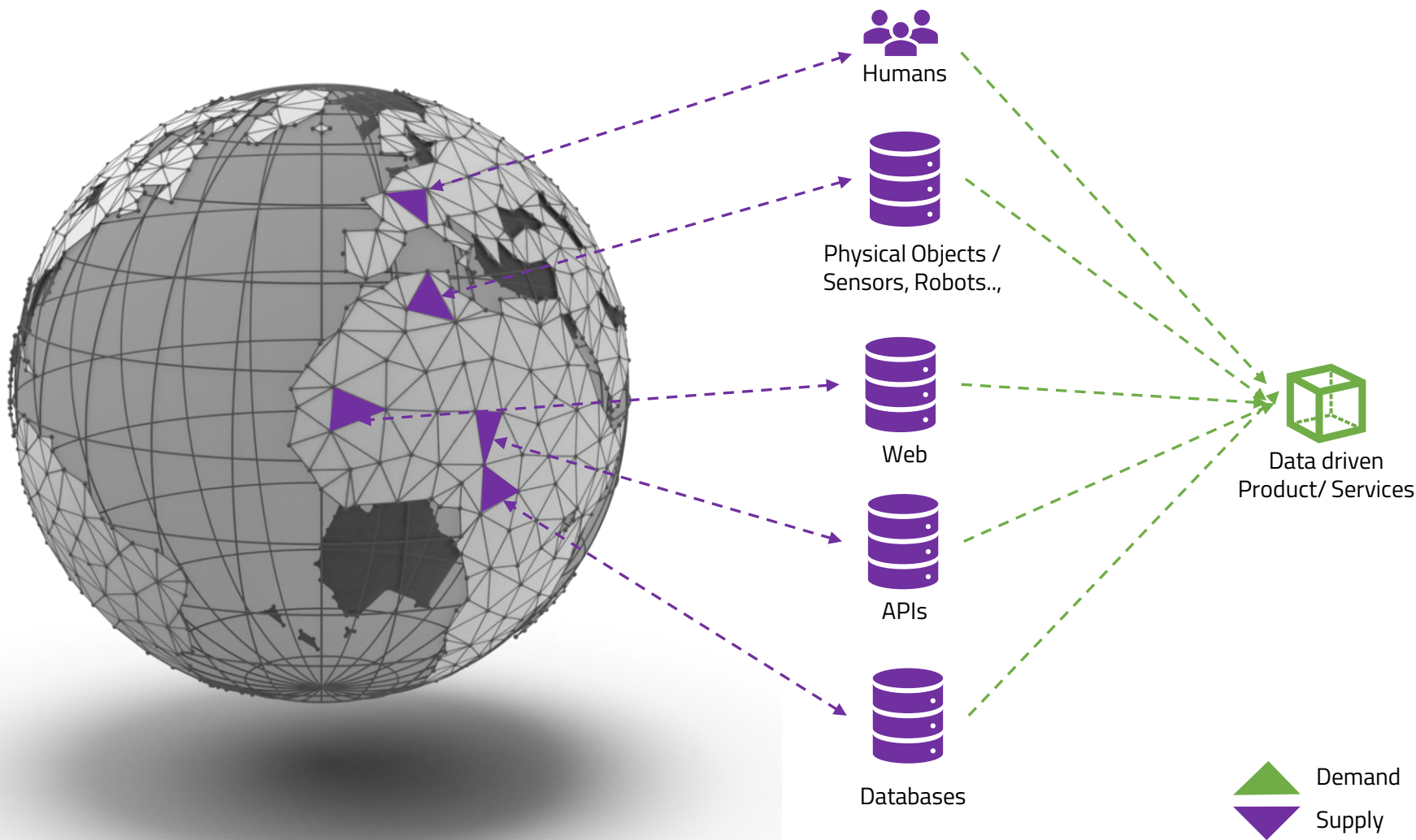
“As time progresses, the amount of data far outpaces our ability to **find, process, or understand** it. Therefore, **information asymmetry isn't a bug—it's a mathematical consequence** of exponential data growth” (*T. Salomaa - Founder Liberbyte*)

