

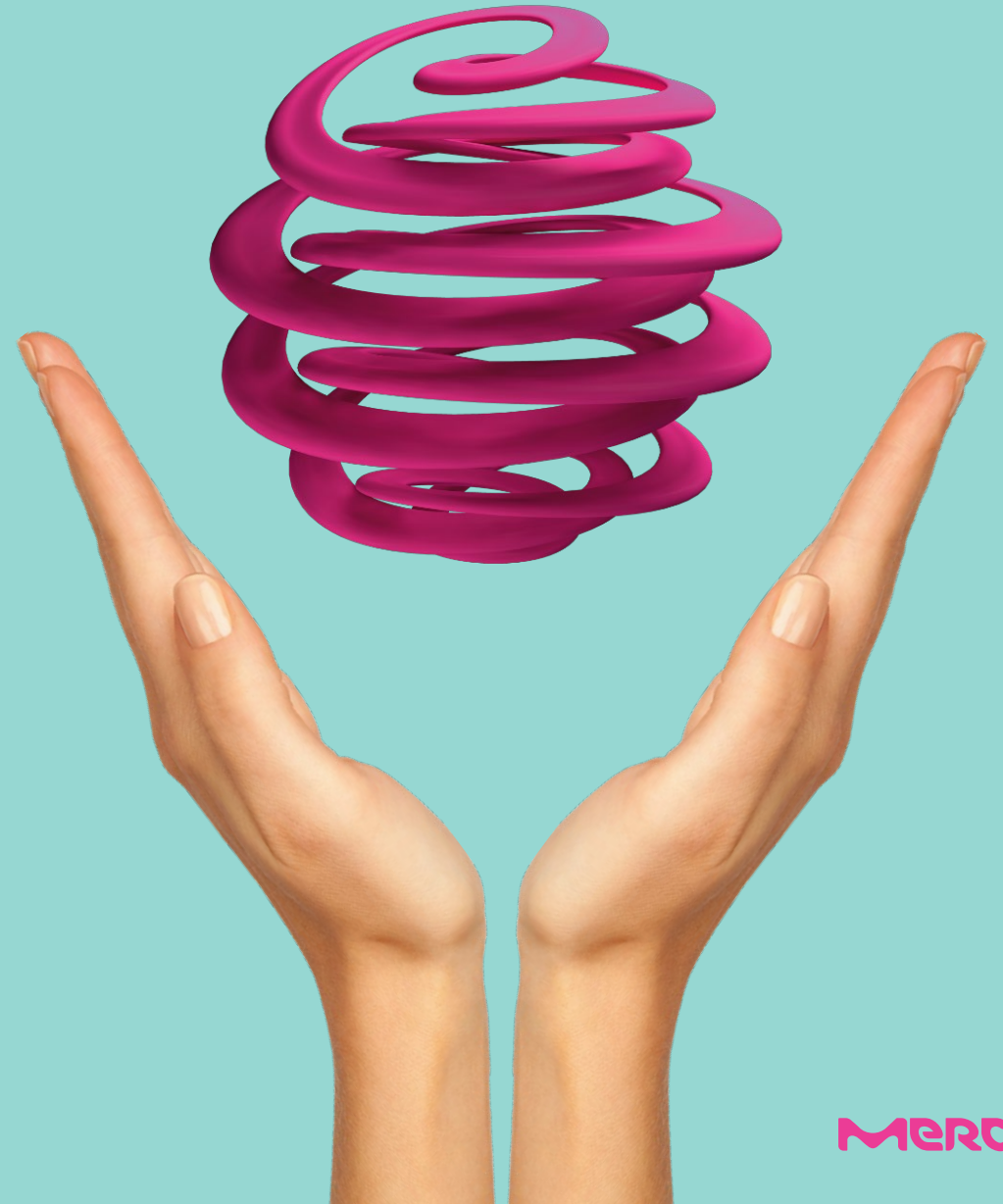
HOW the semiconductor industry can leverage data expertise from healthcare

SEMICON Europa, Nov 15, 2022

Laura Matz, Chief Science and Technology
Officer of Merck and CEO, Athinia

MERCK

we are a
vibrant
science and
technology
company



MERCK

our ideas are everywhere

Healthcare

Life science

Electronics

**Key Focus in Healthcare:
Precision Medicine**

MERCK

CURIOUS MINDS

dedicated to human progress

Within EMD Digital, we develop digital solutions through joint ventures that are separate from Merck's business sectors

Healthcare industry:



Semiconductor industry:



In partnership with:

