

bytΞM

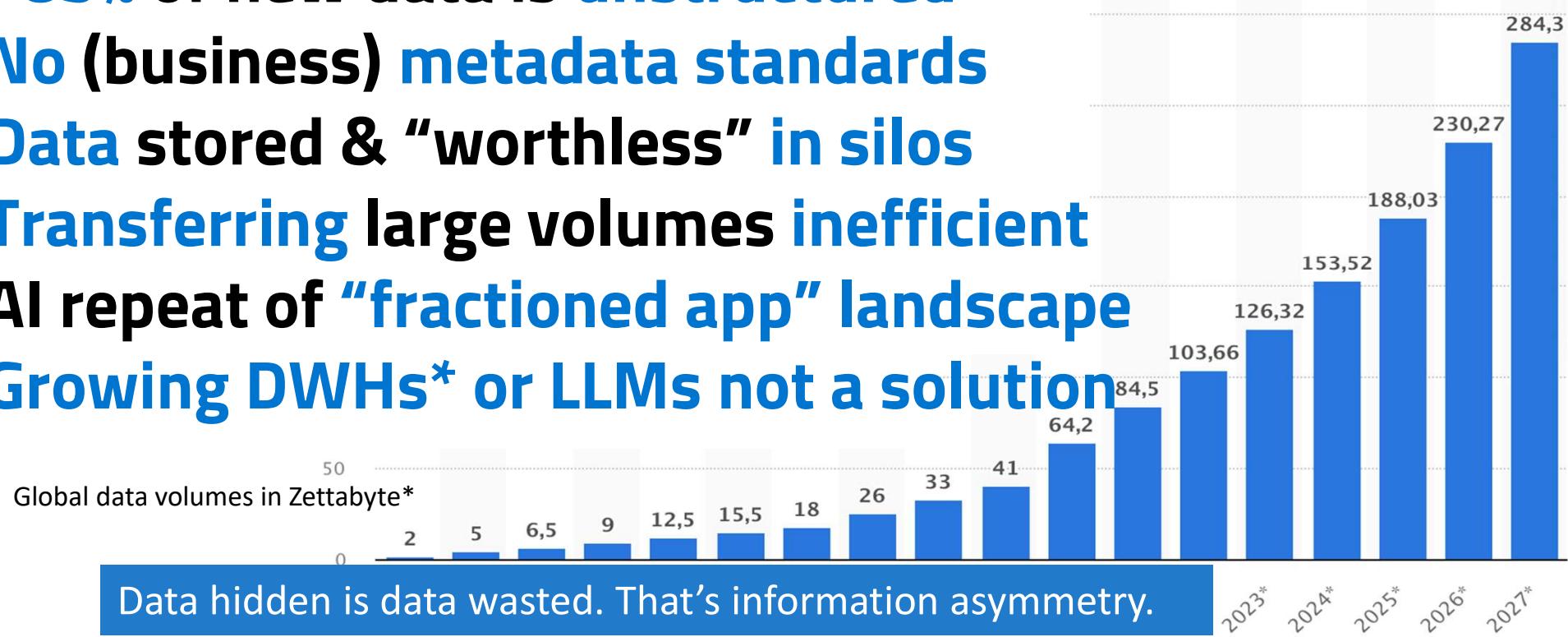
Scaling to global Data Exchange & Management

