

bytΞM

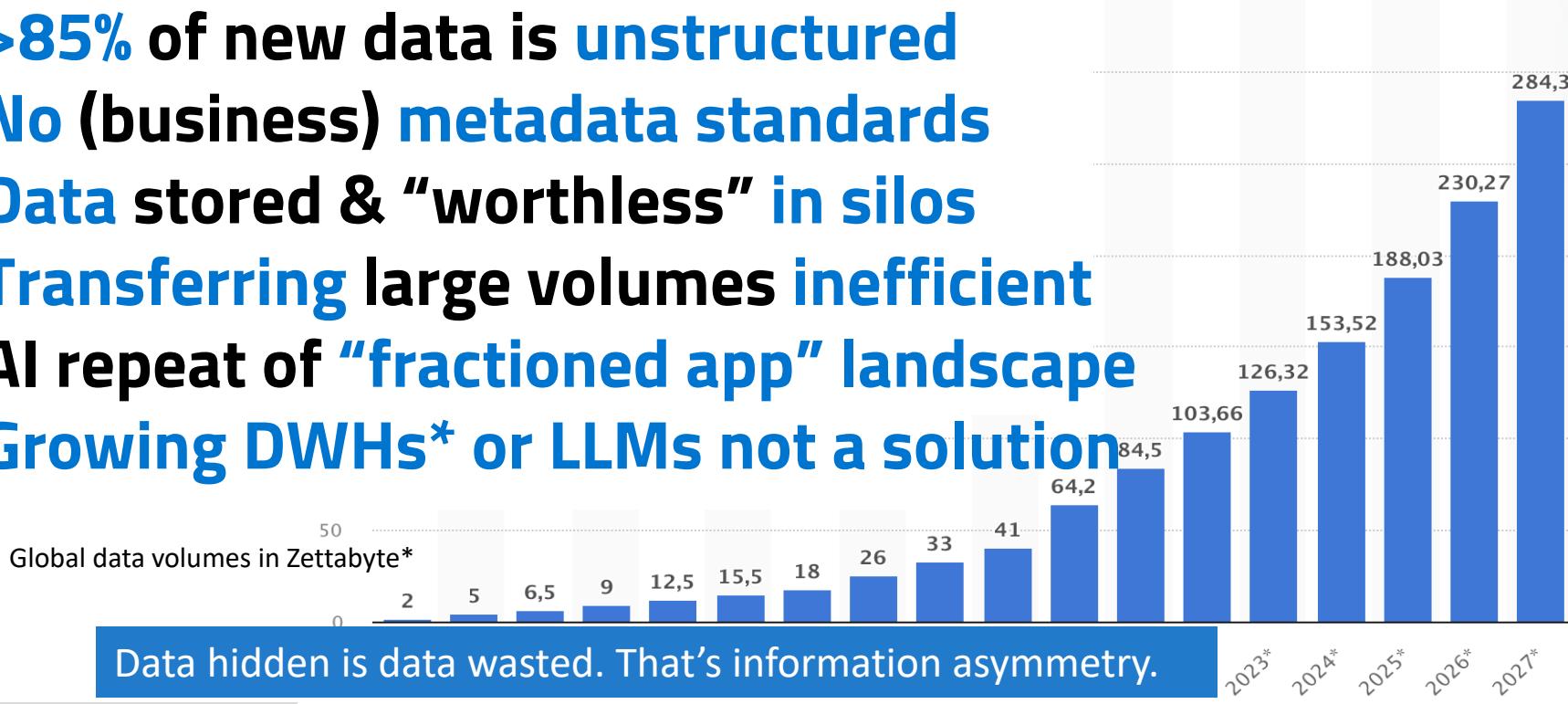
Scaling to global Data Exchange & Management