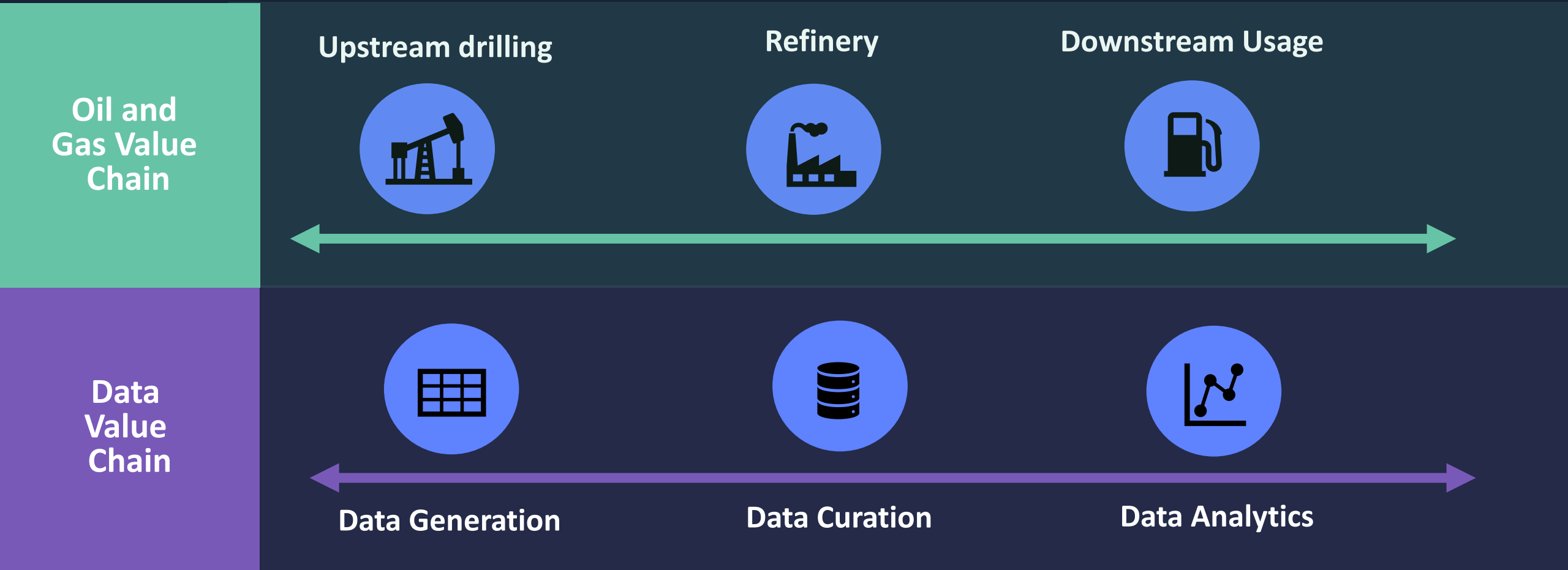




If Data is the New Oil; How Does this Compare?



