

The background is a dark purple gradient. On the left, there are two vertical neon lines, one blue and one magenta, with a horizontal magenta line intersecting the blue one. On the right, a large magenta arc curves from the top towards the bottom. The text 'AVEVA WORLD' is centered in a white, bold, sans-serif font.

AVEVA WORLD

CONNECT 

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# Unlocking the Power of Industrial Data with Real-World Use Cases for **CONNECT** and Databricks



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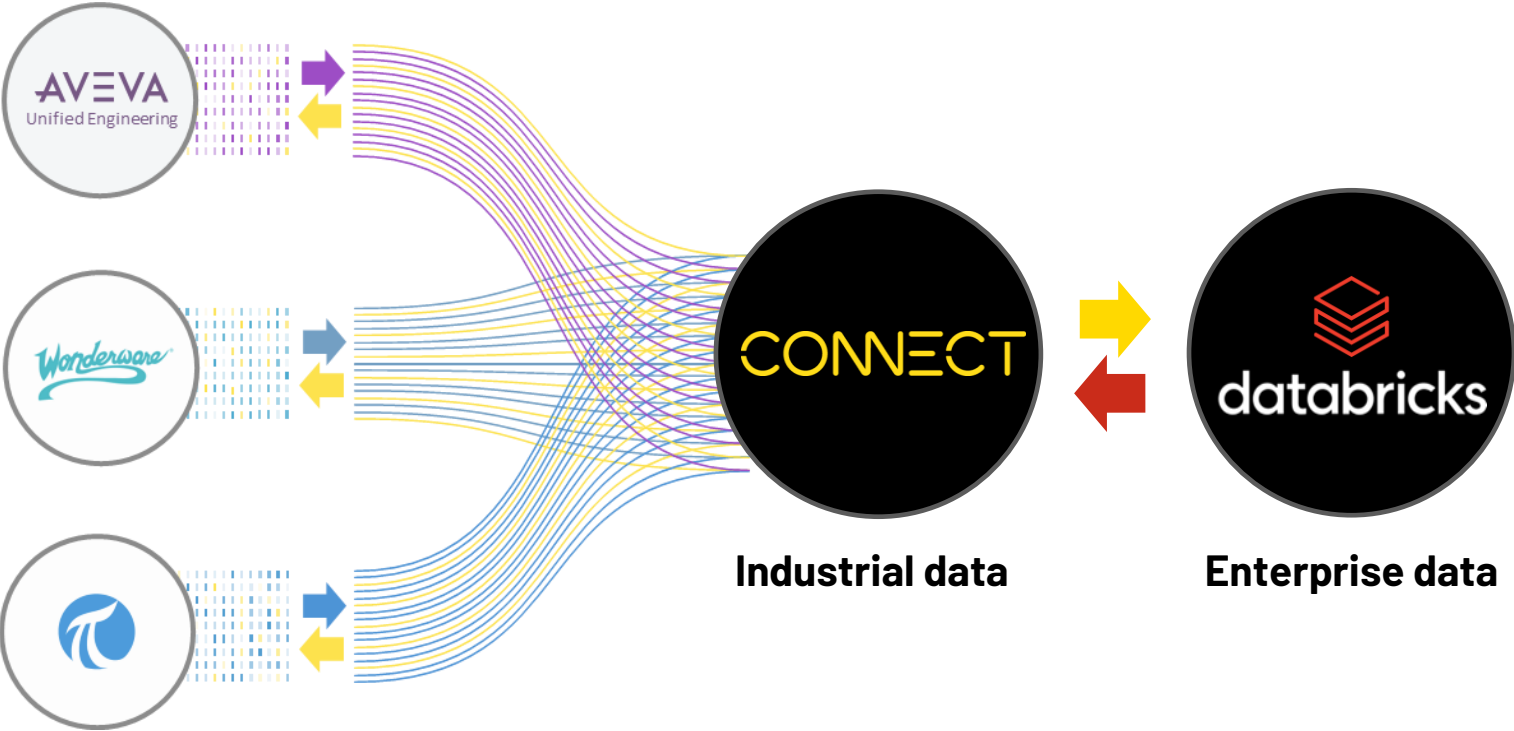
**CONNECT**