**Centralised (read in) - platforms have no data sharing / exchange by default**

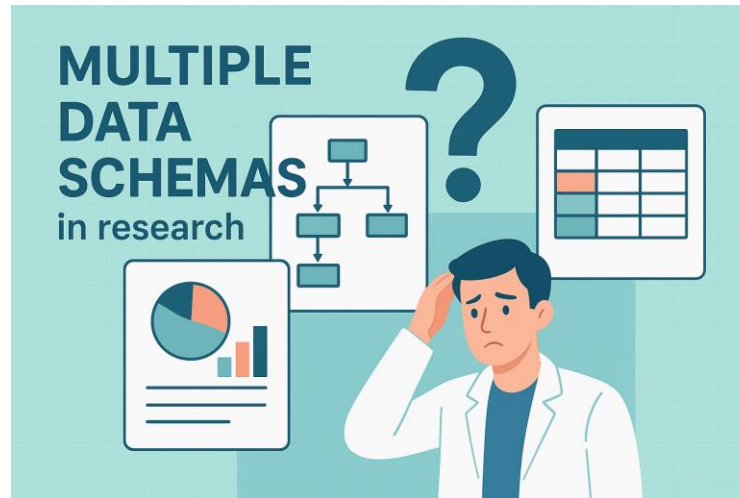


**EDW = Enterprise Data Warehouse**

# Data is „Decentralised“



## No Context / Business / Science etc. Domain

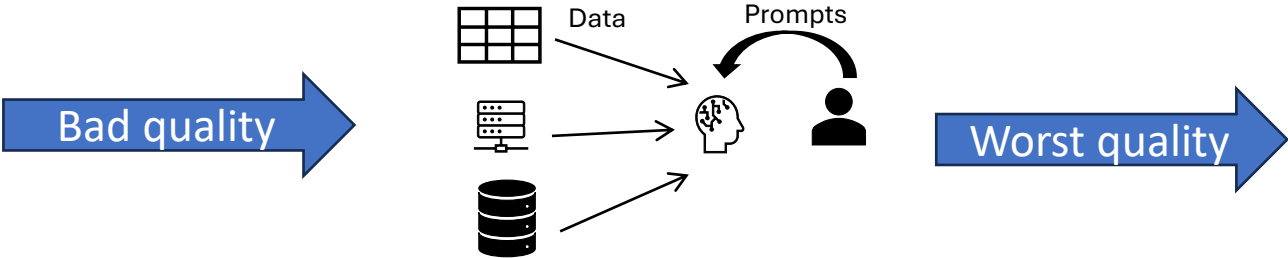


**“Environment”, “Ecosystem”, “Proteins”, “Microbes”,...**

**Who sets the (business) schema?**

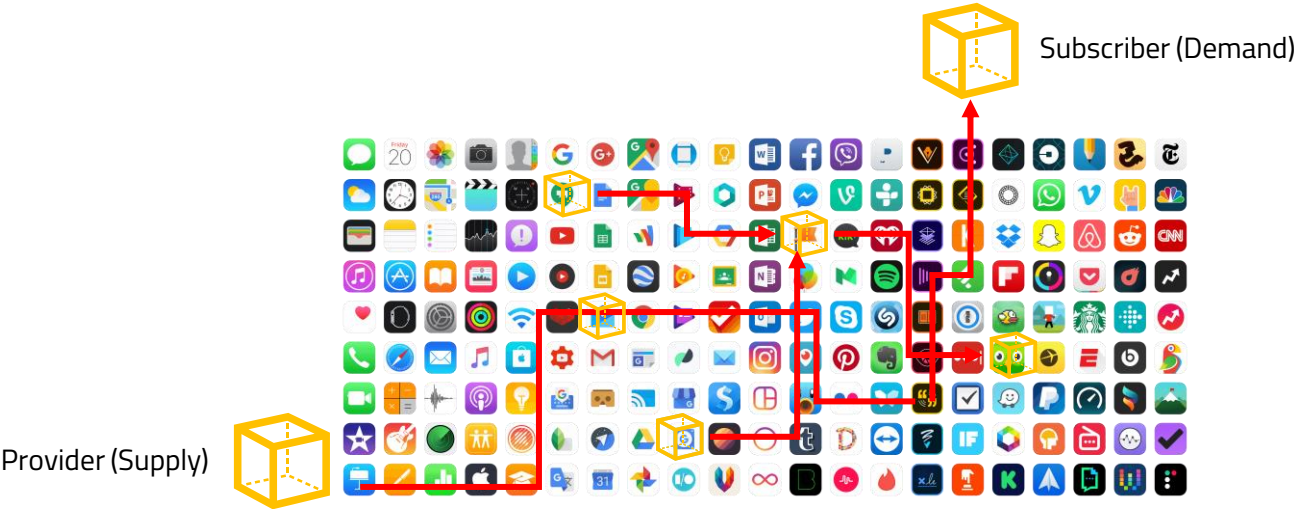
Input Data & Data mgmt **NOT** controlled → AI **NOT** controlled

Data & Data Quality uncontrolled → outcomes not „Lab like“



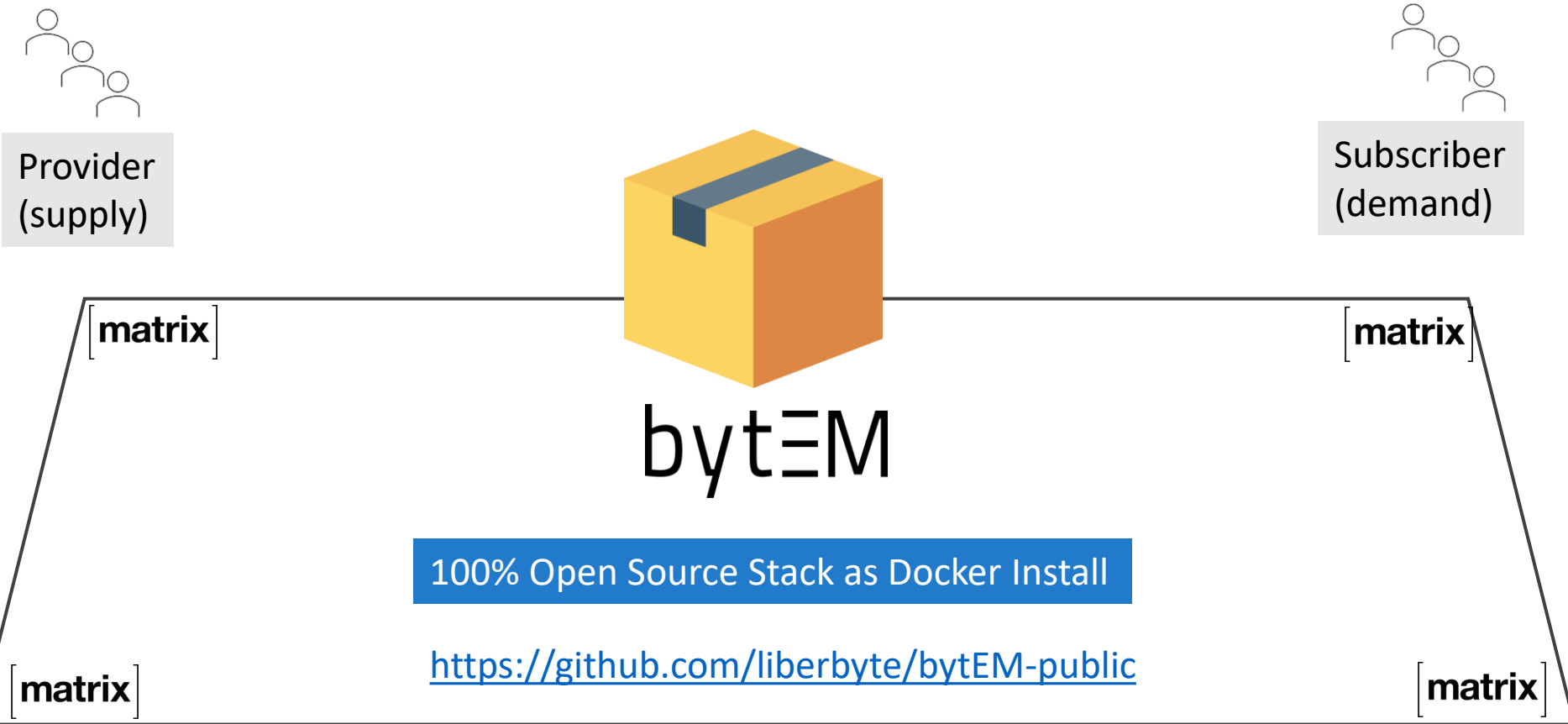
The need to exchange data is greater than ever...