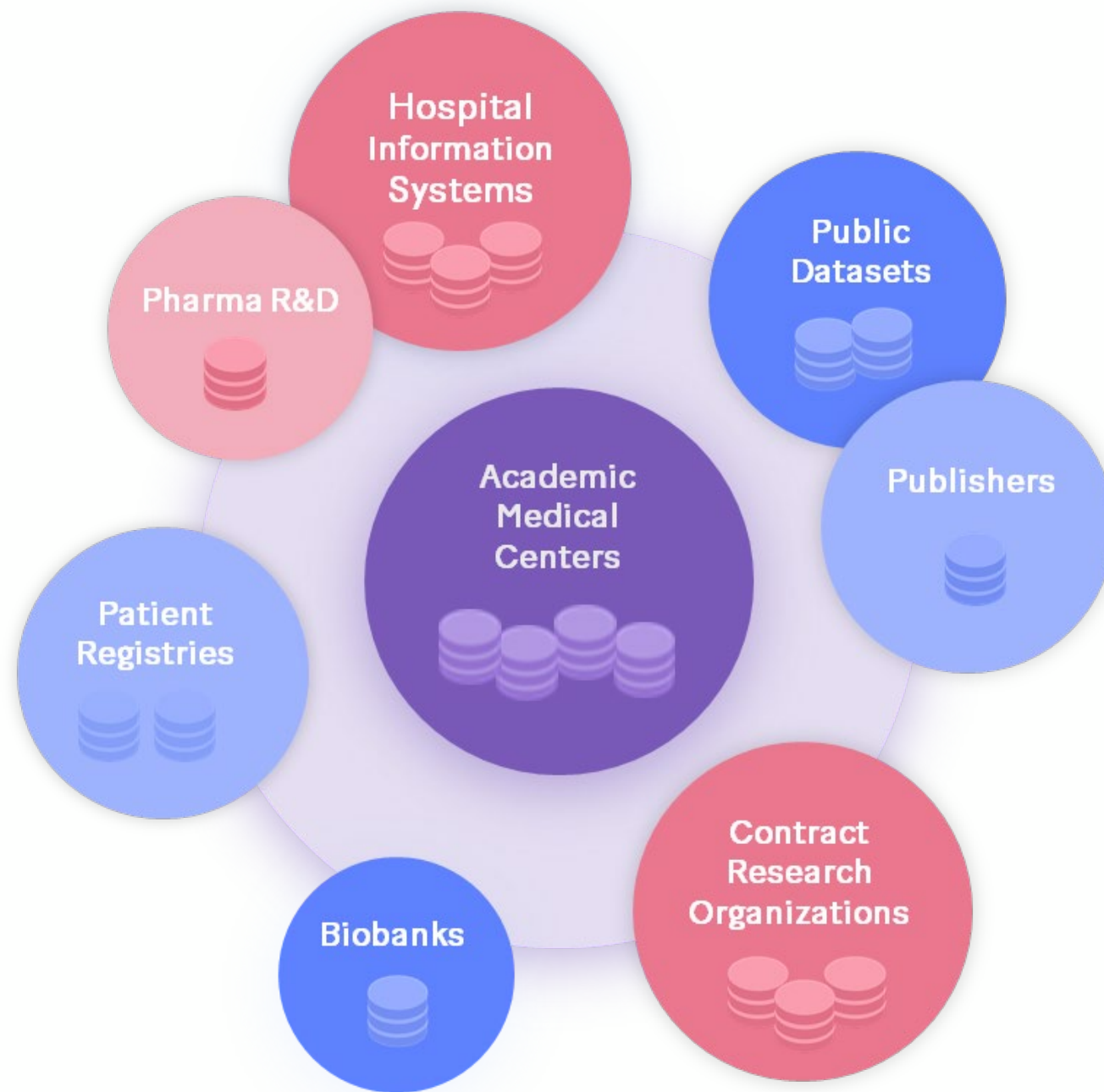
If Data is the New Oil; How Does this Compare?





Syntropy

Biomedical
data is siloed
across the
healthcare
ecosystem



Problem



~80%

of biomedical researchers' time is **spent sourcing and preparing data**¹



>40%

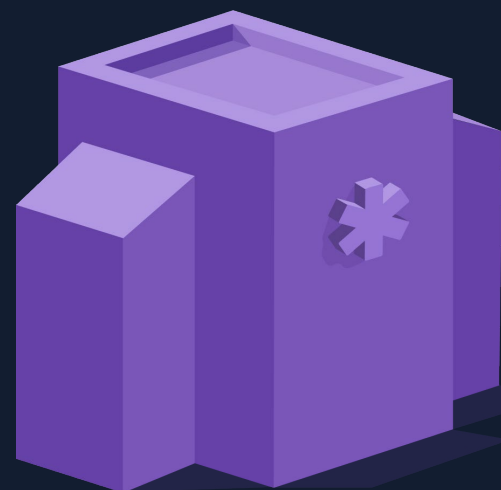
of large pharma companies consider **data quality** the **largest barrier** to conducting remote clinical trials²



Researchers want to collaborate but proliferation of available data, data silos between and within institutions, and **lack of incentives to share** have been huge barriers

¹Primary Syntropy ethnographic research ²PWC Health Research Institute

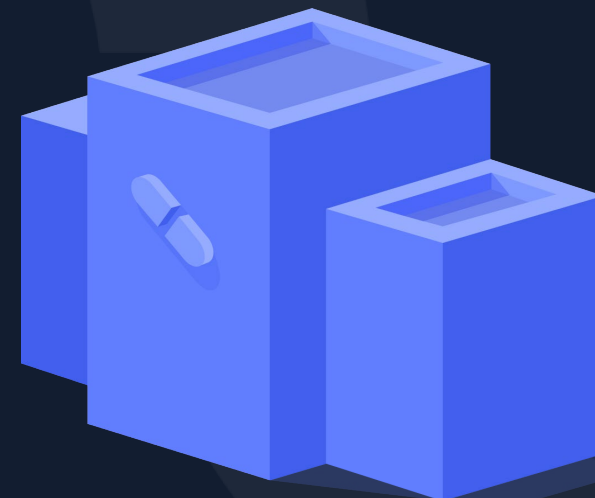
Siloed data makes insights harder and slower to find, and collaboration more difficult