# CONNECT + Databricks

Unified data for a smarter, sustainable future



# OT – IT Convergence



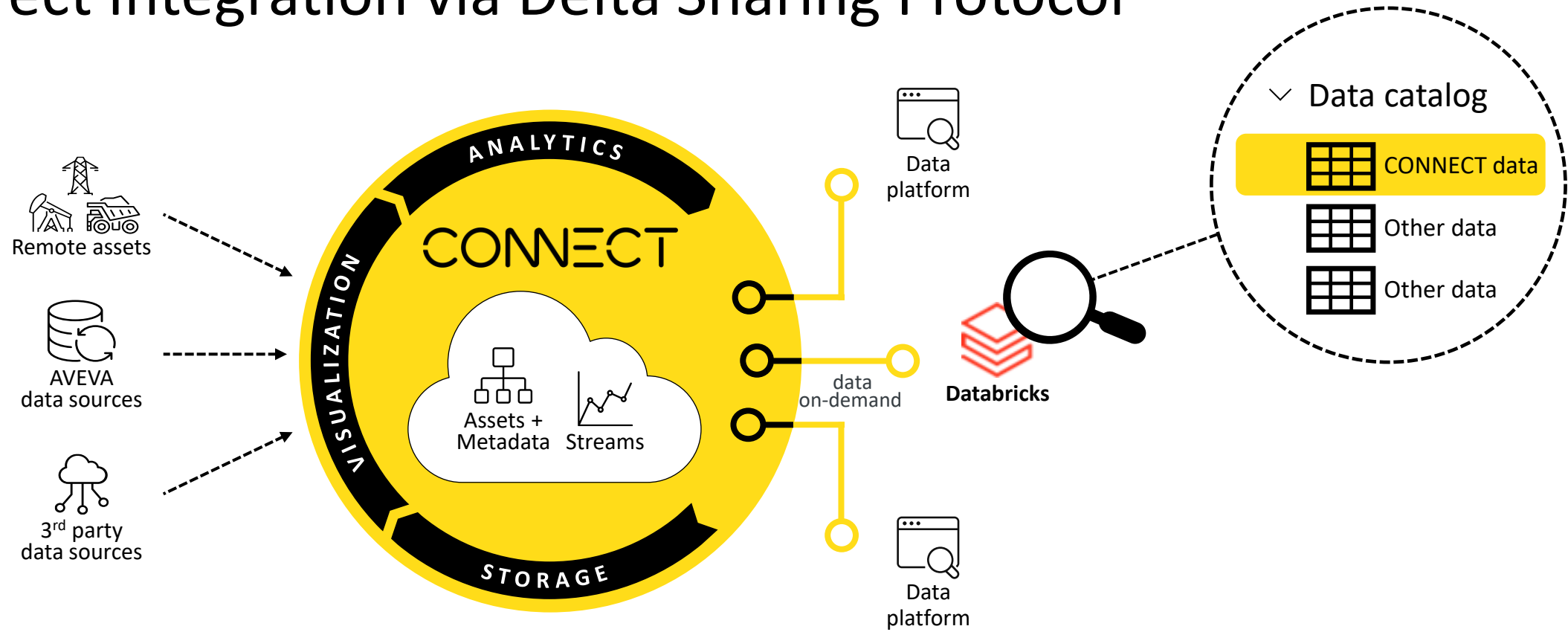
**Data scientist**

```
# query data from data services data view
#
# Specify an initial set of parameters to query the data view
startIndex = str(date.today())
endIndex = str(date.today())
interval = "00:01:00"
count = 250000
form = "json"
dataView = "All Wind Turbines"

# generate the URL for the data view query
try:
    result2 = client.DataViews.getDataInterpolated(namespace_id, dataView, count, form, startIndex, endIndex, interval)
except Exception as e:
    print(e)
```