LIBERBYTE
FREE YOUR DATA

Oct 2025

Exponential x^2 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**

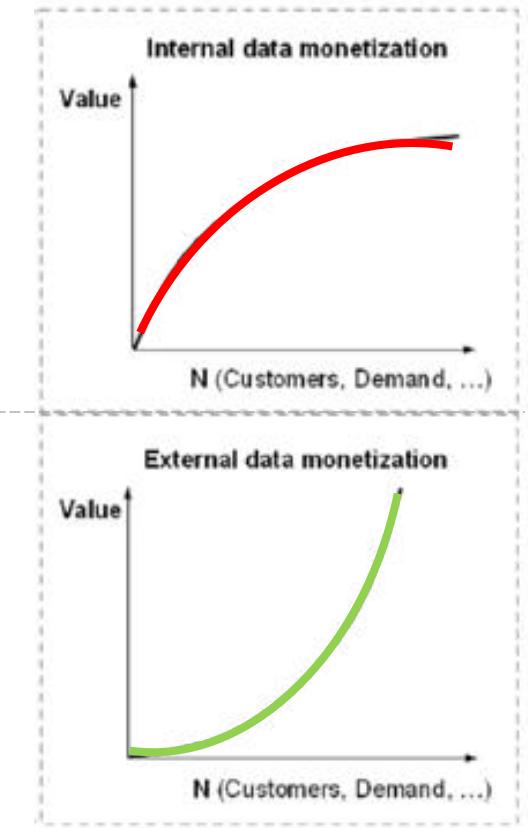
providing *diminishing* returns

instead

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

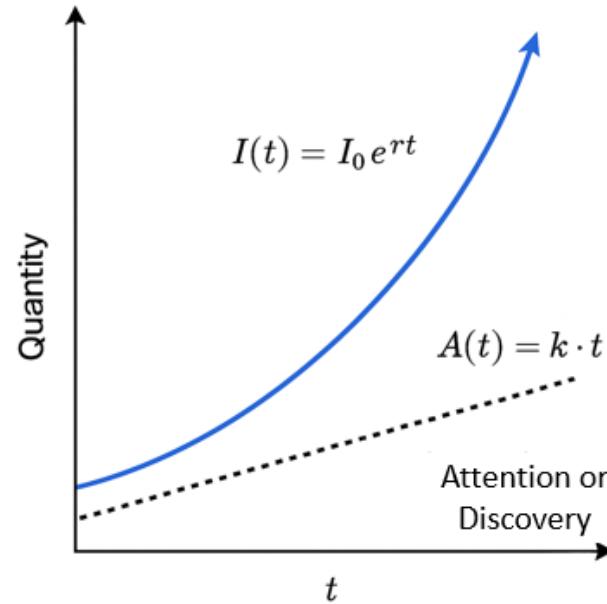
which provide *increasing* returns

Data exchange capabilities enable demand driven value extraction



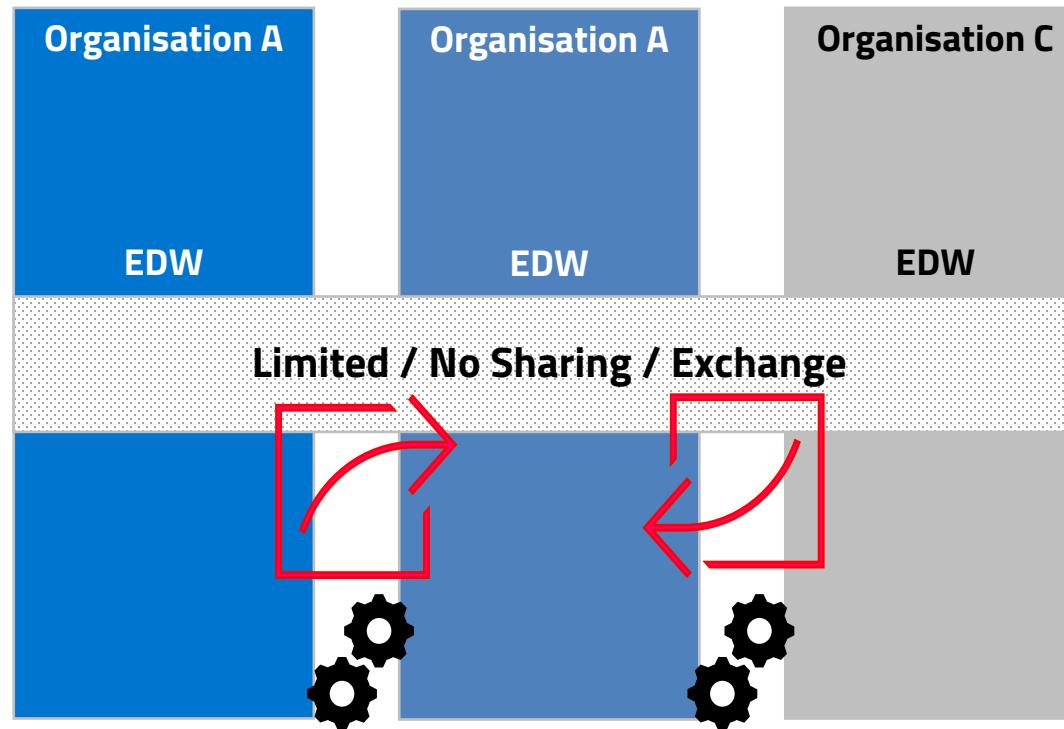
"Asymmetric information creates inefficiencies that markets strive to overcome."

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



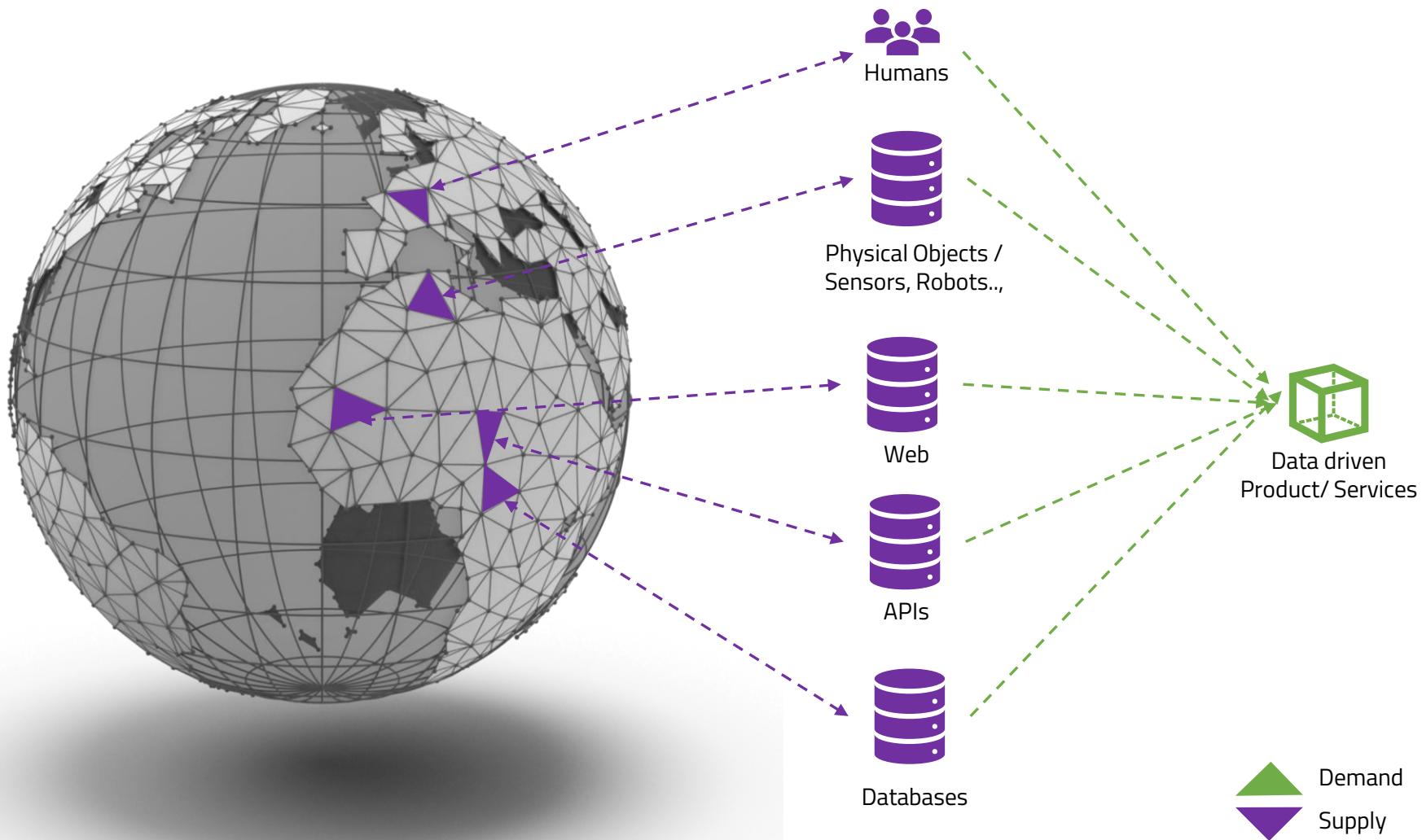
"As time progresses, the amount of data far outpaces our ability to **find, process, or understand** it. Therefore, **information asymmetry isn't a bug—it's a mathematical consequence** of exponential data growth" (T. Salomaa - Founder Liberbyte)