{Data Creators}
Research Organizations



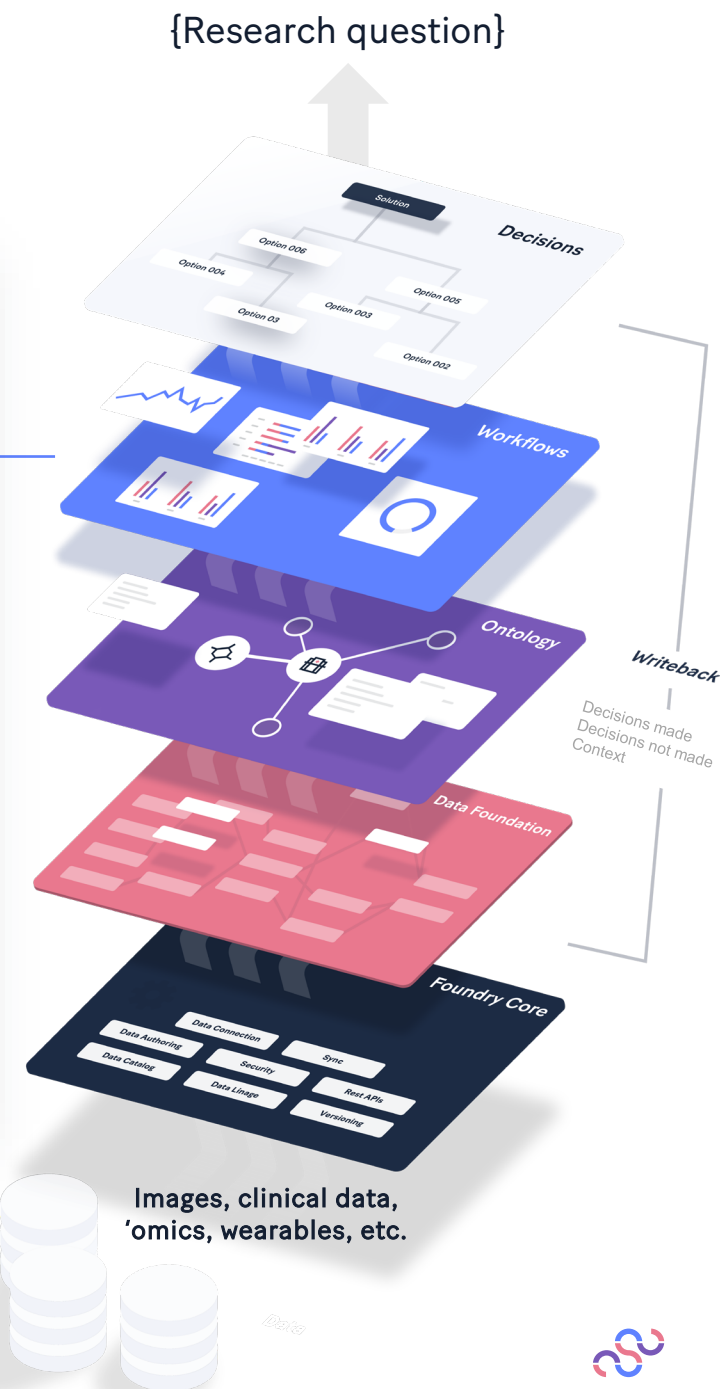
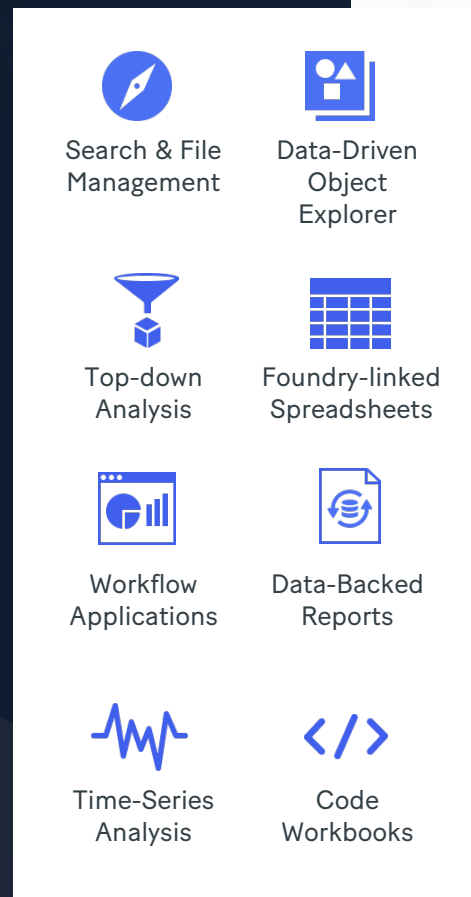
Syntropy



{Data Collaborators}
Industry Partners



A secure & collaborative ecosystem that empowers researchers to work together across organizational boundaries to ask tough questions and solve hard problems