LIBERTYTE
FREE YOUR DATA

Oct 2025

Exponential x² pa 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



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

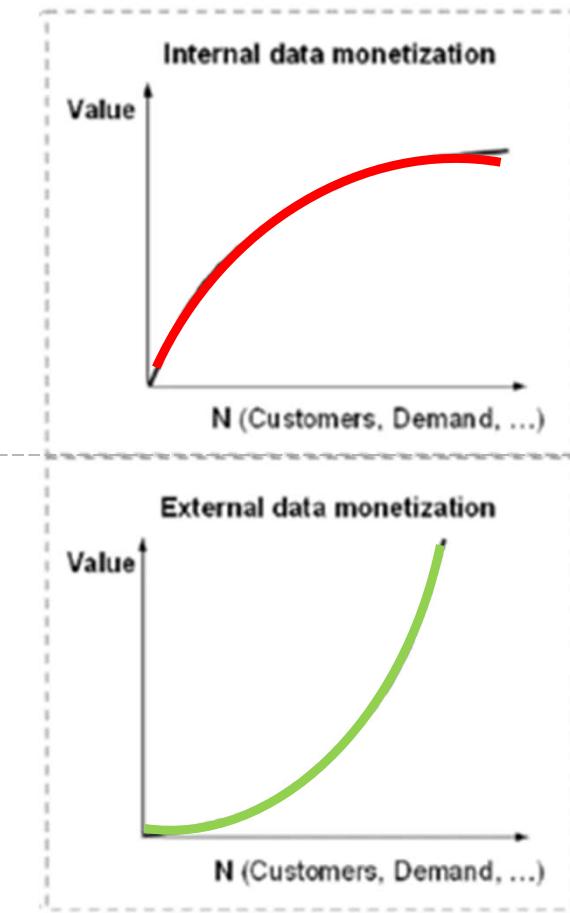
- indirect internal approach

providing *diminishing* returns

instead

- indirect external approach,
- direct external approach

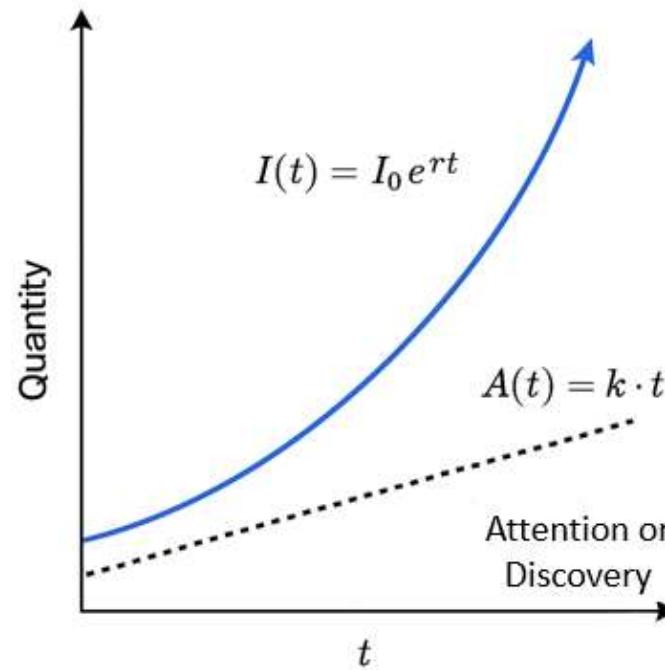
which provide *increasing* returns



Data exchange capabilities enable demand driven value extraction

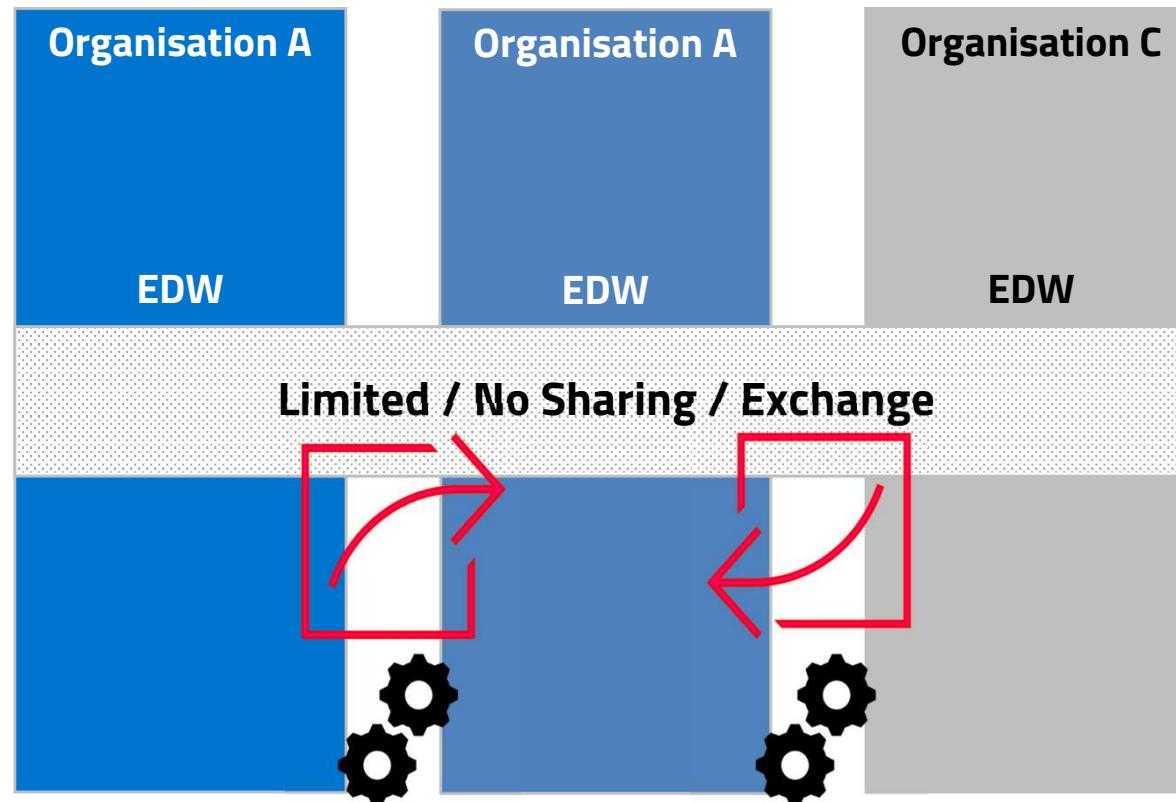
“Asymmetric information creates inefficiencies that markets strive to overcome.”

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



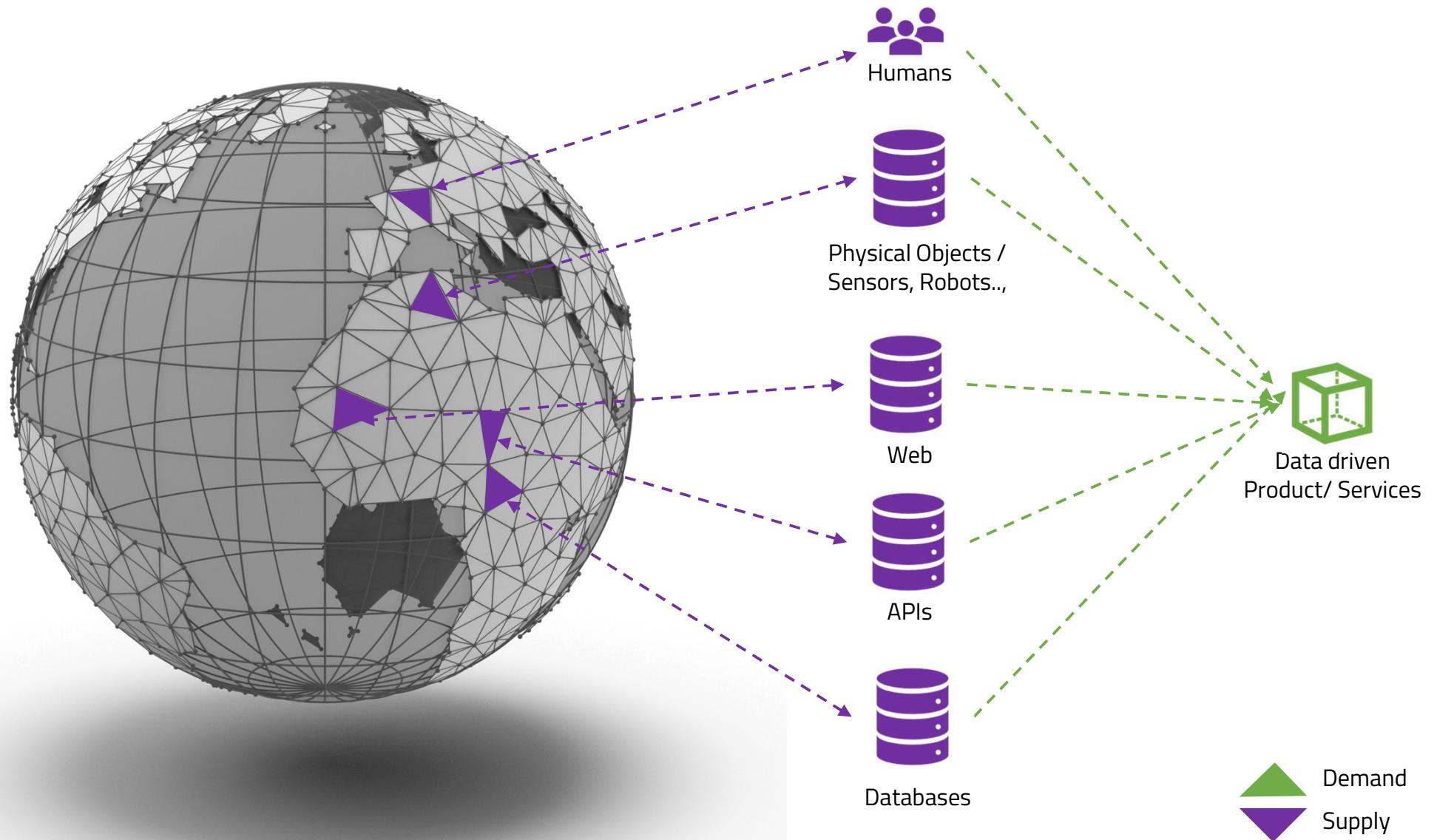
“As time progresses, the amount of data far outpaces our ability to **find, process, or understand it**. Therefore, **information asymmetry isn't a bug—it's a mathematical consequence** of exponential data growth” (*T. Salomaa - Founder Liberbyte*)