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

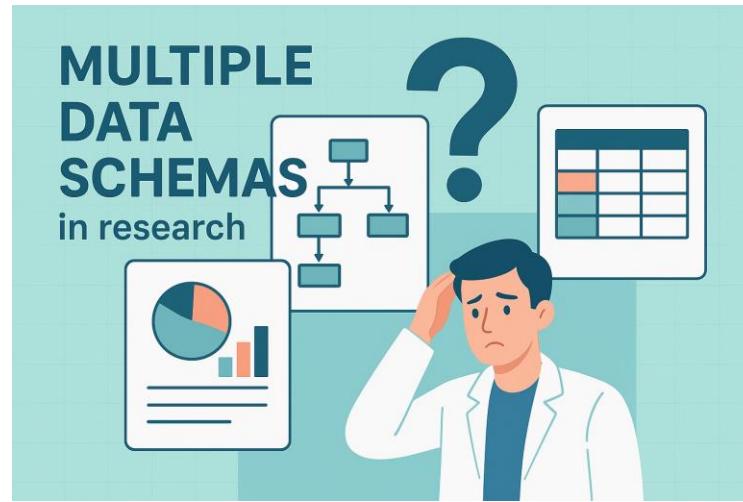


EDW = Enterprise Data Warehouse

Data is „Decentralised“



No Context / Business / Science etc. Domain

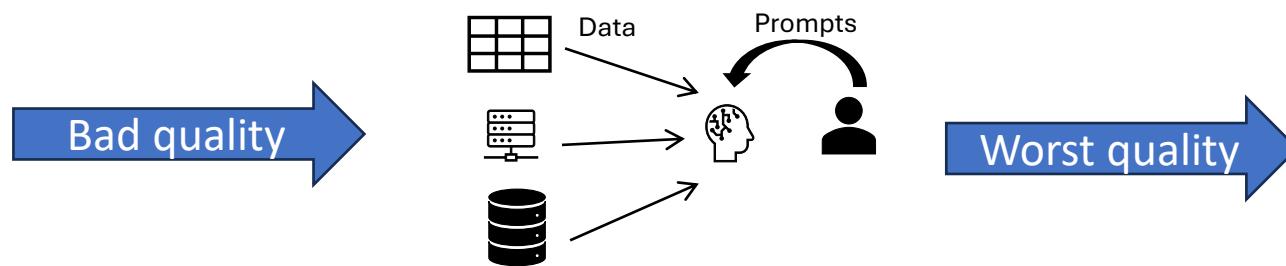


“Environment”, “Ecosystem”, “Proteins”, “Microbes”,...

Who sets the (business) schema?

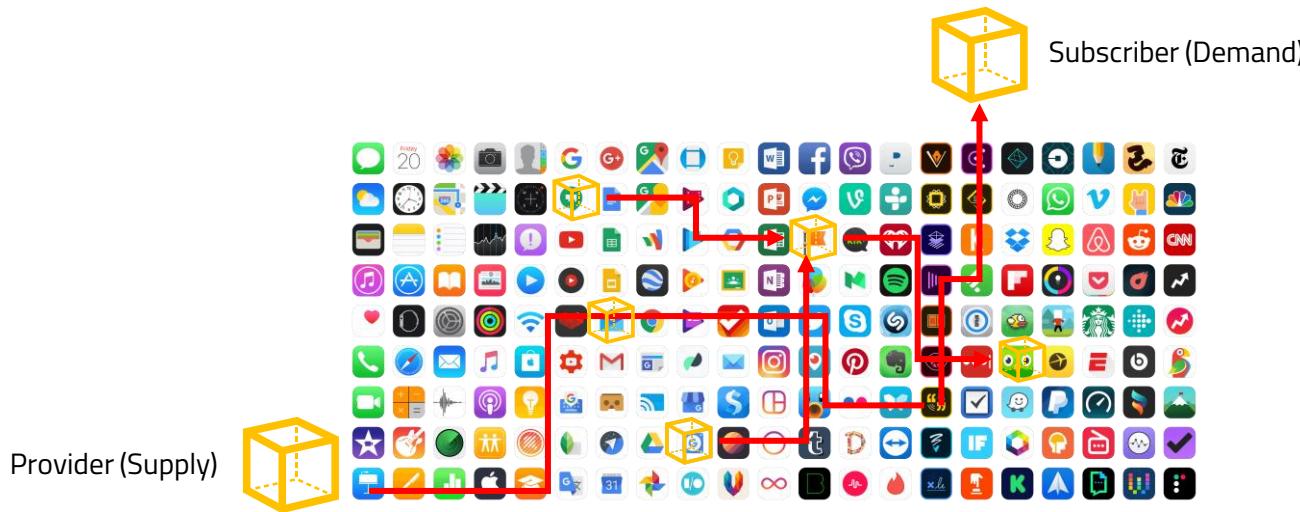
Input Data & Data mgmt NOT controlled → AI NOT controlled