"Powered by Syntropy"
UC Irvine Case study



Improvement in data curation efficiency

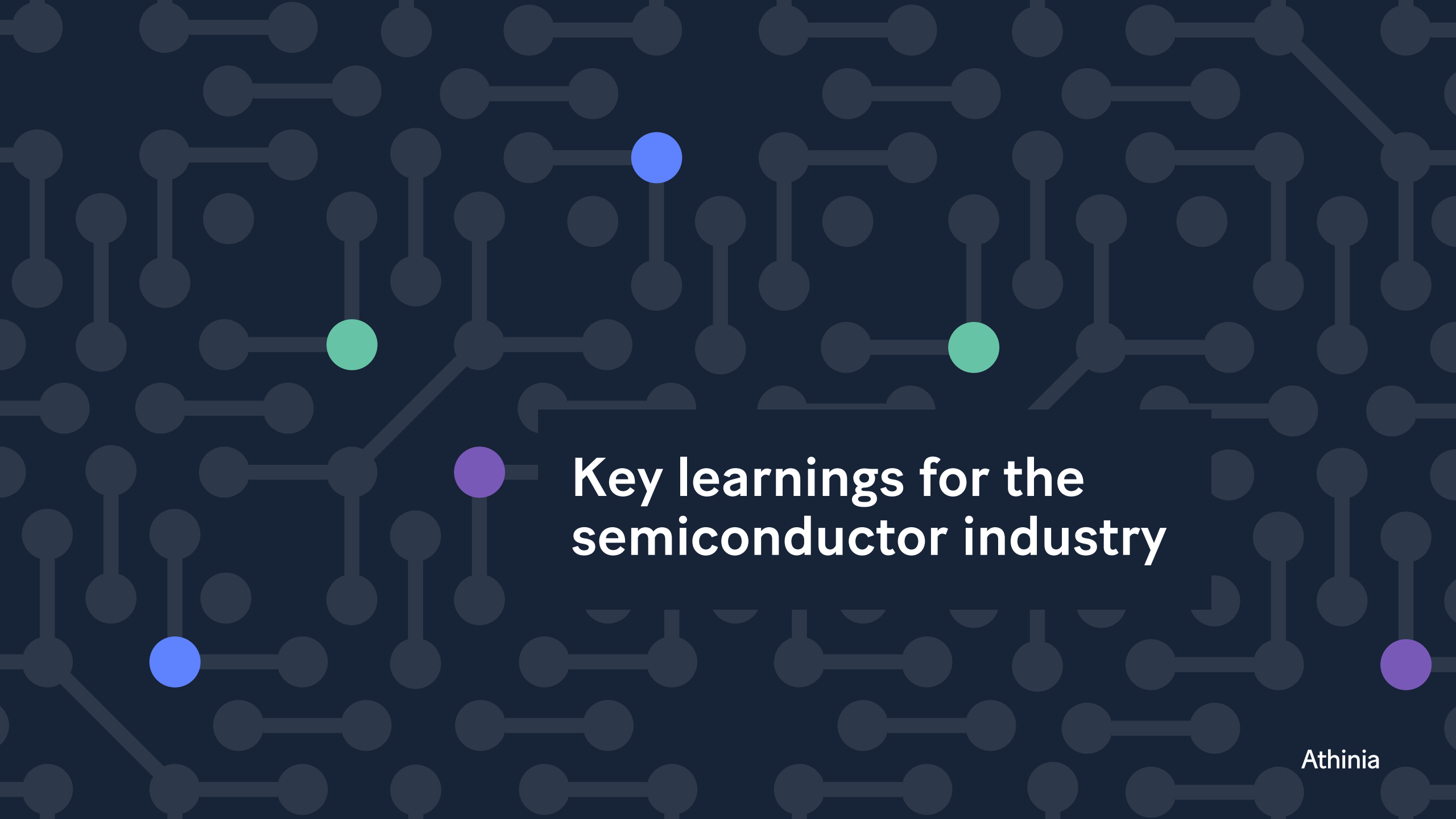
- 📌 **Deeper data:** Harmonized disparate data sources (EHR + genomics + labs + clinical notes)
- 📌 **Robust data curation** – semi-automatic curation allows for dynamic response to changing Real World context
- 📌 Build **fit-for-purpose contextualized domains** to solve the problem at hand
- 📌 Planning for **operational efficiency** use cases (~4% overall efficient use of data)
- 📌 Starting projects that enable **effectiveness | Impact** of Efficiency for clinical decision support (e.g., patient trajectory), operational efficiency (e.g., length of stay), and patient outcomes



"What used to take me months, now takes me days in the Syntropy Platform"