# Direct Integration via Delta Sharing Protocol



## DATA INTEGRITY

Make more informed decisions with near real-time, accurate data

## NATIVE CONTEXTUALIZATION

Save interpretation time with ready-to-consume data

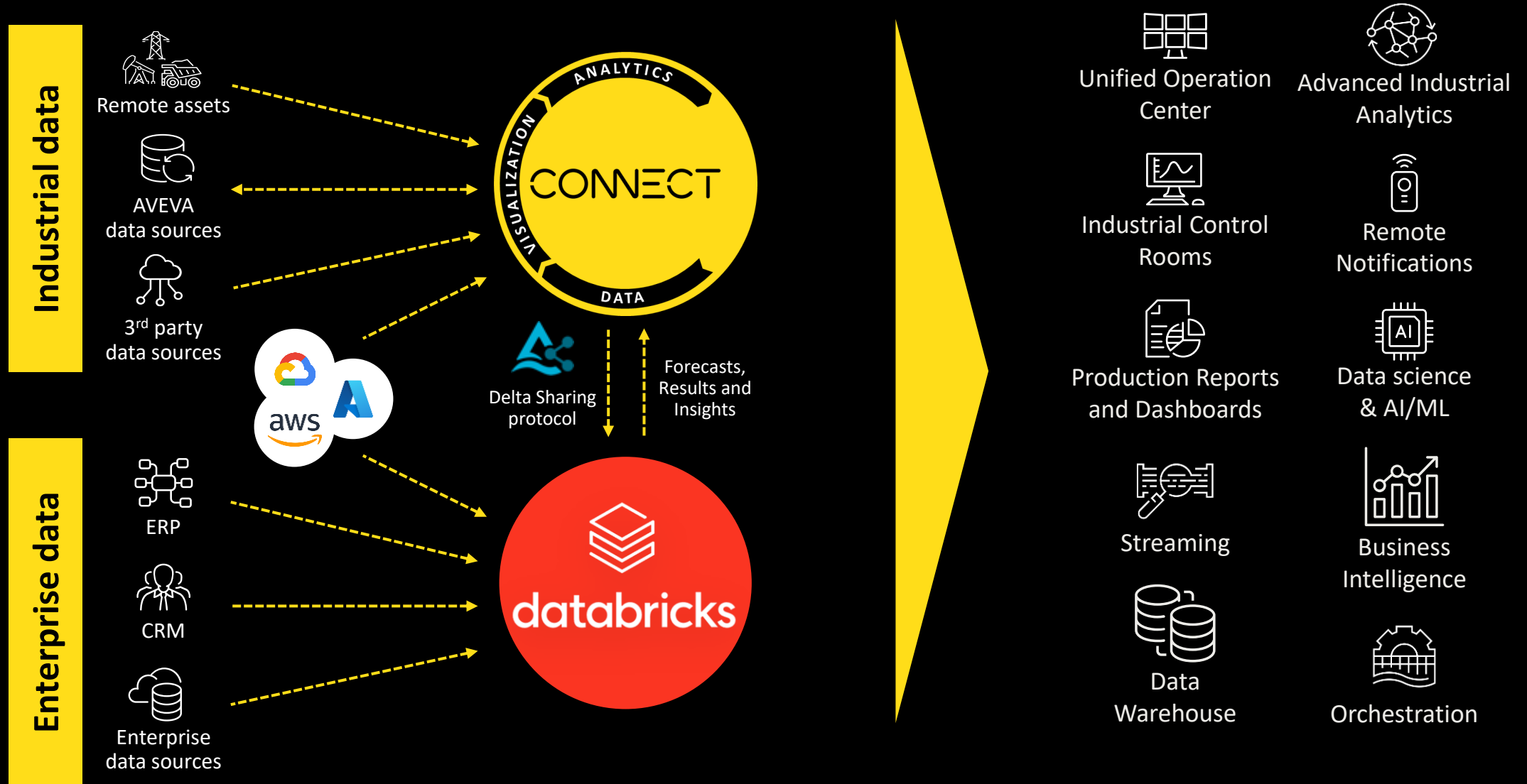
## STORAGE EFFICIENCY

Reduce costs by eliminating duplicated datasets

## STREAMLINED DEPLOYMENT

Out-of-the-box integration, no technical debt left behind

# New Use Cases, New User Personas



# Existing Lighthouse Program Engagements

## Customers already utilizing Virtual Tables



### Mobile Fleet

Fuel Efficiency & Maintenance  
Reduction

Reduced Data preparation  
time from weeks into days



### Manufacturing

Identifying performance issues with  