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



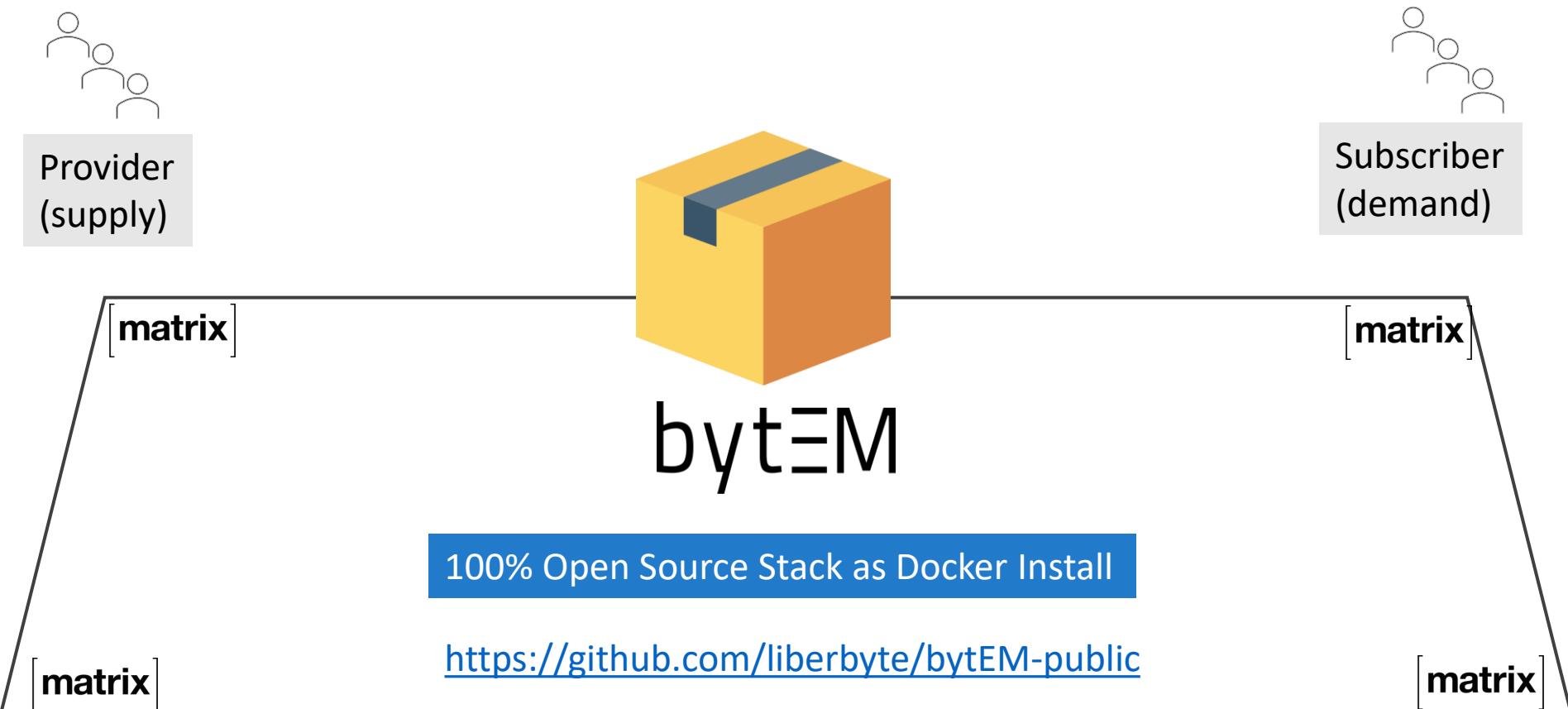
The need to exchange data is greater than ever...

How to enable exchangable Data Products & Services?

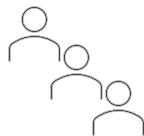


Solution: exchangable data rooms + business (domain) context + interoperable architecture.

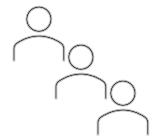
Liberbyte's bytEM



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

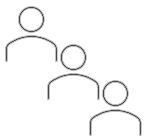


Provider
(supply)

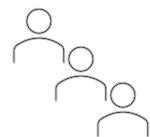


Subscriber
(demand)

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



Provider
(supply)

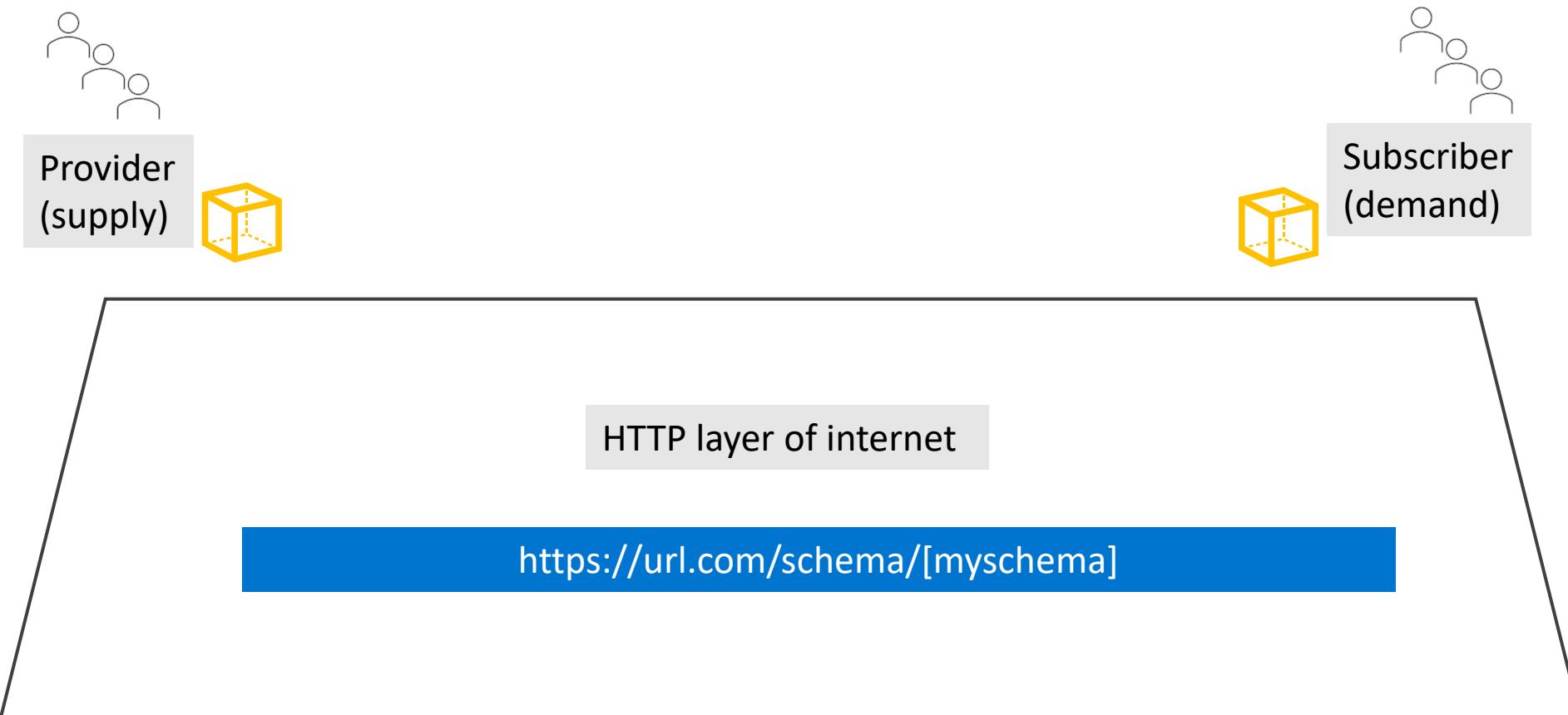


Subscriber
(demand)

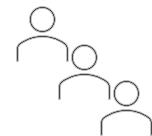


HTTP layer of internet

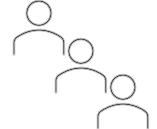
...yet you still need to tie the business and exchange semantics to (web2) / URL system...