Dr. Daniel Chow
Co Director for AI in Diagnostic
Medicine, Radiological services





Key learnings for the semiconductor industry

1

Security supports the essential foundation of trust

- Security is key for the Semi industry; levels of precision aren't as important in medicine;
- IP protection is different in Healthcare, but privacy is key
- Both need protection and security, but the reasons are different

2

Getting the rawest and least-interpreted data is better

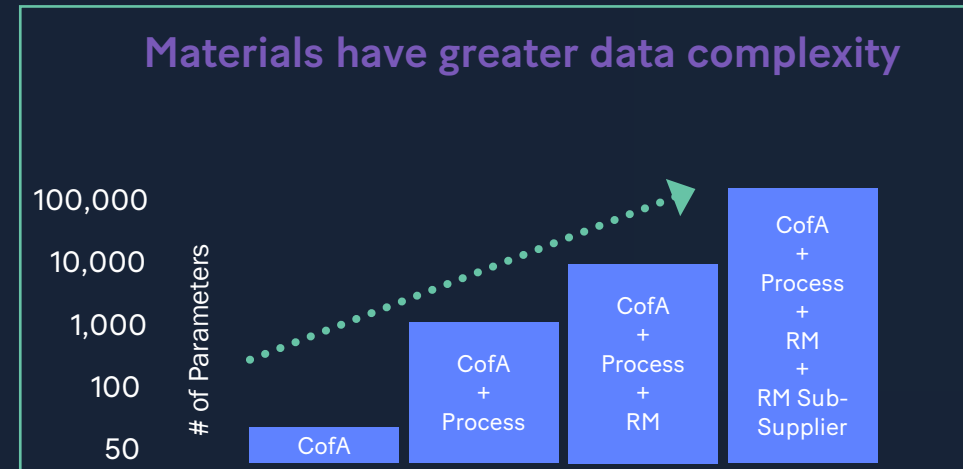
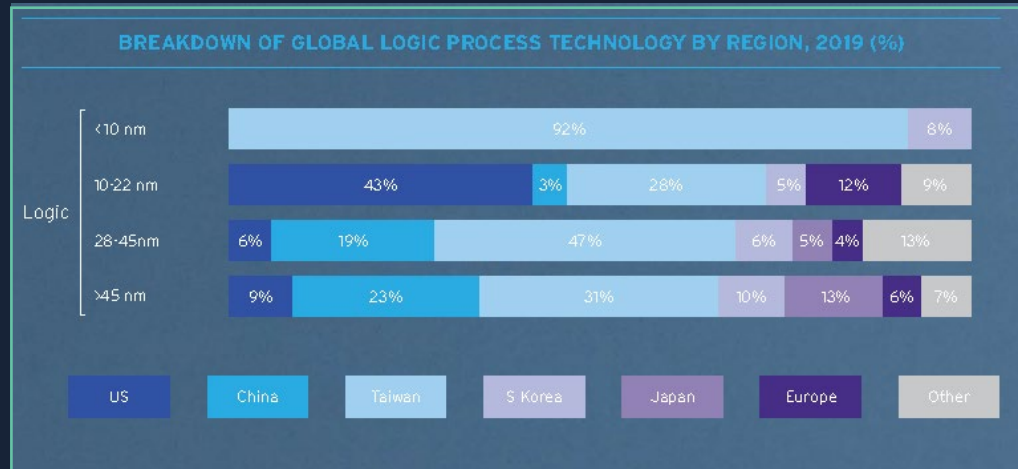
- When bringing data together from different organizations, getting the rawest and least-interpreted data is better than giving rigid specifications.
- At UCI, raw data led to more accurate outcomes

3

Figuring out how to align the incentives is essential

- Figuring out the motivation is key if you have to disrupt the data practice on the source side
- The principle of creating an ecosystem wherein everyone wins applies to both industries.