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

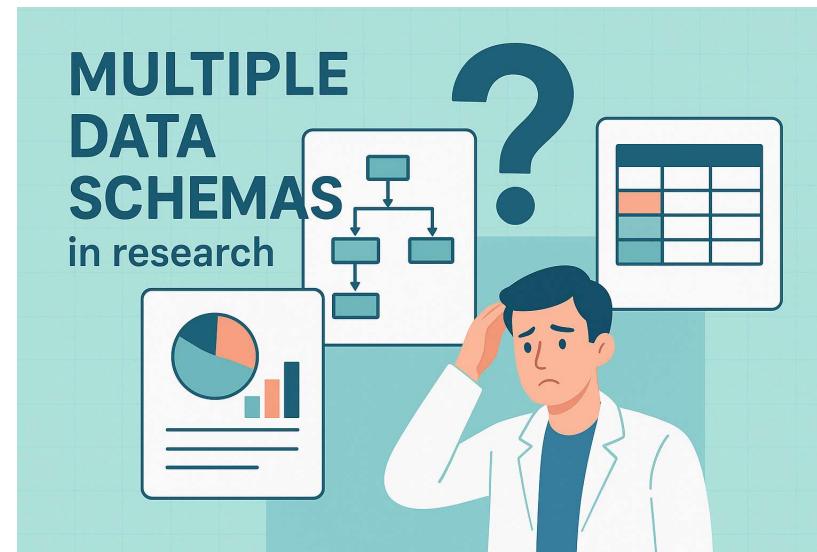


EDW = Enterprise Data Warehouse

Data is „Decentralised“



No Context / Business / Science etc. Domain

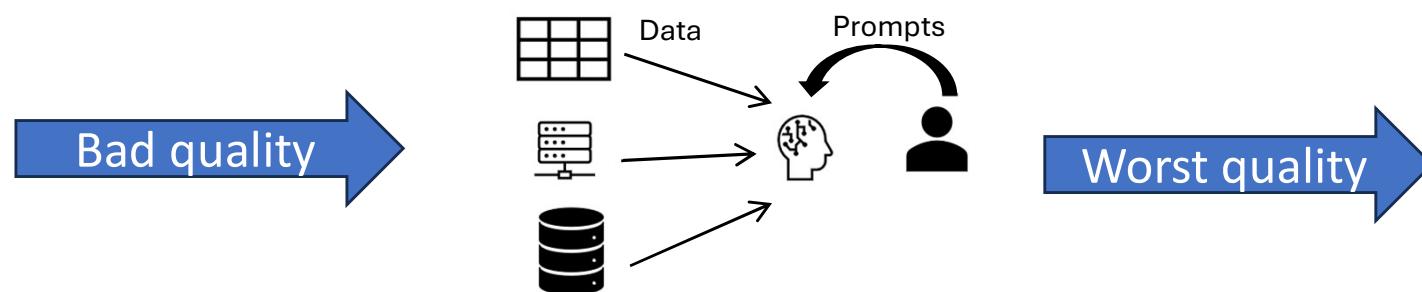


“Environment”, “Ecosystem”, “Proteins”, “Microbes”,...

Who sets the (business) schema?

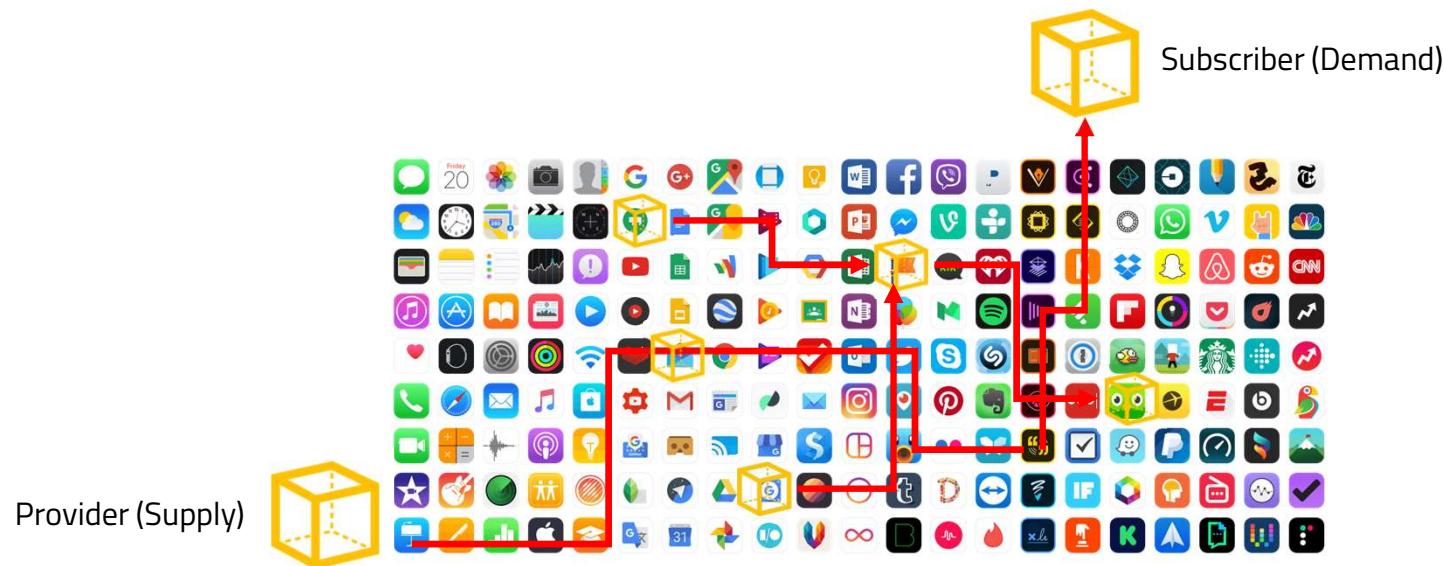
Input Data & Data mgmt NOT controlled → AI NOT controlled