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



Provider
(supply)



Subscriber
(demand)



[matrix]

HTTP layer of internet

[matrix]

[https://url.com/schema/\[myschema\]](https://url.com/schema/[myschema])

Data rooms: #myroom:matrix.url.com

[matrix]

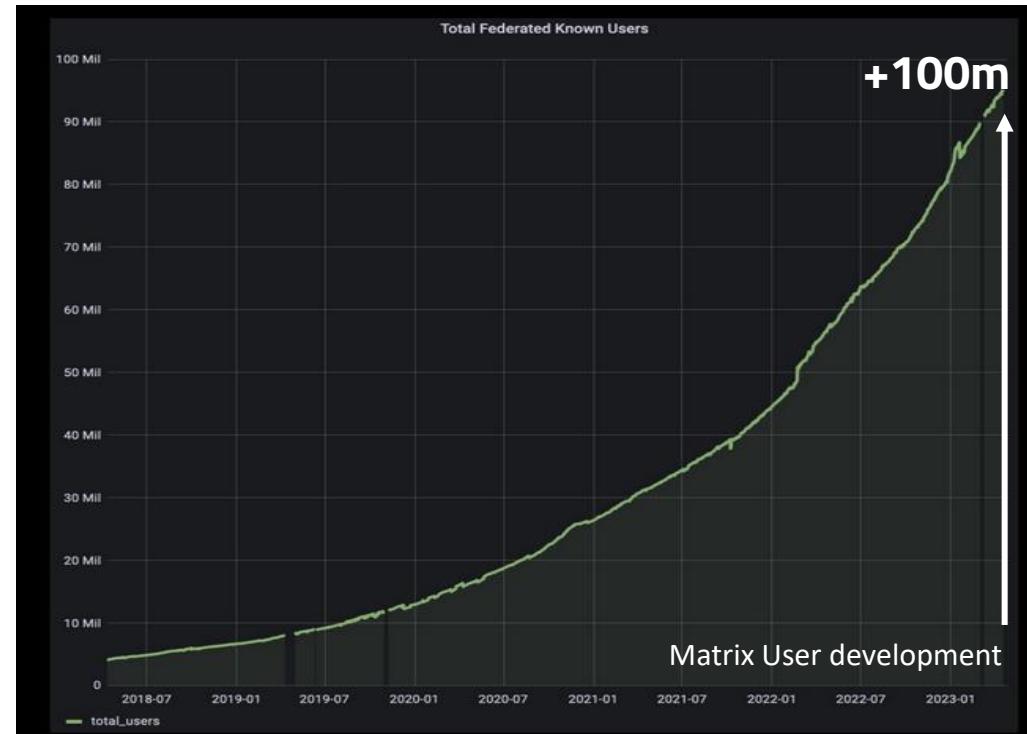
matrix* as protocol

[matrix]

[matrix]

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

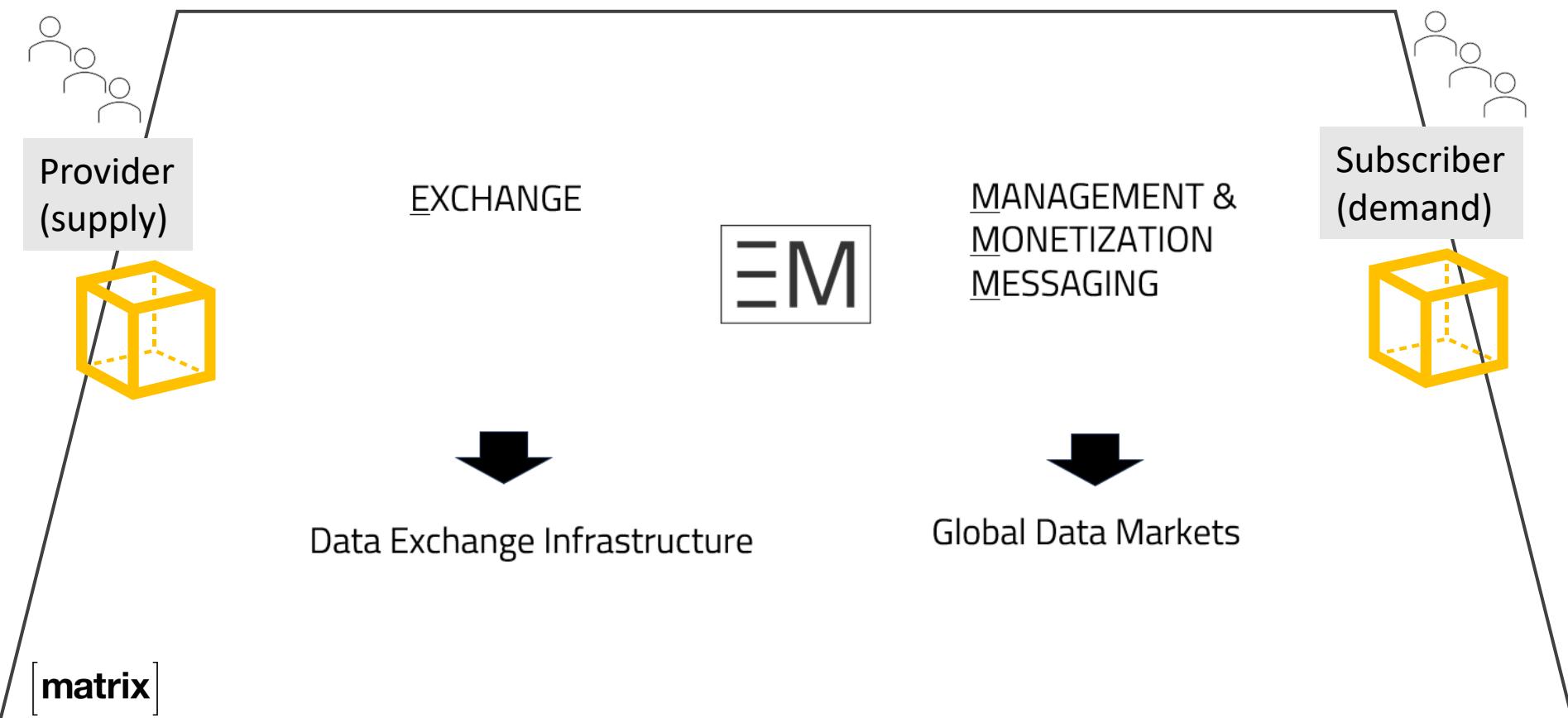
- Open-source project for secure, decentralized communication
- +100m users, ~17m rooms, ~64k servers
- Matrix is Liberbyte's technical platform engine and enables open & federated data exchange