# How to enable exchangable Data Products & Services?

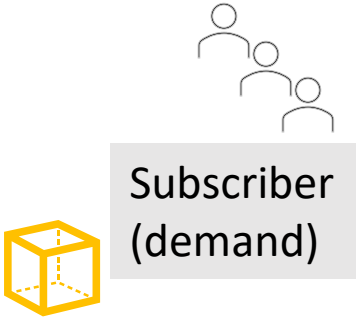
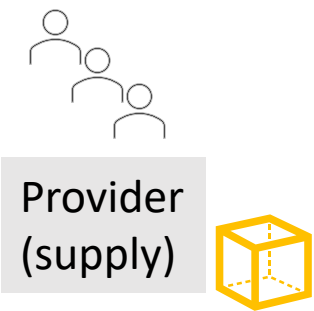


Solution: exchangable data rooms + business (domain) context + interoperable architecture.

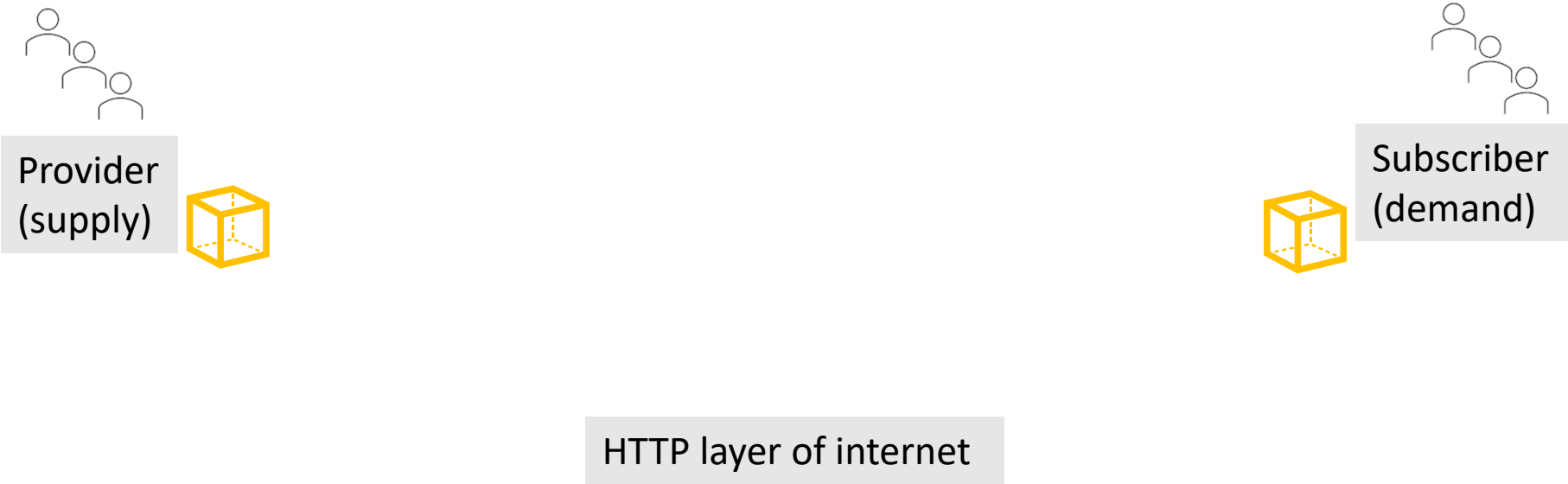
# Liberbyte's bytEM



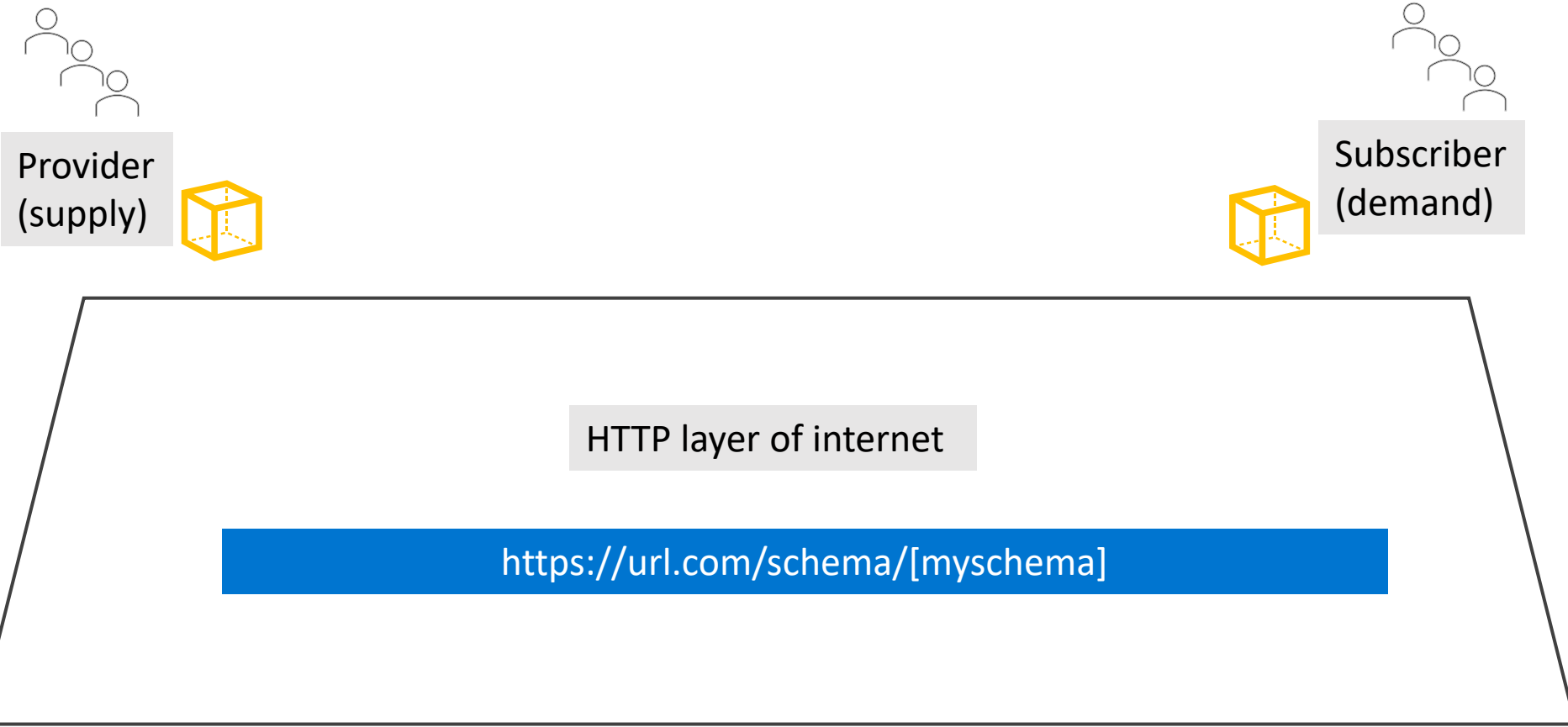
World needs to **connect supply & demand** i.e.  
“**match provides to subscribers**” for data