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



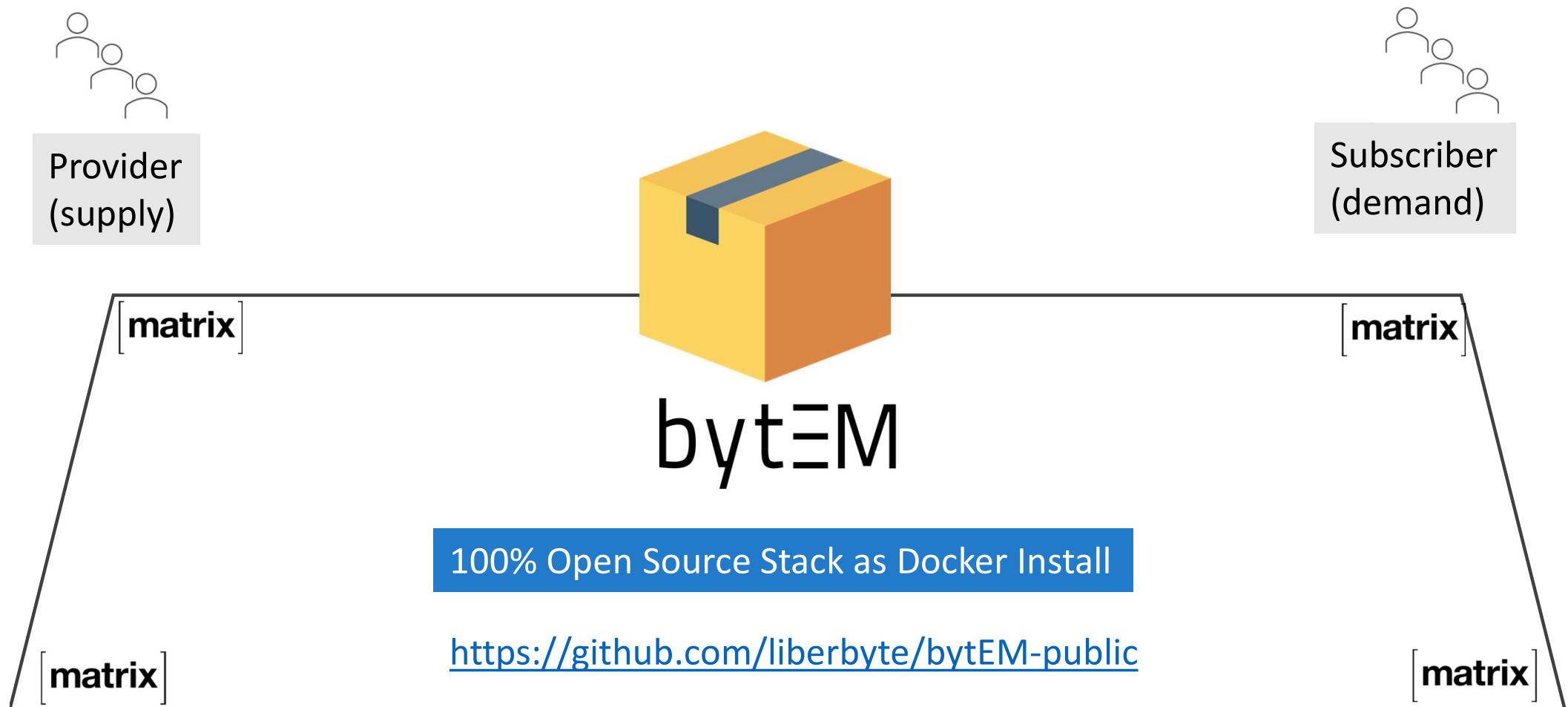
The need to exchange data is greater than ever...

How to enable exchangable Data Products & Services?

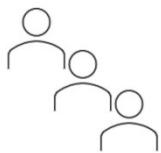


Solution: exchangable data rooms + business (domain) context + interoperable architecture.

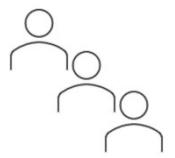
Liberbyte's bytEM



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

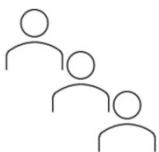


Provider
(supply)

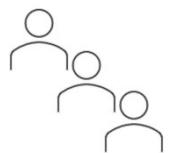


Subscriber
(demand)

The Internet and HTTP(s) layer are already there for connecting parties...



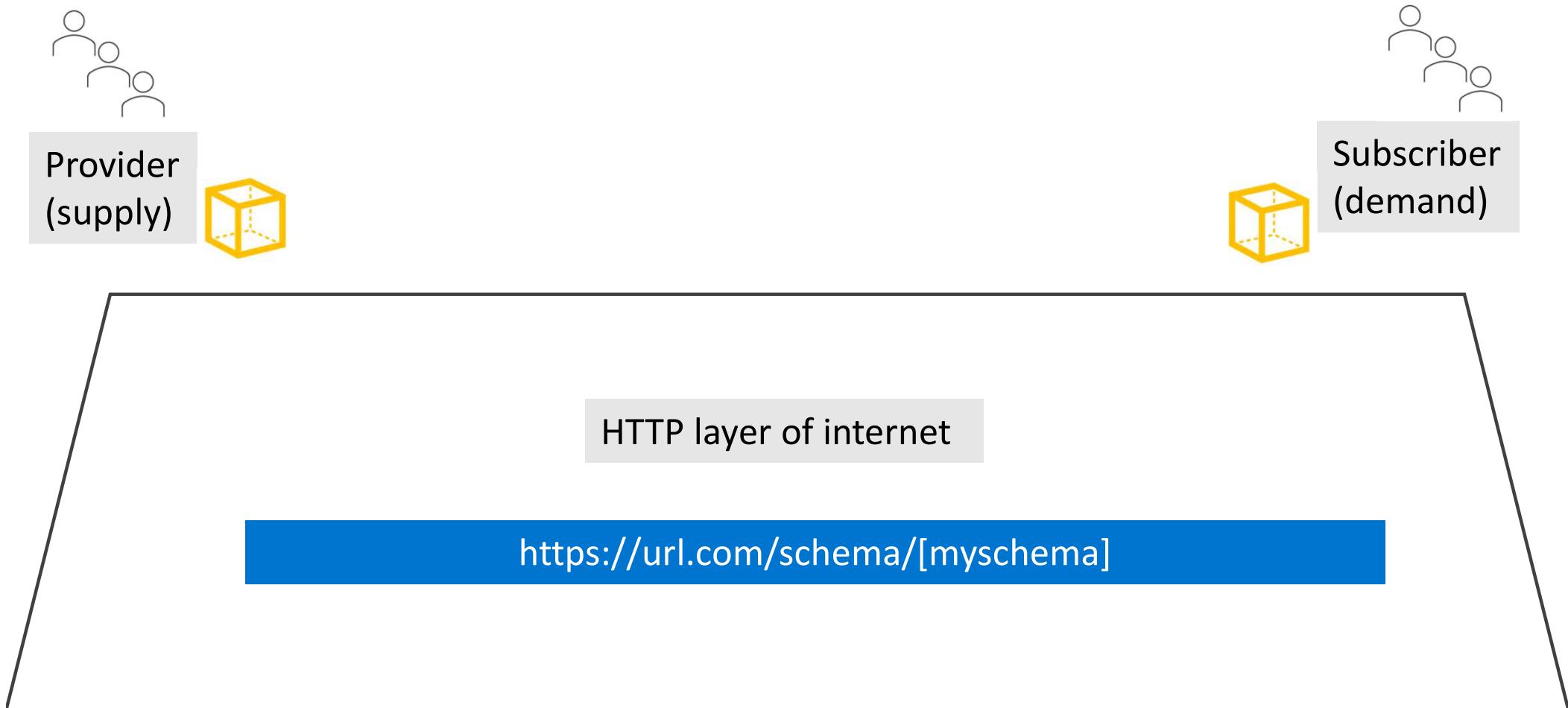
Provider
(supply)