Time Urgency in Semiconductor Industry

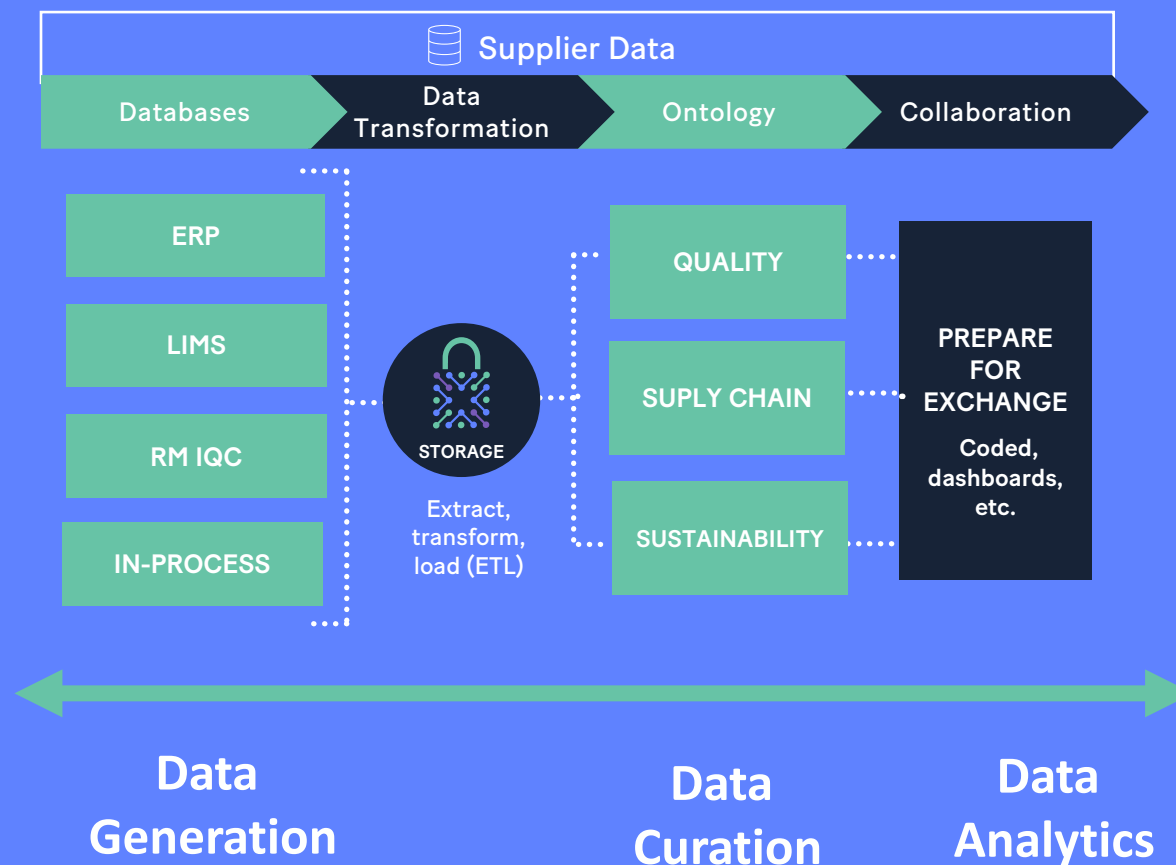
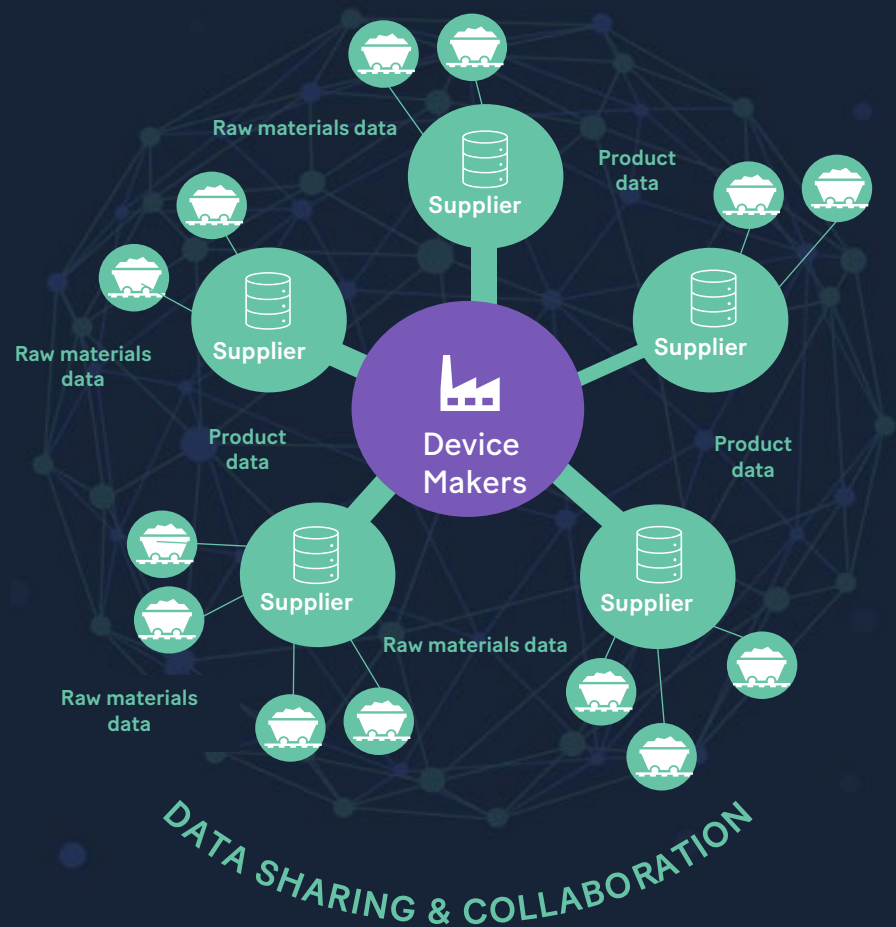