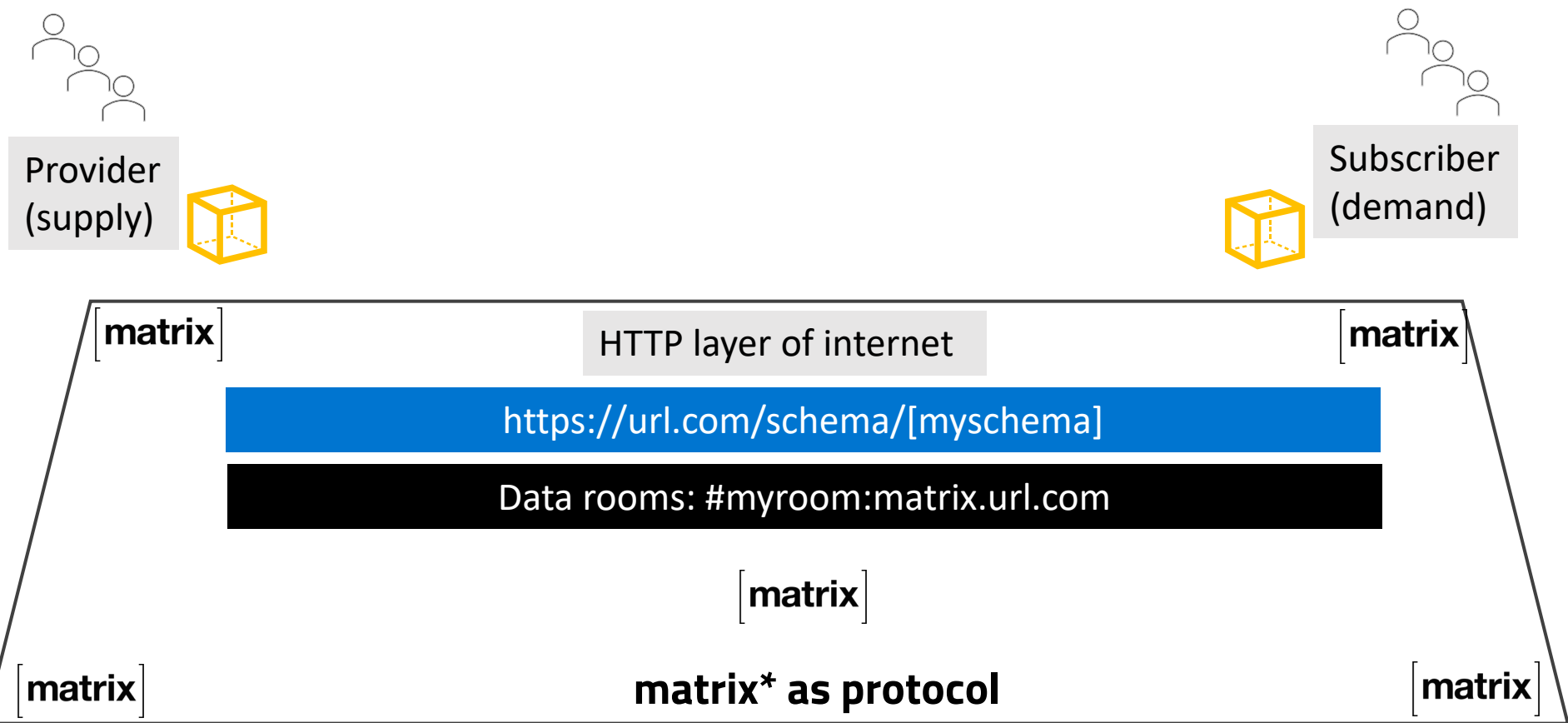
# The **internet and HTTP(s) layer** are already there for connecting parties...



...yet you still need to tie the business and exchange semantics to (web2) / URL system...

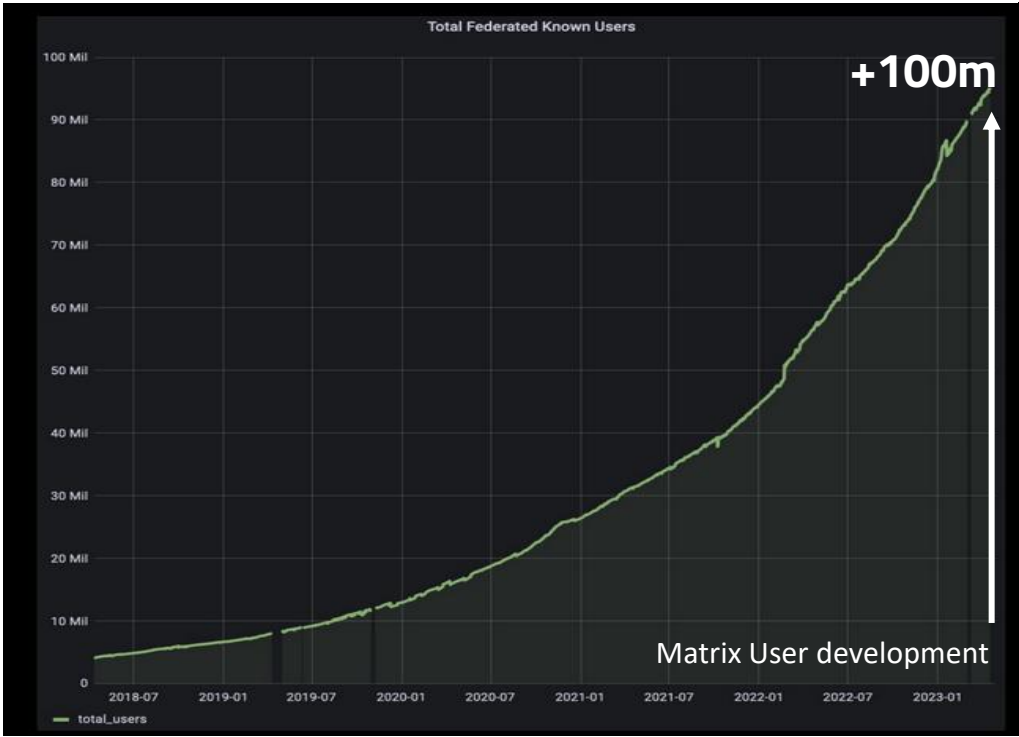


...and then mix in globally **accessible data rooms**,  
using **standard communication protocol** [matrix]