critical equipment

Simplified Integration, lowering  
IT expenditure and resources



### Renewable Energy

Forecasting the environmental  
impact of Battery Storage solution

Accelerated path to value by  
reducing implementation  
time through a solution that  
will scale with their roll-out



### Oil & Gas

Well head Production optimization  
and Asset health

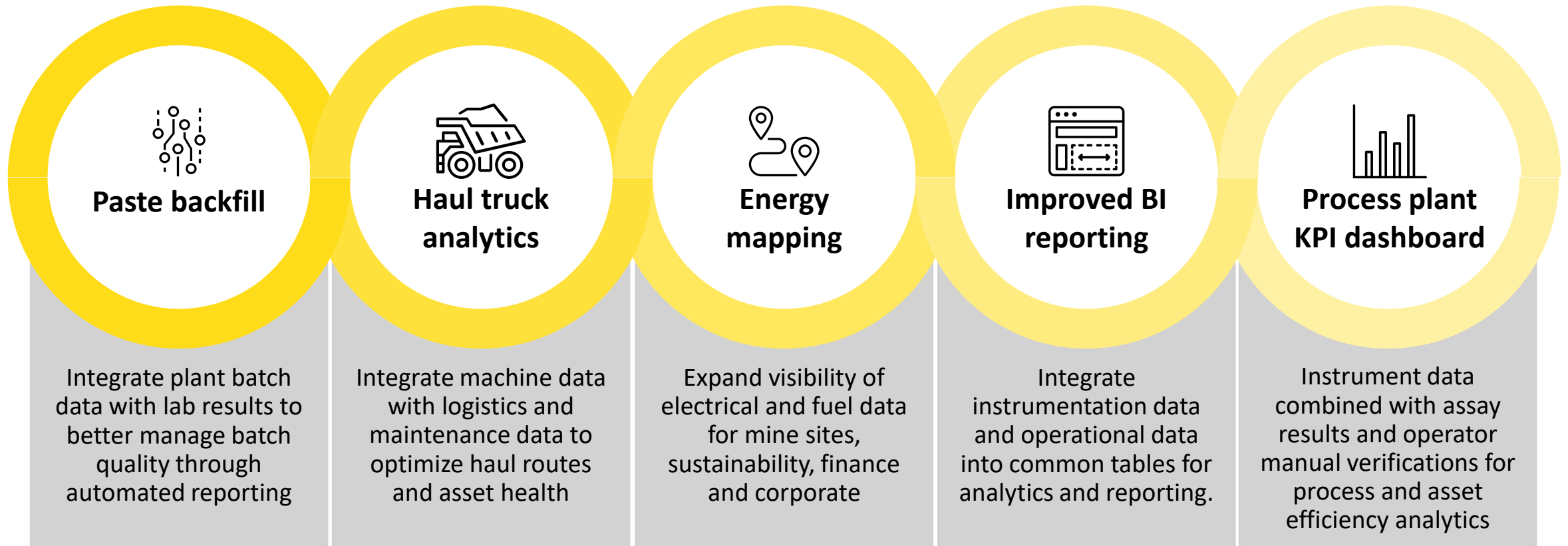
Replace existing PI-based  
integration, reducing  
performance concerns and  
allowing Data Scientists to  
directly control their data sets



# Mining Company

# Analytical projects overview

AVEVA and Databricks integration using CONNECT data services will lower the technical knowledge barriers