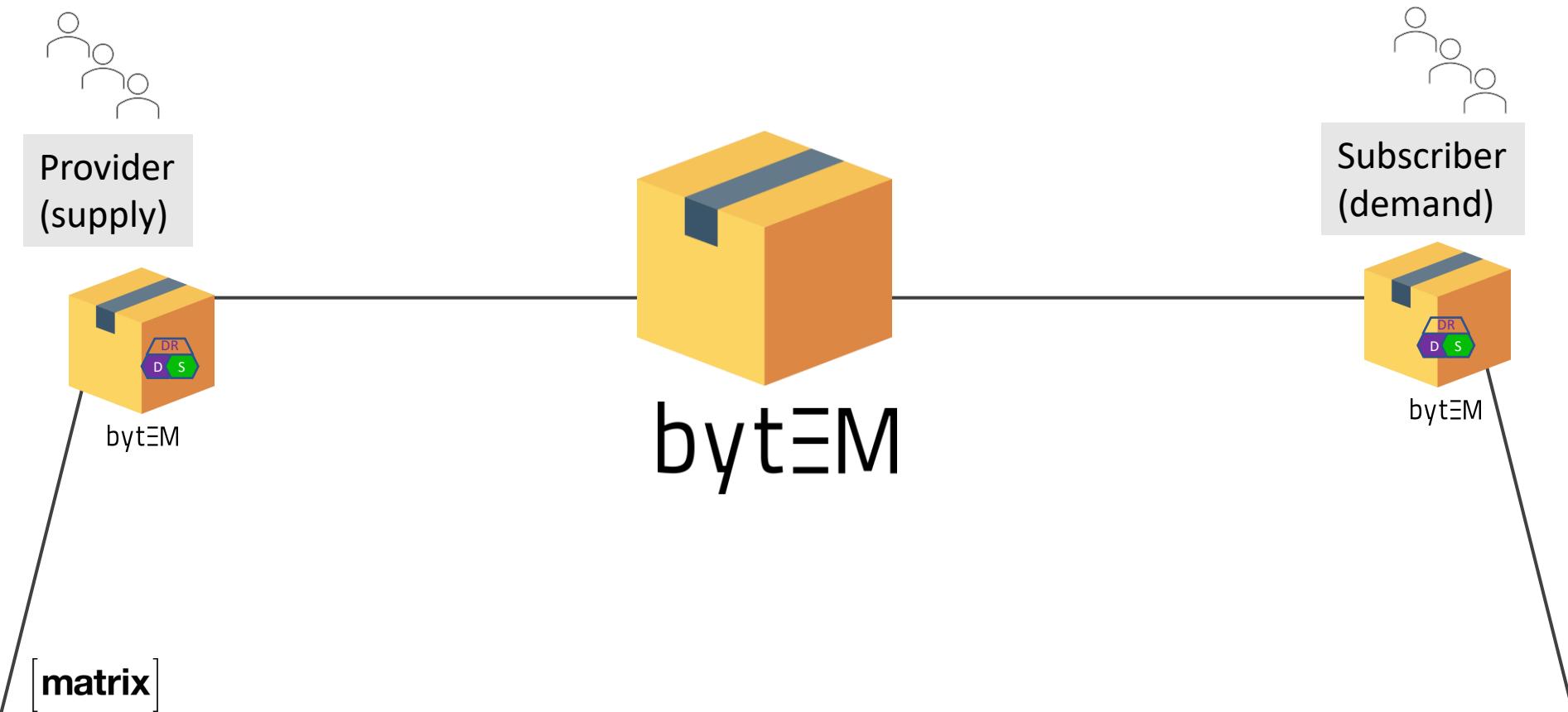
[matrix] Used by:



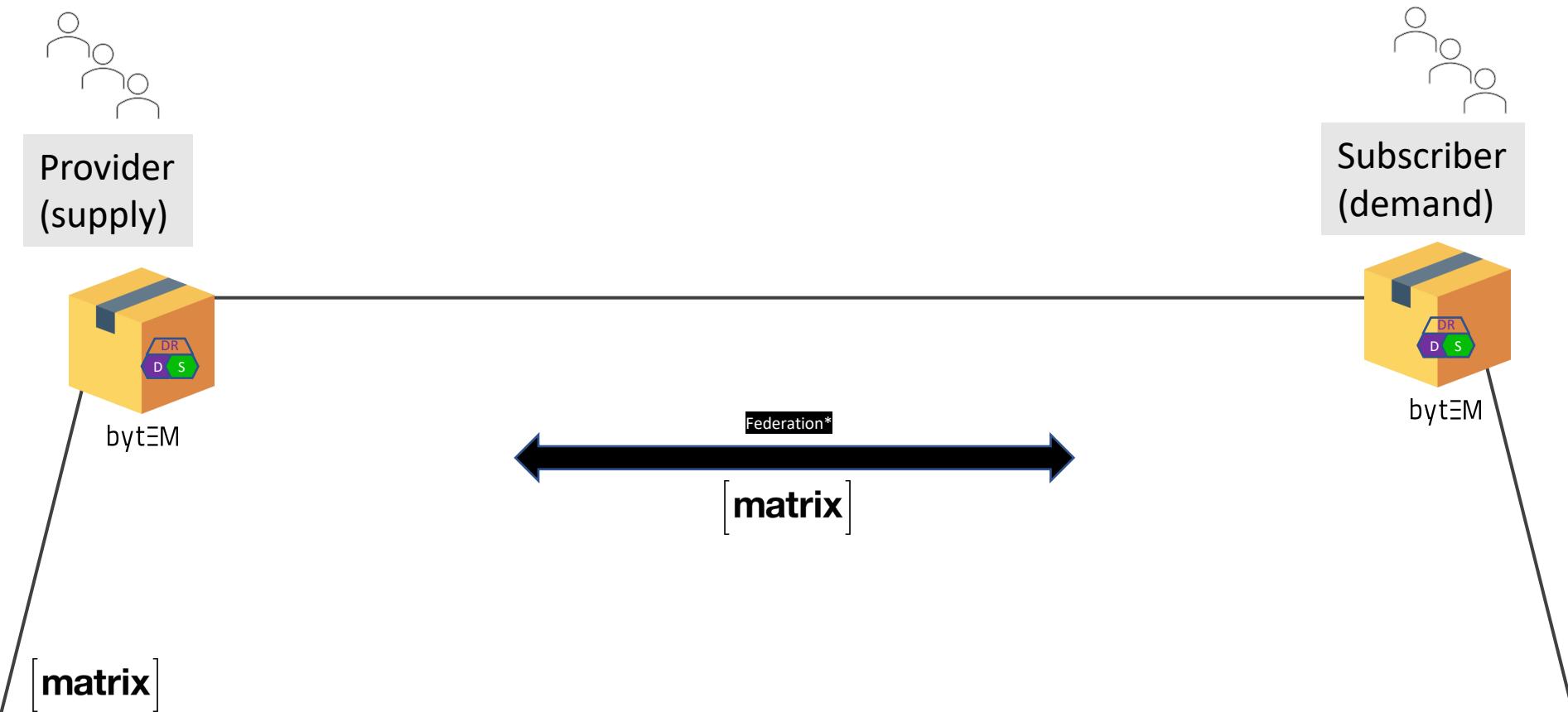
...hence enables bytEM to Exchange, Manage, Monetize and Message data