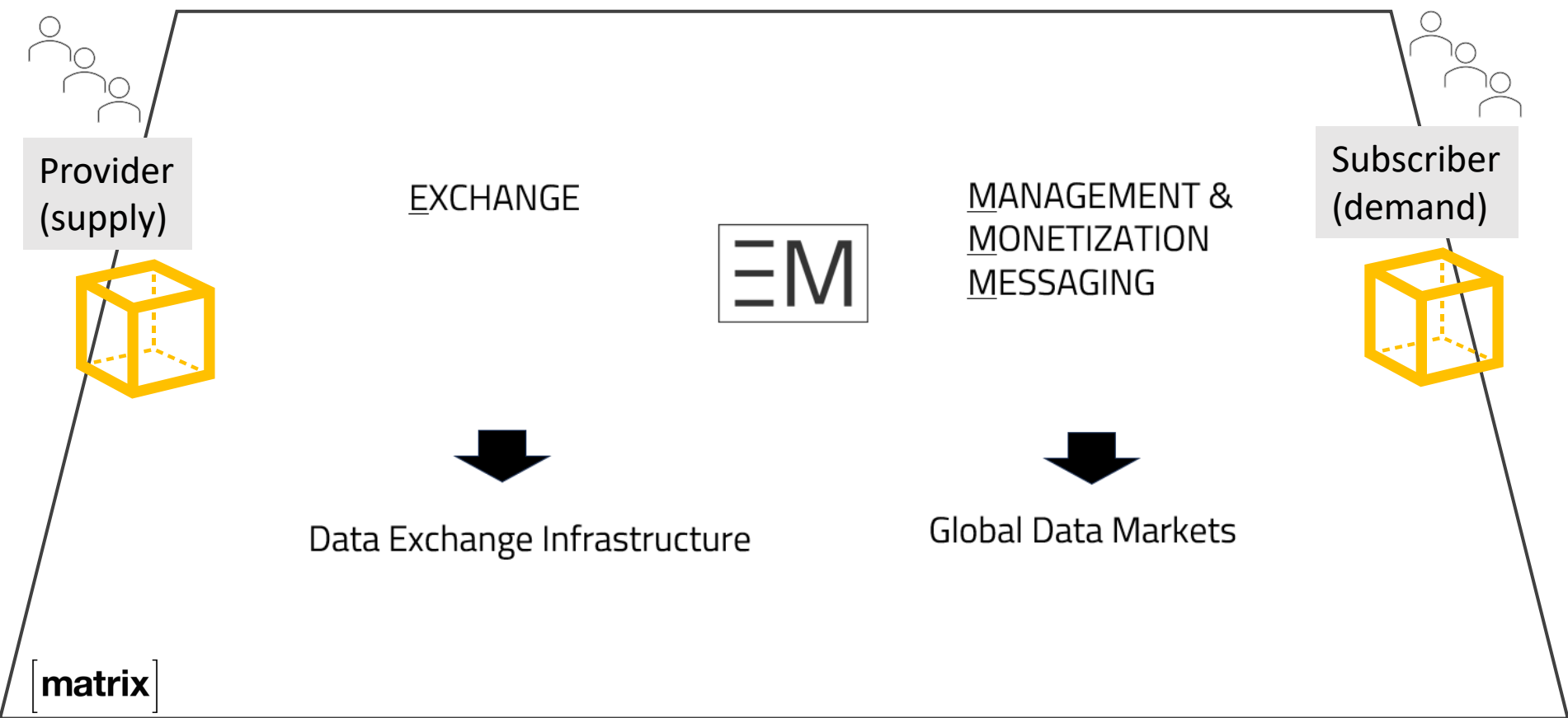
# Liberbyte's bytEM builds on [matrix] standard\* (with +100m users)...

- Open-source project for secure, decentralized communication
- +100m users, ~17m rooms, ~64k servers
- Matrix is Liberbyte's technical platform engine and enables open & federated data exchange