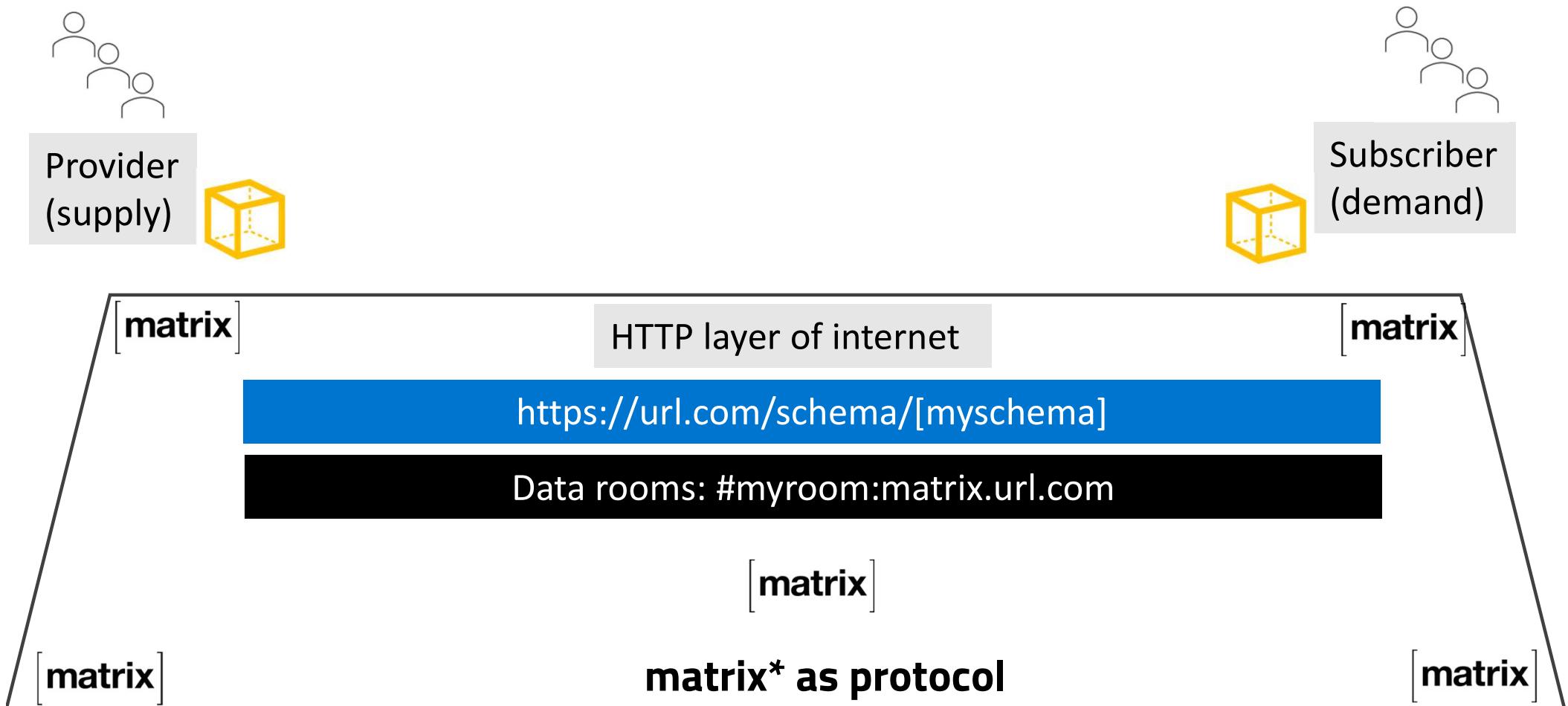
Subscriber
(demand)