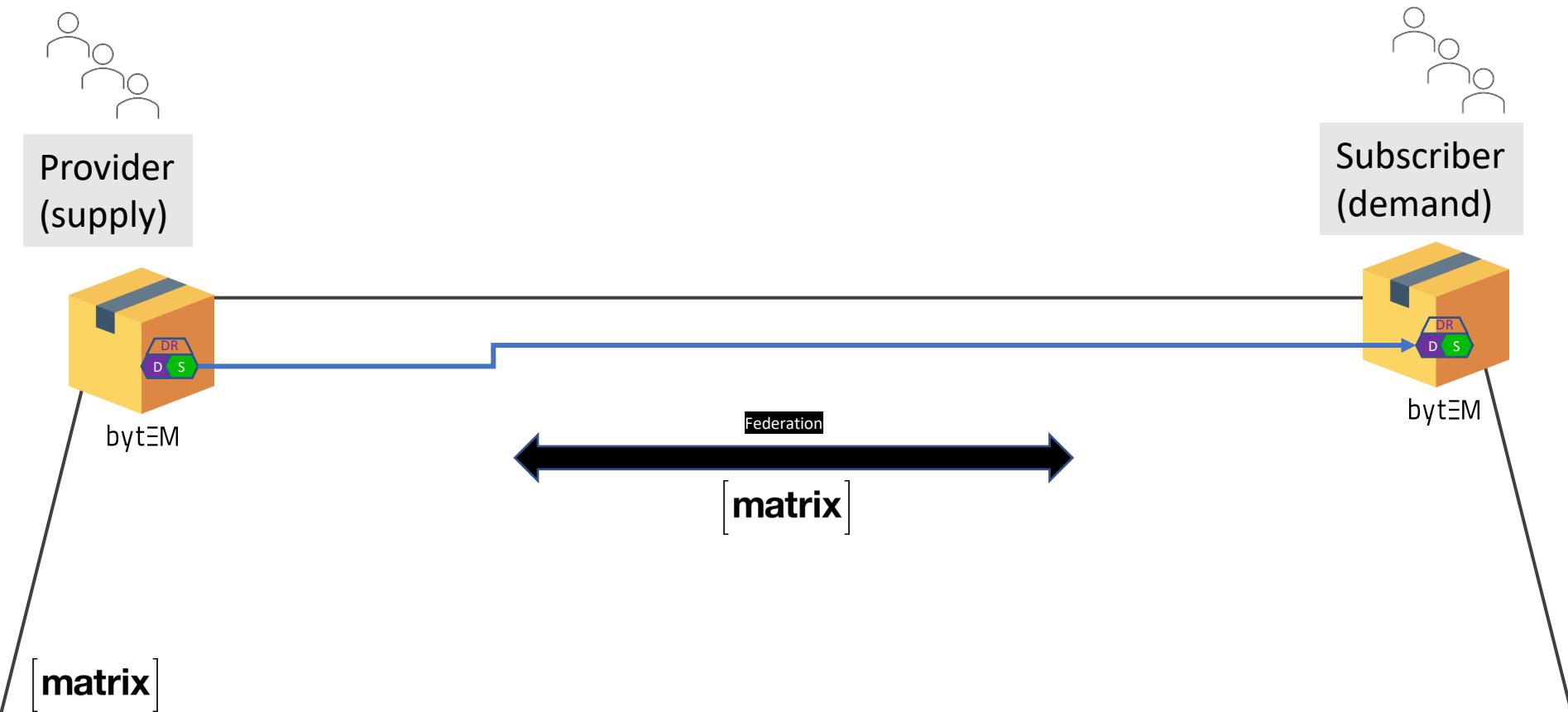
bytEM as 100% opensource solution for any individual or organization...