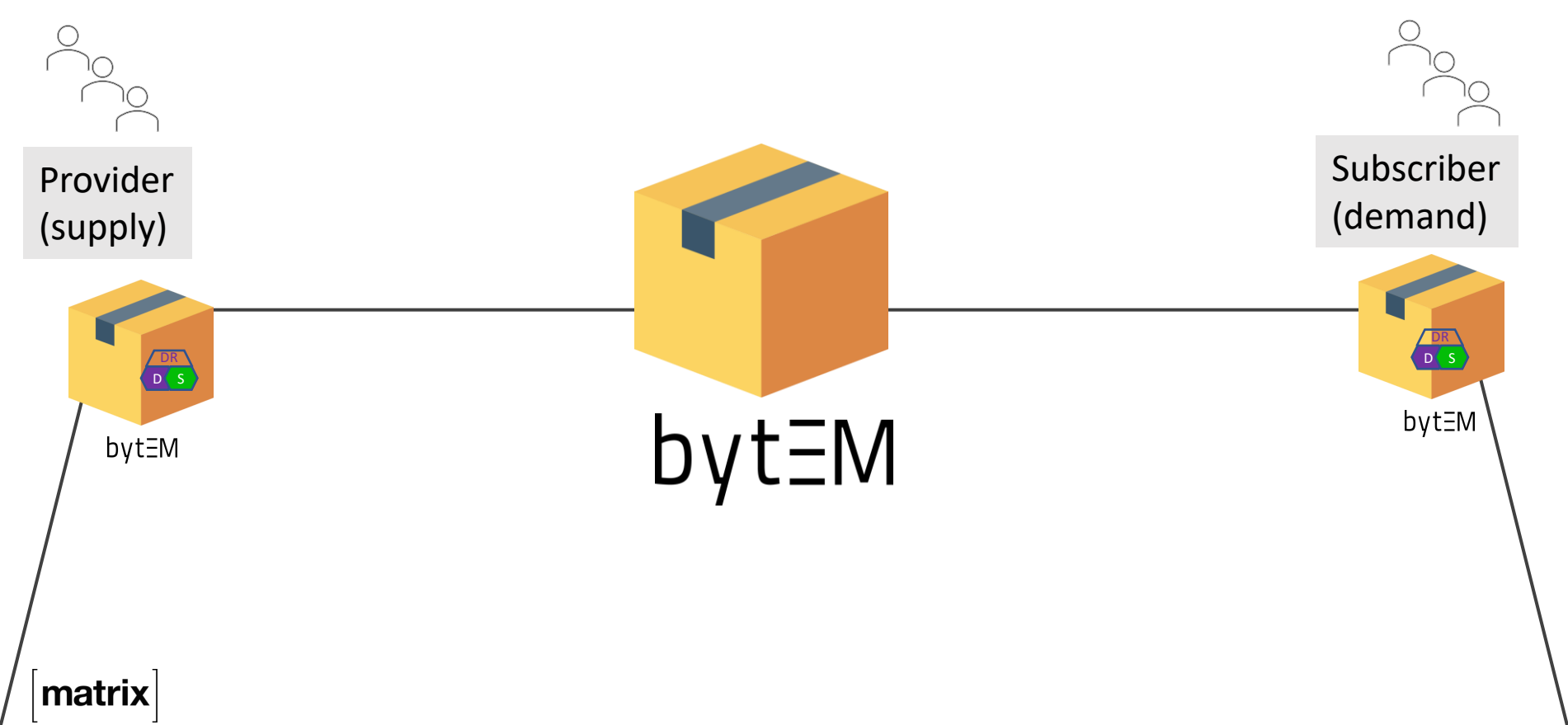


**[matrix] Used by:**

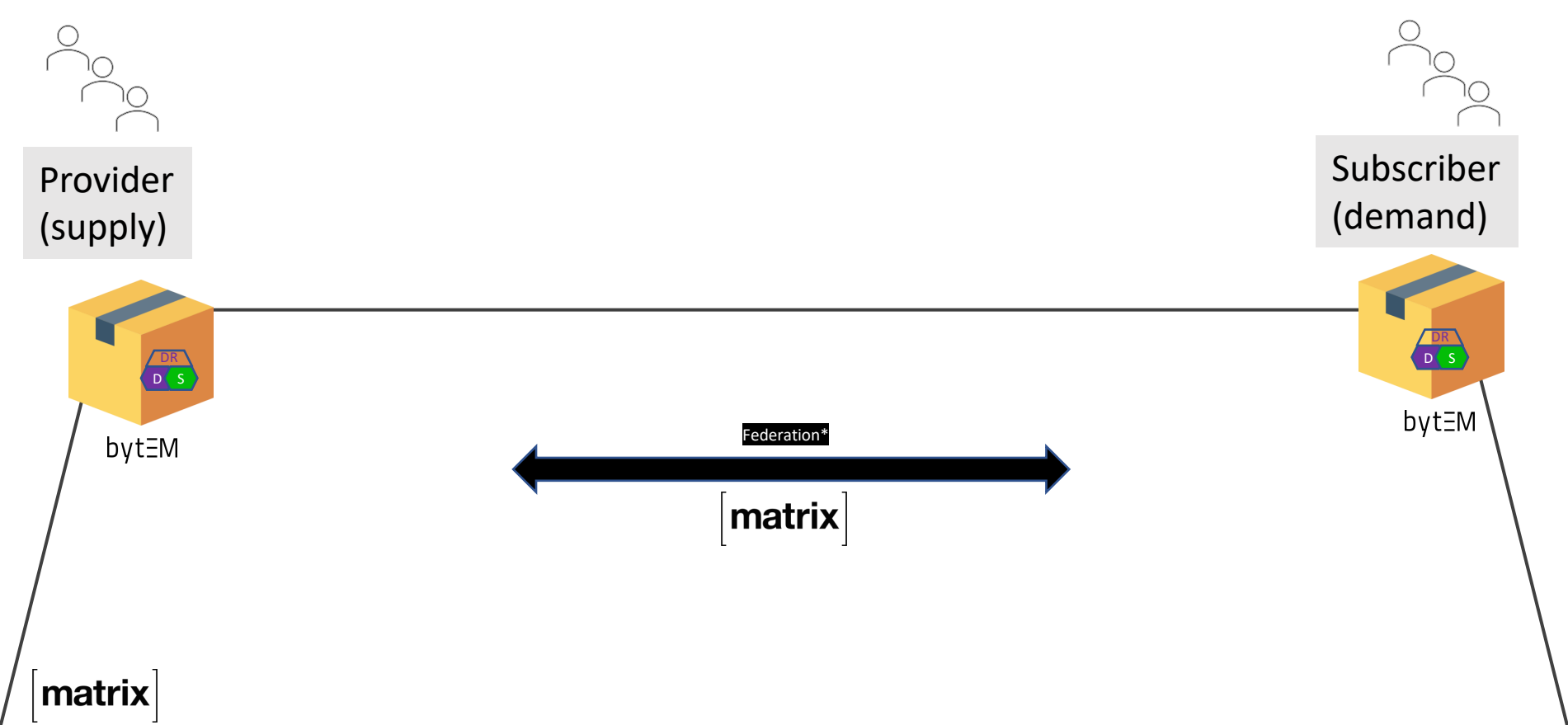
...hence enables bytEM to **Exchange, Manage, Monetize** and **Message** data