HTTP layer of internet

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

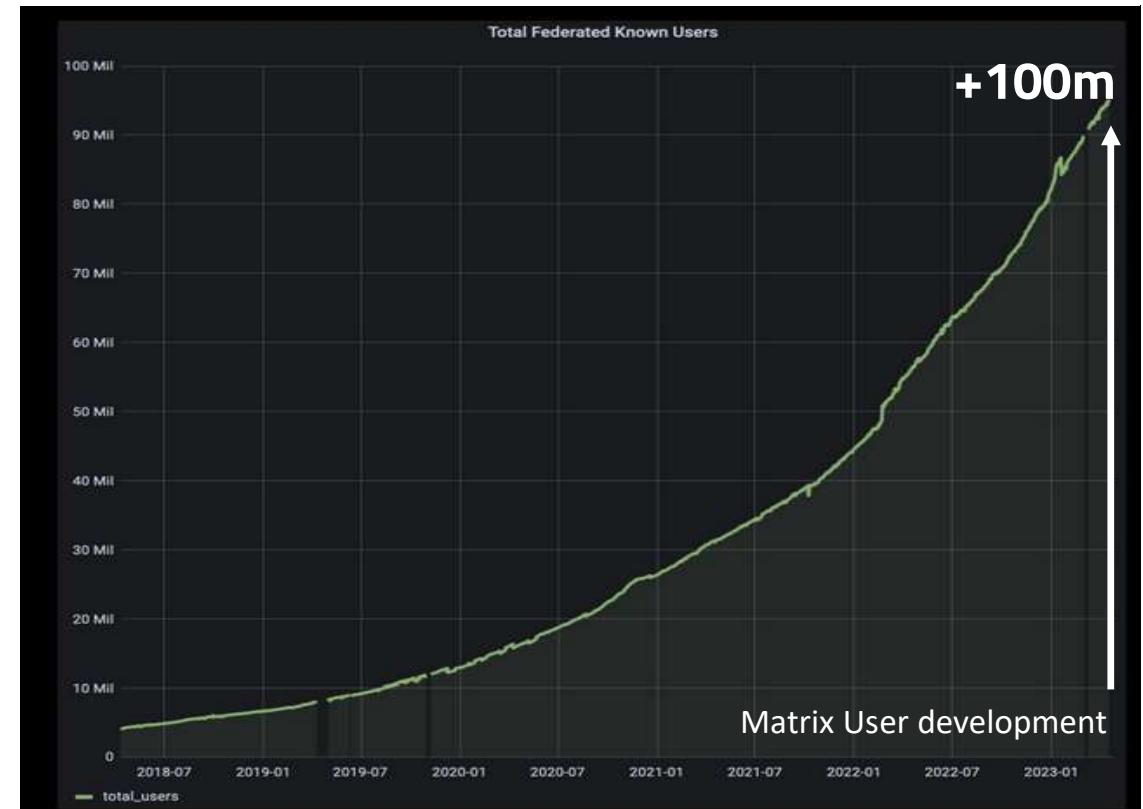


**...and then mix in globally accessible data rooms,
using standard communication protocol [matrix]**



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

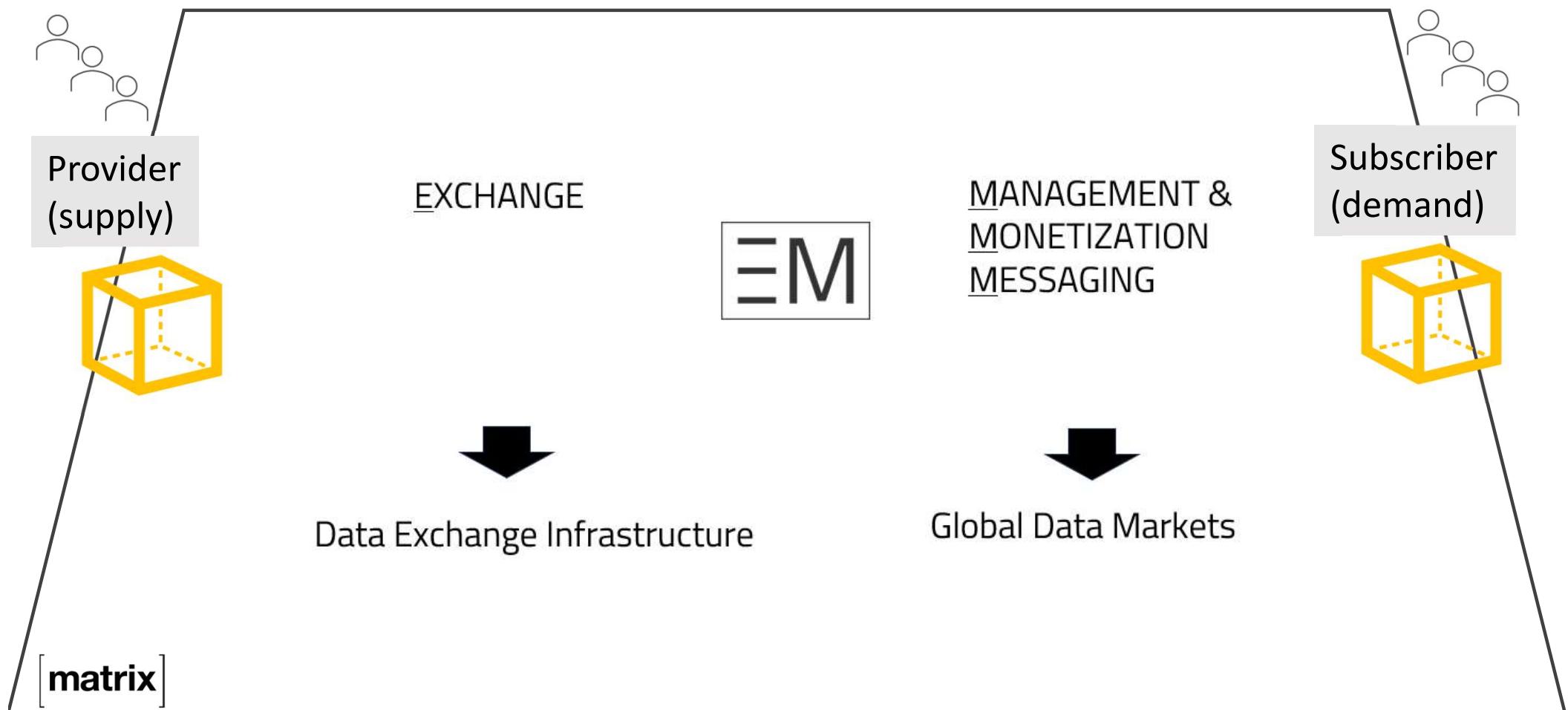
- Open-source project for secure, decentralized communication
- +100m users, ~17m rooms, ~64k servers
- Matrix is Liberbyte's technical platform engine and enables open & federated data exchange



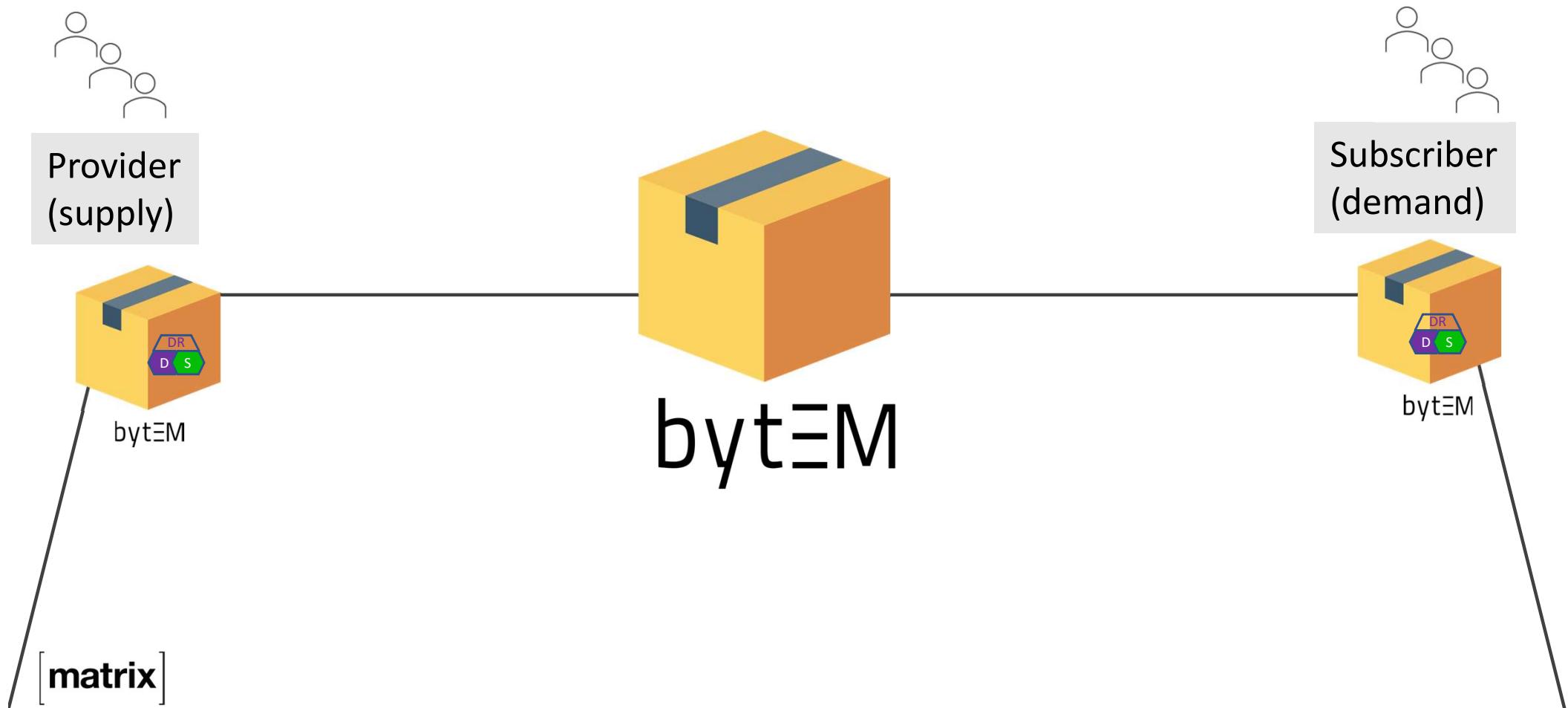
[matrix] Used by:



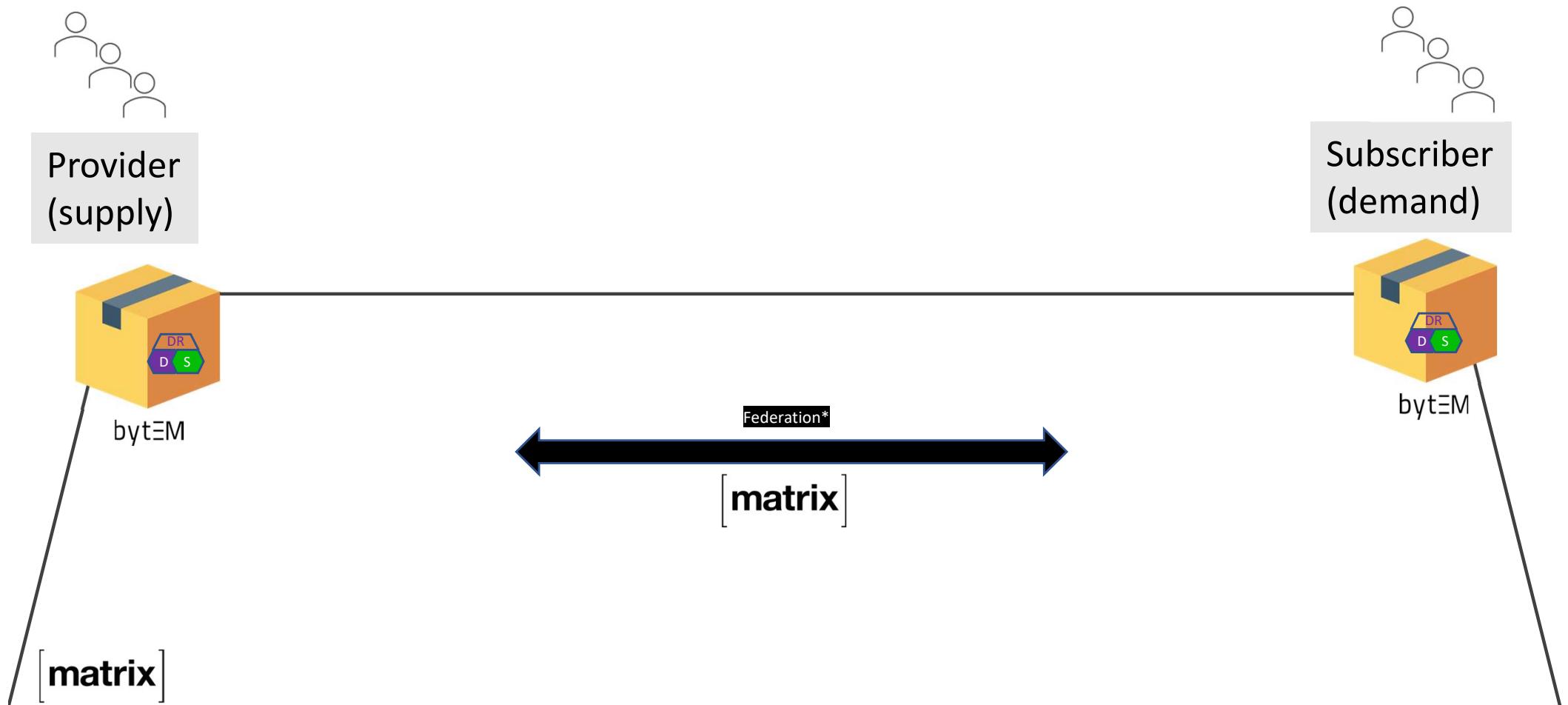
...hence enables bytEM to **Exchange, Manage, Monetize and Message data**



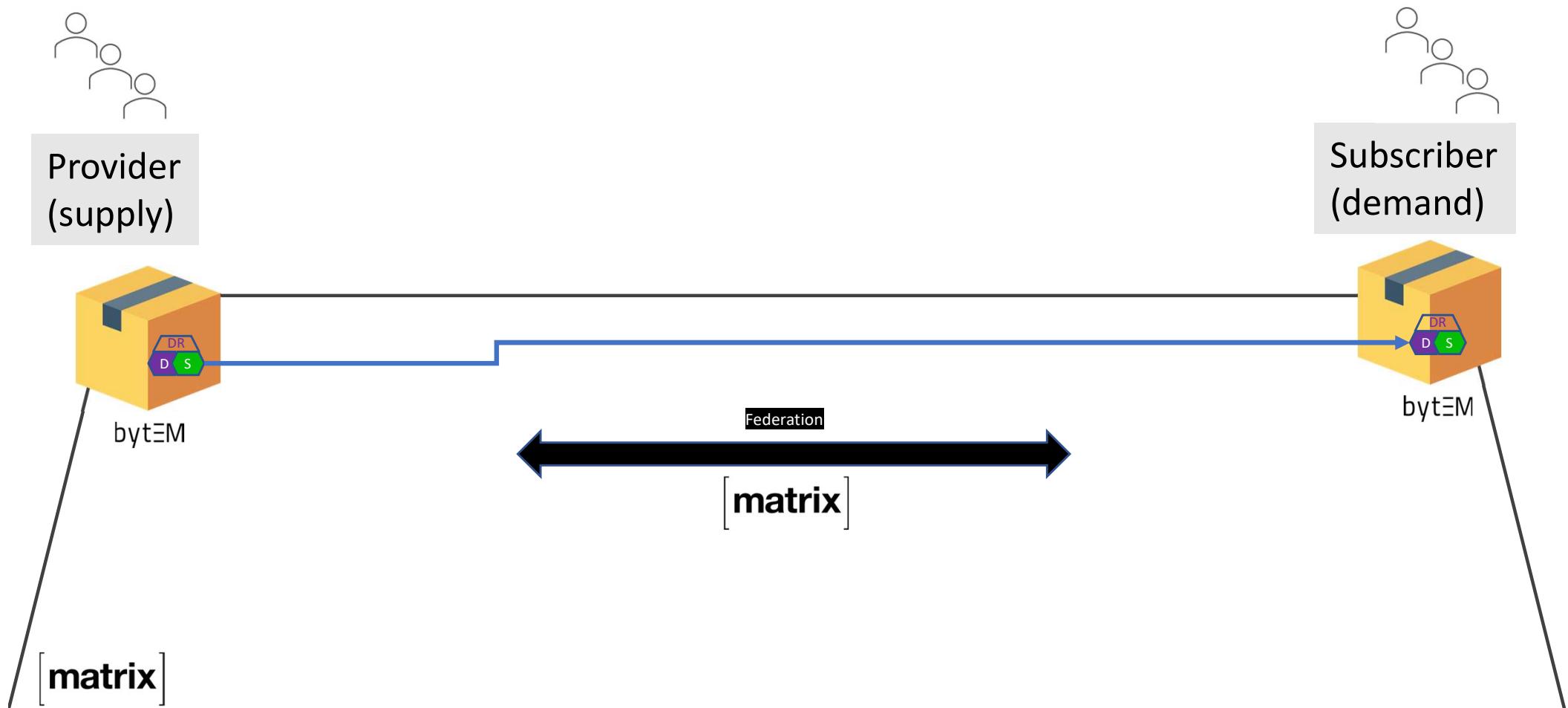
bytEM as 100% opensource solution for any individual or organization...