- >\$150B investments planned for US and EU
- Chip shortage highlighted the gap
- The industry requires smart and scalable data & analytical capabilities
- Growing amount of parameters:

60 200 60,000
2010 ➤ 2020 ➤ 2030

The Solution Explained

By bringing together disparate sources of data, we can uncover new insights and solutions across industry players



Data collaboration to improve semiconductor manufacturing.

Key application areas:



Quality

Improving quality by focusing on the parameters that matter most



Supply Chain

Ensuring supply transparency and availability across industry players

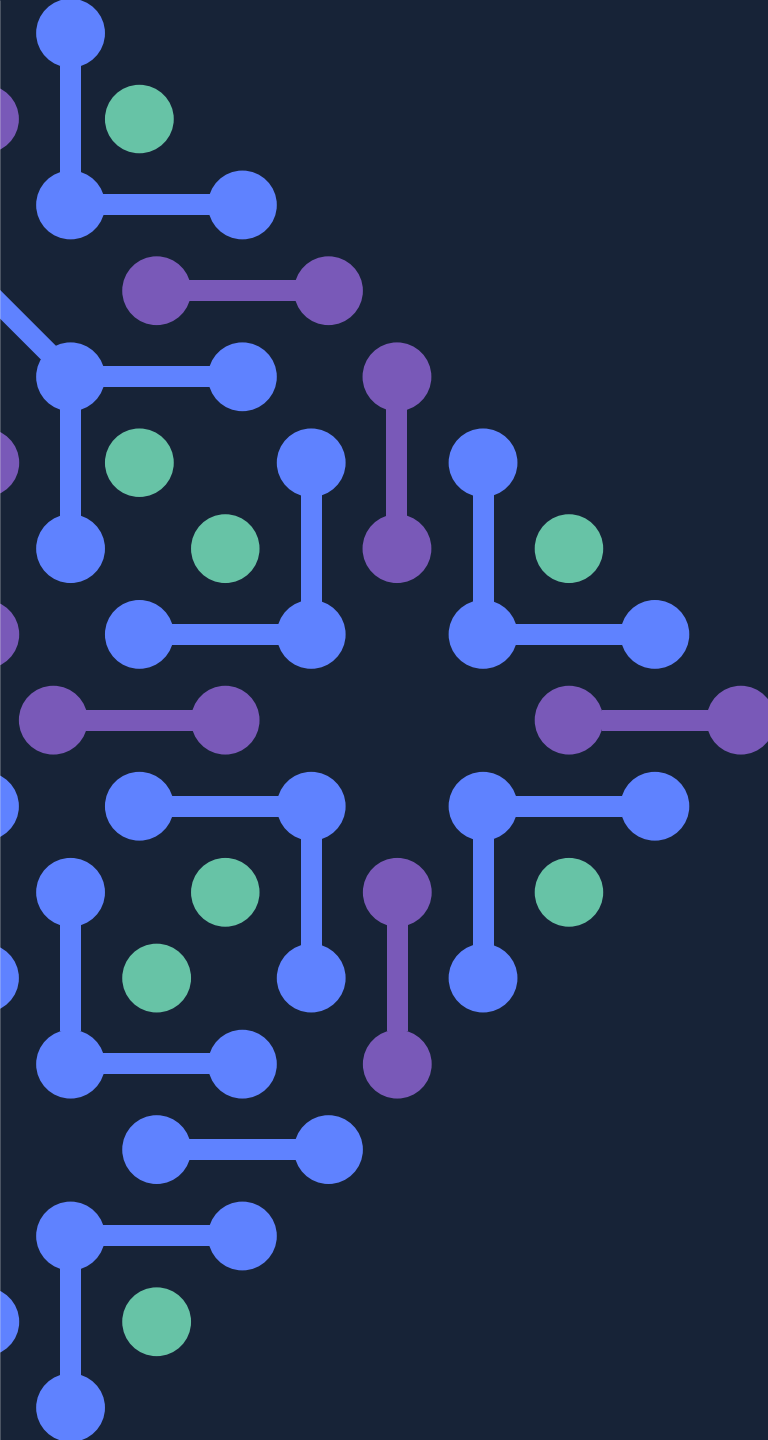


Sustainability

Empowering companies to track and manage their environmental impact



Focus on making secure data exchange easier and safer, using advanced analytics to uncover novel insights



Questions?