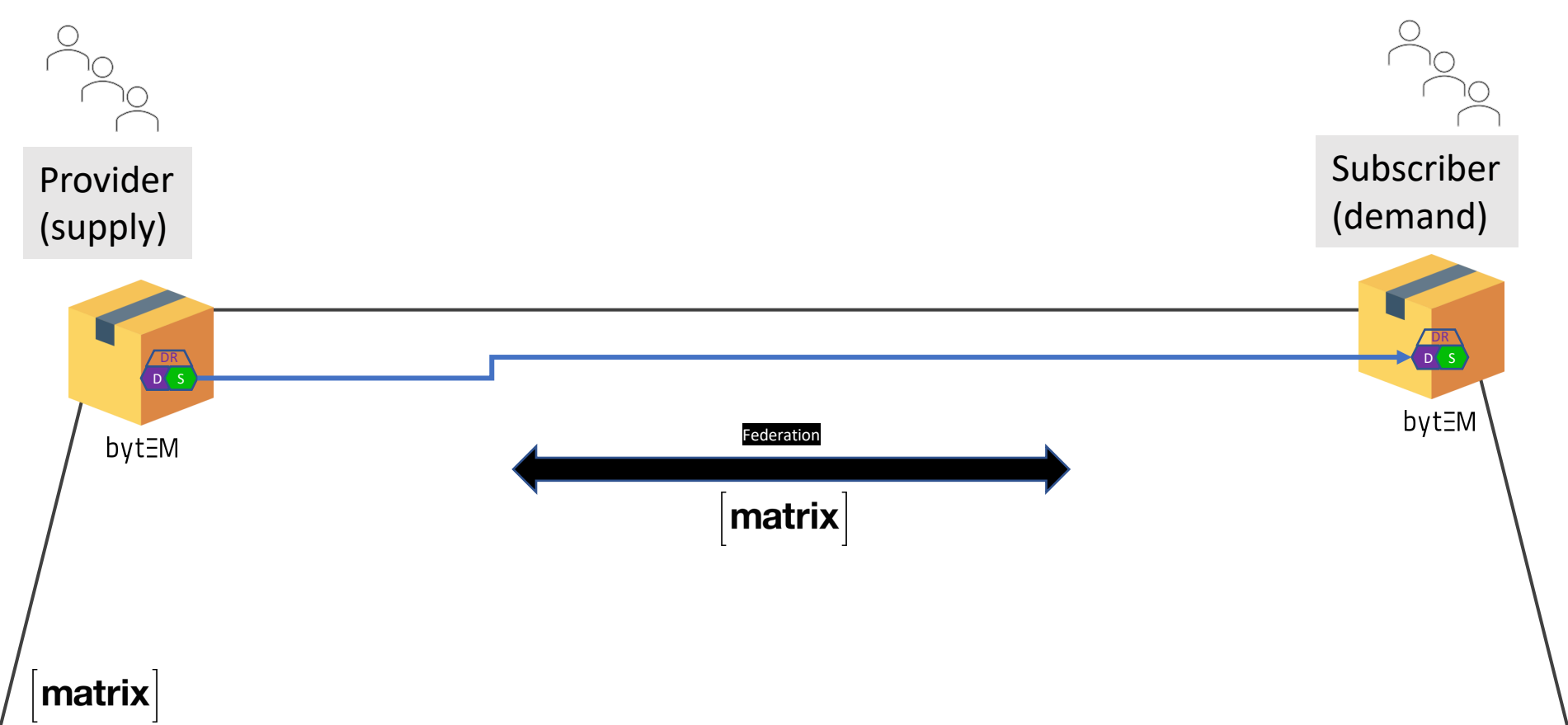
# bytEM as 100% opensource solution for any individual or organization...



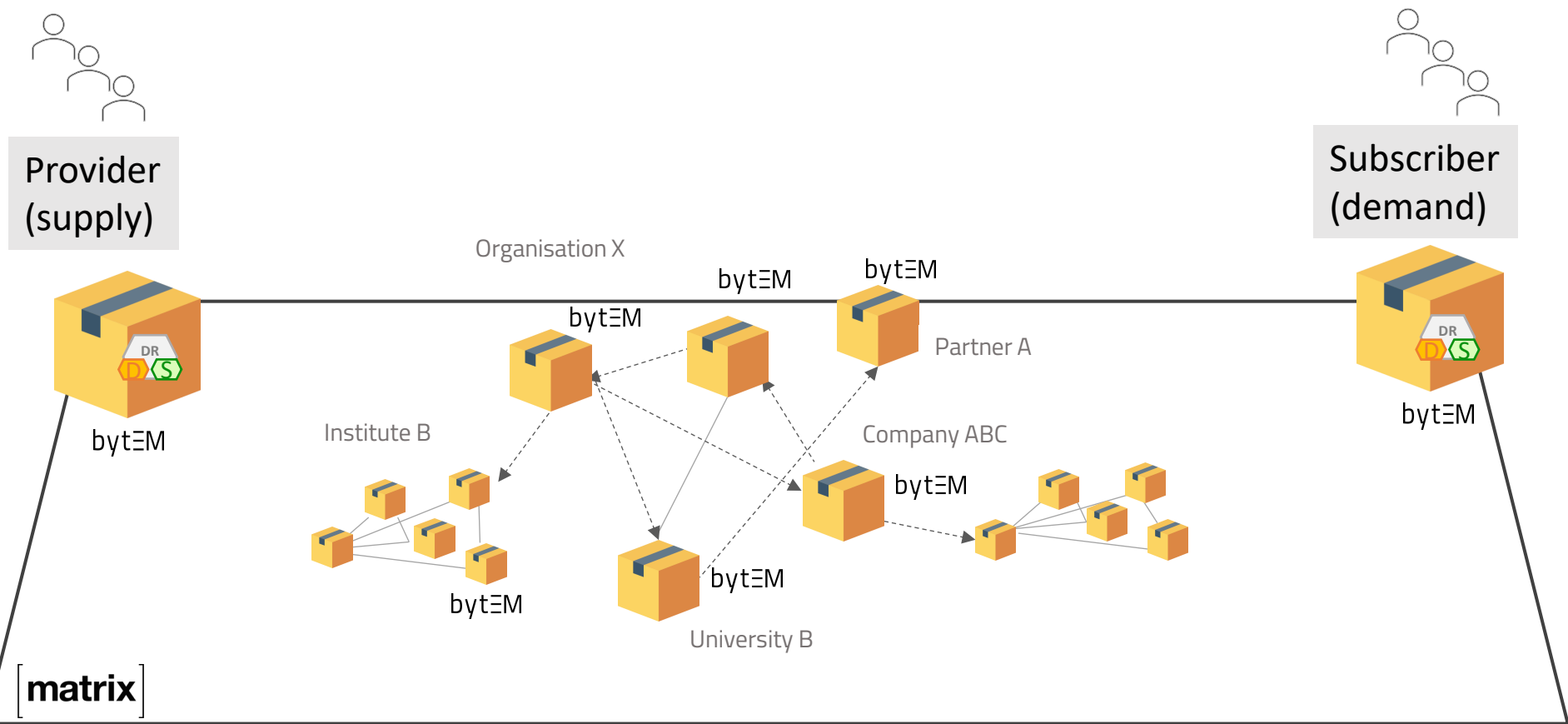
# to connect data supply & demand over matrix's federated network\*