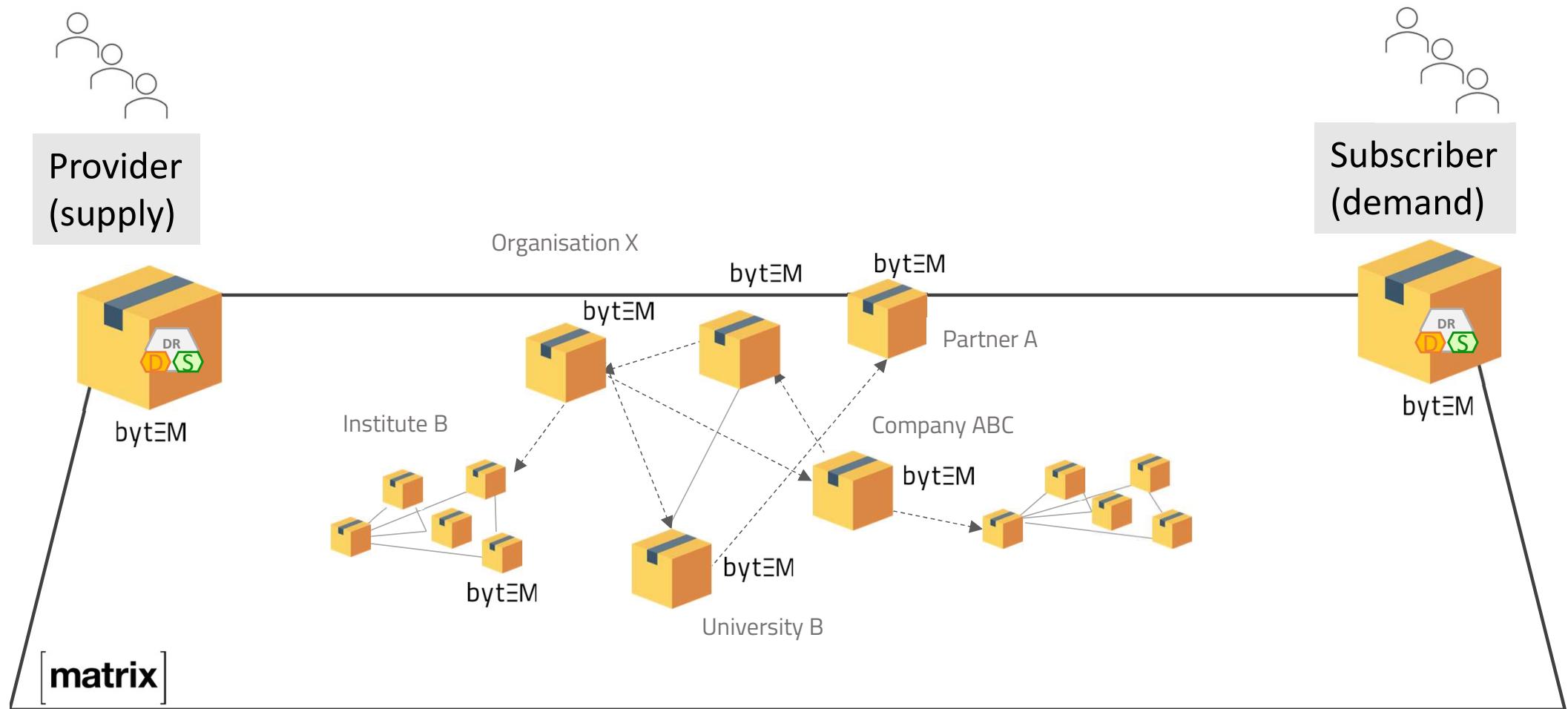
to connect data supply & demand over matrix's federated network*...



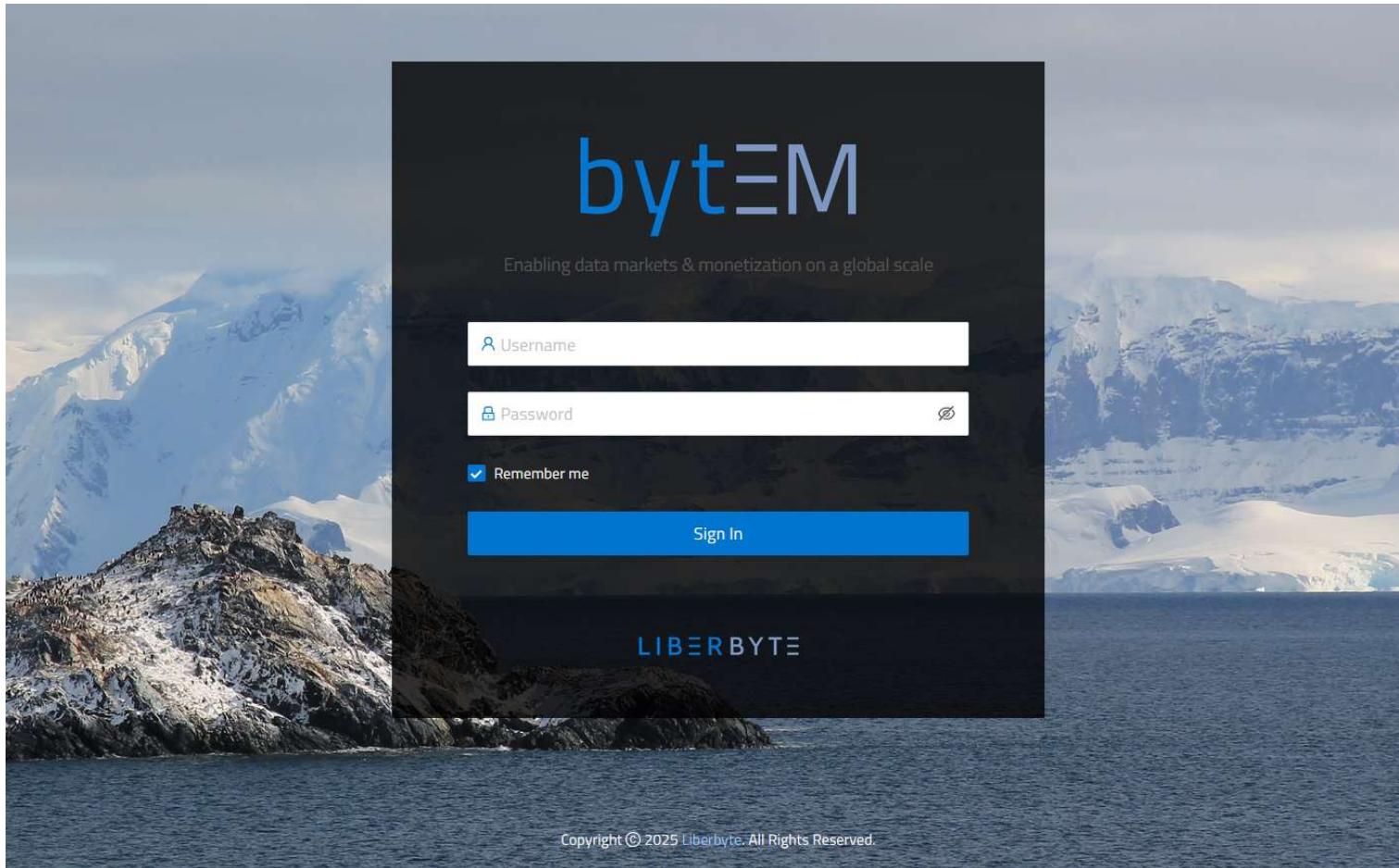
...enabling data (supplies) to be shaped into data (demand) products and exchanged...



...via decentralized Network of bytEMs (globally)



bytΞM 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 AI-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

website:

www.liberbyte.com

bytEM intro:

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