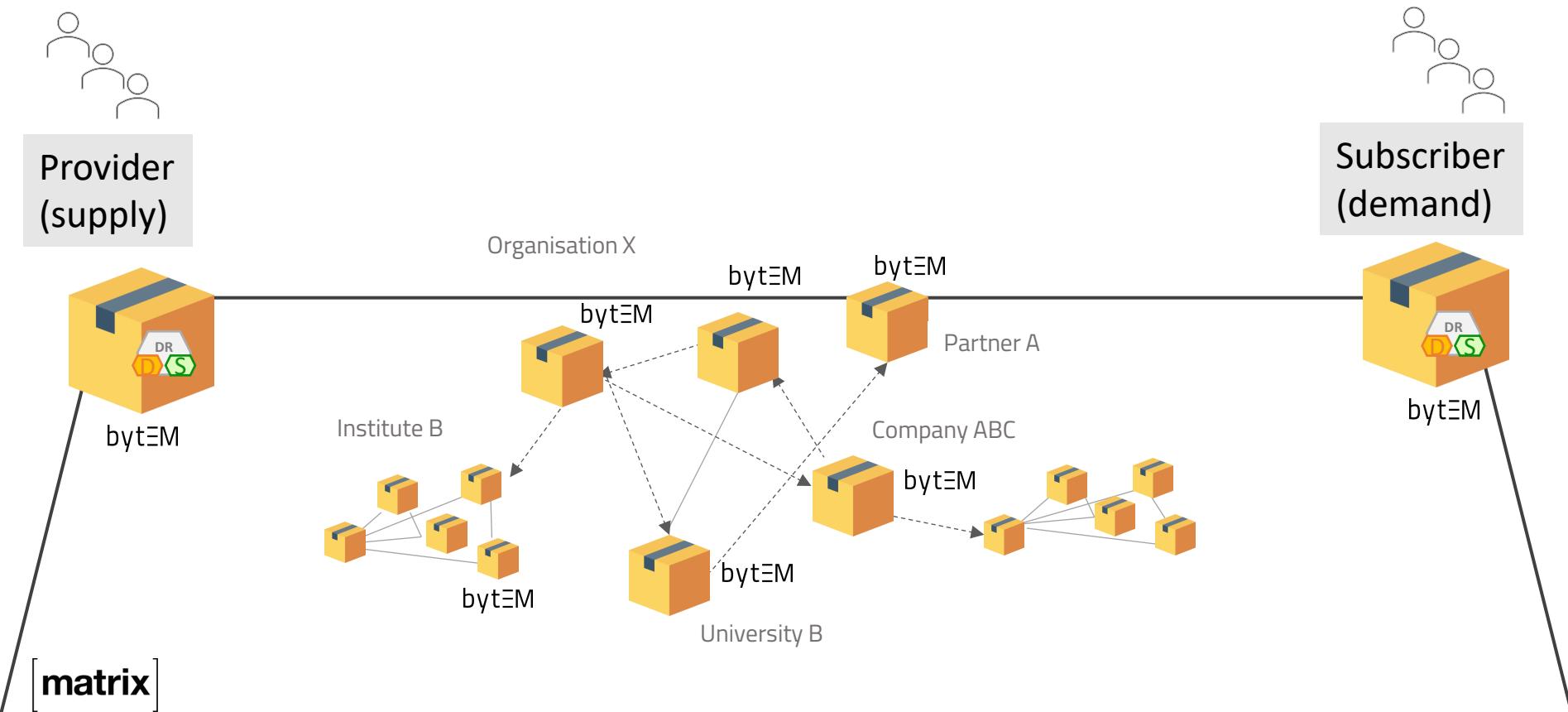
to connect data supply & demand over matrix's federated network*...



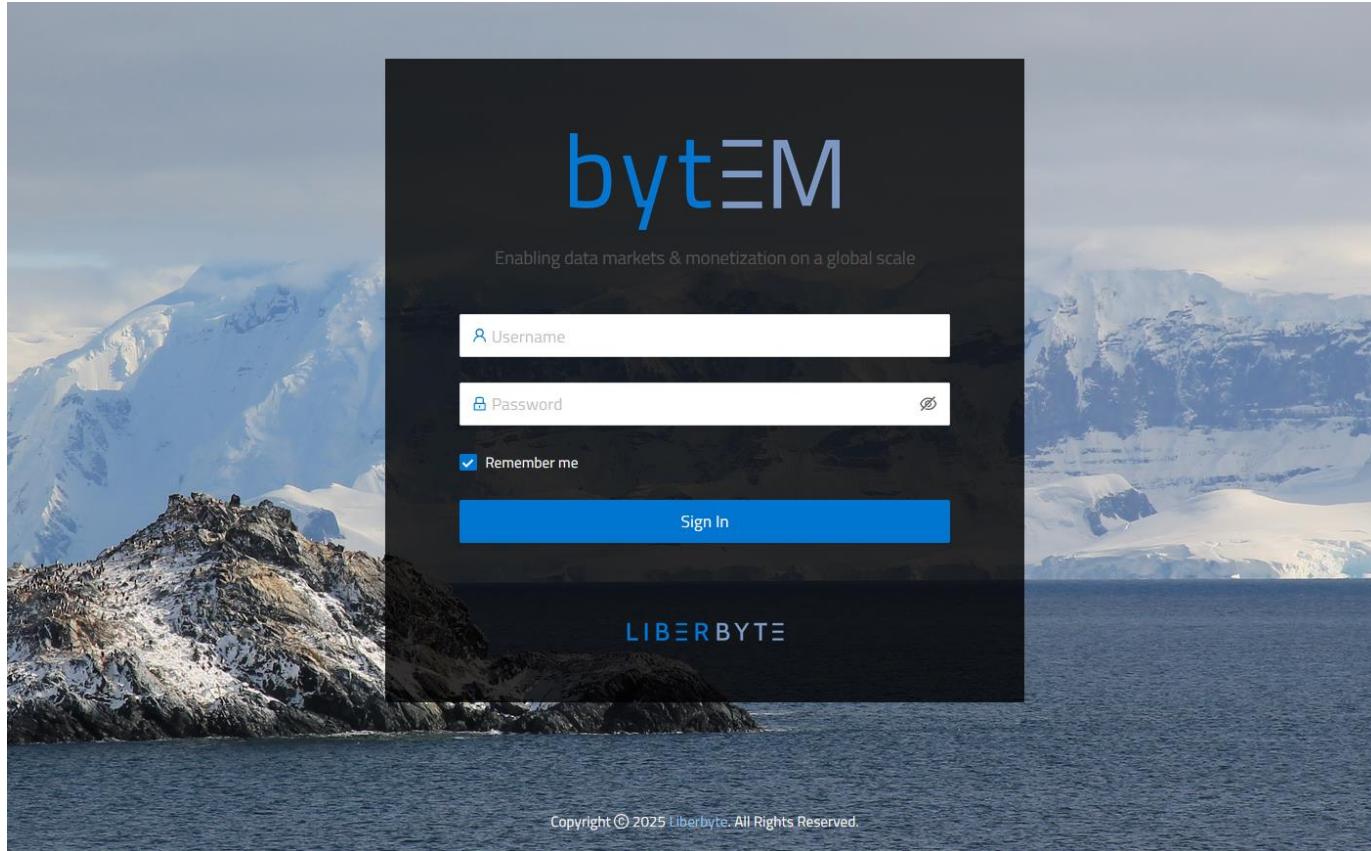
...enabling data (supplies) to be shaped into data (demand) products and exchanged...



...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 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

F R E E Y O U R D A T A

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