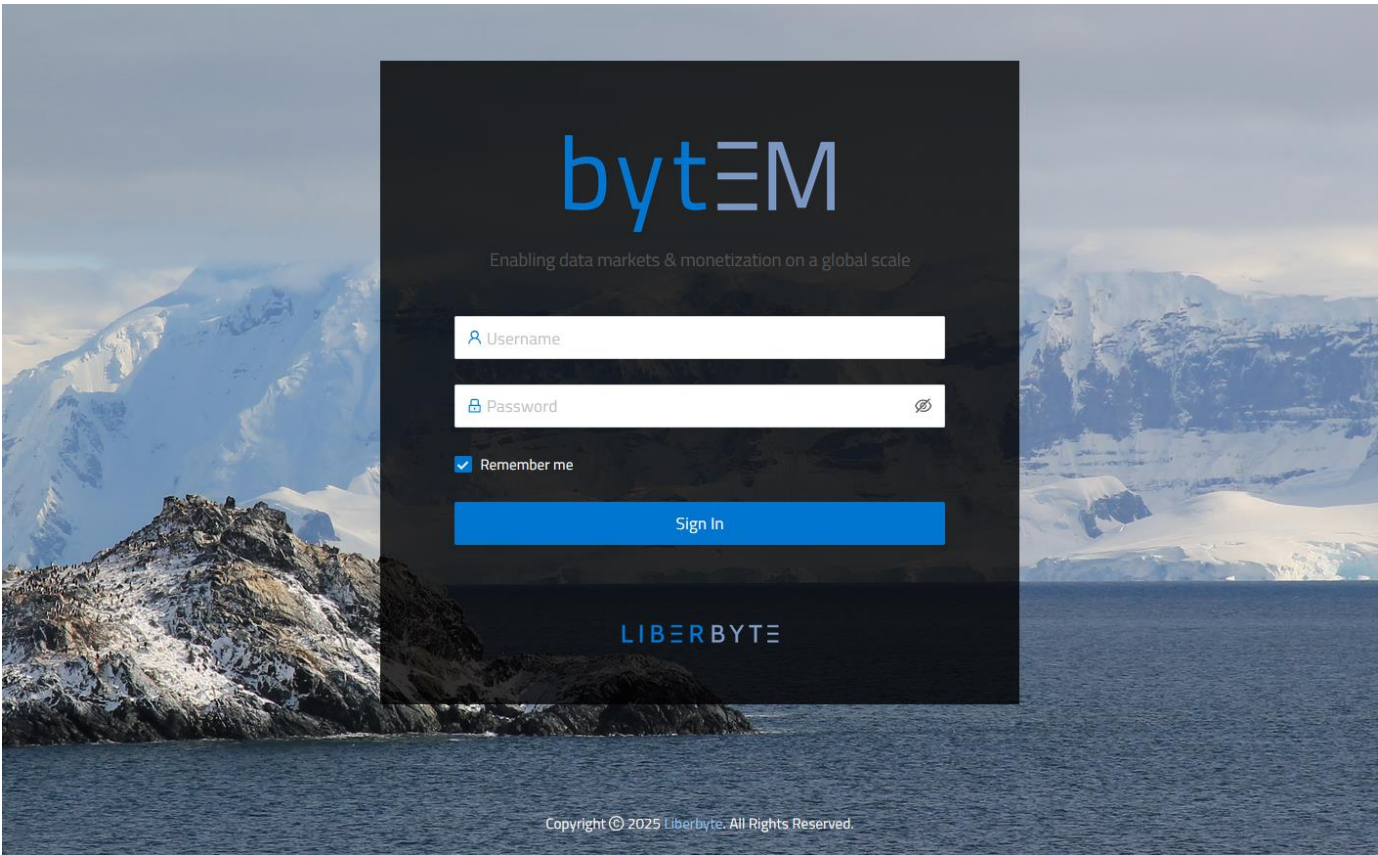
...enabling **data (supplies)** to be **shaped into data (demand) products** and **exchanged**...



# ...via decentralized Network of bytEMs (globally)



# bytEM live demos @ request



# For bytEM Partners

## Where are we on the journey?

- Next iteration of **bytEM** launching in November 2025.
- AGPL public version from 10/2025: <https://github.com/liberbyte/bytEM-public>

## What are we looking for?

- **bytEM** pilots on non-commercial basis for NGOs/communities/universities/public authorities.
- **bytEM** product adoption for real scientific data management / exchange and discovery problems including applying AI (of your choice) with active / ongoing user feedback

# Abstract

## Abstrakt - DE

- **bytEM** ist eine offene, modulare Plattform für das Datenmanagement, die dezentrale Datenhoheit mit zentralen Standards vereint. Organisationseinheiten behalten die Kontrolle über ihre Datenräume und bestimmen selbst, welche Daten sie wie veröffentlichen – innerhalb eines Rahmens aus gemeinsam genutzten Metadaten-, Lizenz- und Workflow-Standards. Besonders im Fokus steht dabei der kontrollierte Datenaustausch: **bytEM** ermöglicht die sichere und flexible Zusammenarbeit zwischen Einheiten und externen Partnern, z. B. durch projektbasierte Datenräume mit fein justierbarem Zugriffsmanagement. Daten können automatisiert oder „on-demand“ publiziert, geteilt und kombiniert werden – auch KI-gestützt oder als dynamische Datenprodukte. Dabei unterstützt **bytEM** sowohl interne Workflows als auch föderierte Netzwerke und Drittsysteme. So wird kollaborative, transparente und reproduzierbare Arbeits-/Datenmanagement basis auf Basis eines flexiblen Daten-Ökosystems realisierbar – ohne Daten aus der Hand zu geben.

## Abstract EN

- **bytEM** is an open, modular platform for data management that combines decentralized data ownership with centralized standards. Organizations maintain full control over their data spaces and decide how and what to publish – all within a shared framework of metadata, licensing, and workflow policies. A key focus is on controlled data exchange: **bytEM** enables secure and flexible collaboration between internal teams and external partners via project-specific data spaces and customizable access control. Data can be shared, published, and combined either automatically or on-demand – including AI-supported or dynamically generated data products. **bytEM** supports both internal workflows and federated networks, allowing integration with third-party systems. This makes collaborative, transparent, and reproducible data exchange / management possible – without giving up control over the data.

# LIBERBYTE

FREE YOUR DATA

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website: [www.liberbyte.com](http://www.liberbyte.com)

bytEM intro: [www.liberbyte.com/bytEM.html](http://www.liberbyte.com/bytEM.html)

bytEM install: <https://github.com/liberbyte/bytEM-public>

matrix room (help): <https://matrix.to/#/#bytEM-install-admin:matrix.liberbyte.com>

contact: [info@liberbyte.com](mailto:info@liberbyte.com)