# Business challenge and opportunity

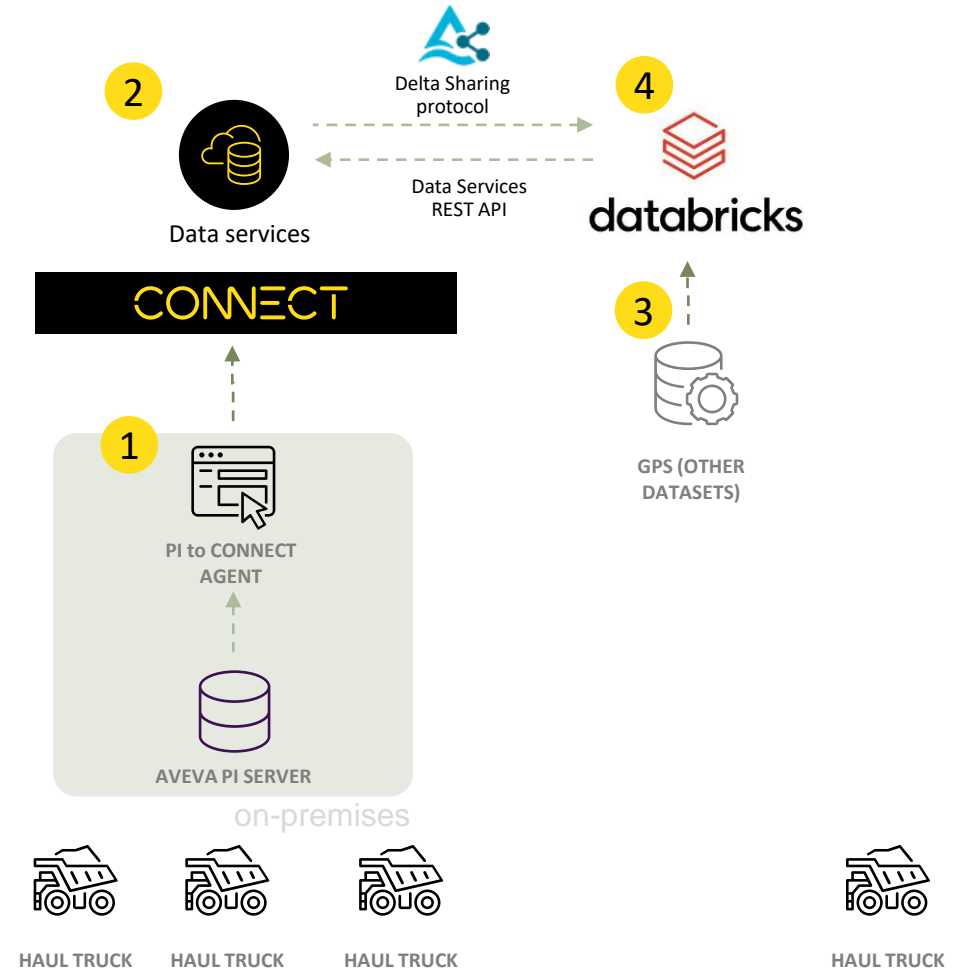
- Many analytics opportunities are limited by data access challenges
- Increase availability of production haul trucks
- Reduce energy intensity and CO2 emissions
- Optimize route/haul road



# Lighthouse architecture

## Data flow

1. Configure dataset transfer
2. Configure data view and virtual table
3. 3rd party and related datasets  
- including GPS truck data
4. Analyze combined datasets in databricks
  - (optional) write data back to CONNECT





## MINING, METALS & MINERAL

# Integrating CONNECT data services and Databricks to improve haul truck analytics

### Challenge

- Lack of integration between data sets limits the opportunity for haul truck analytics related to asset health, operator performance and lowering emissions.
- Secure data integration needs to be easier and faster.
- Creating a scalable data infrastructure across OT and IT is an enabler.

### Solution

- Deploy an end-to-end solution, from operational data using AVEVA PI System to the cloud via CONNECT data services, efficiently enabling use cases within Databricks.

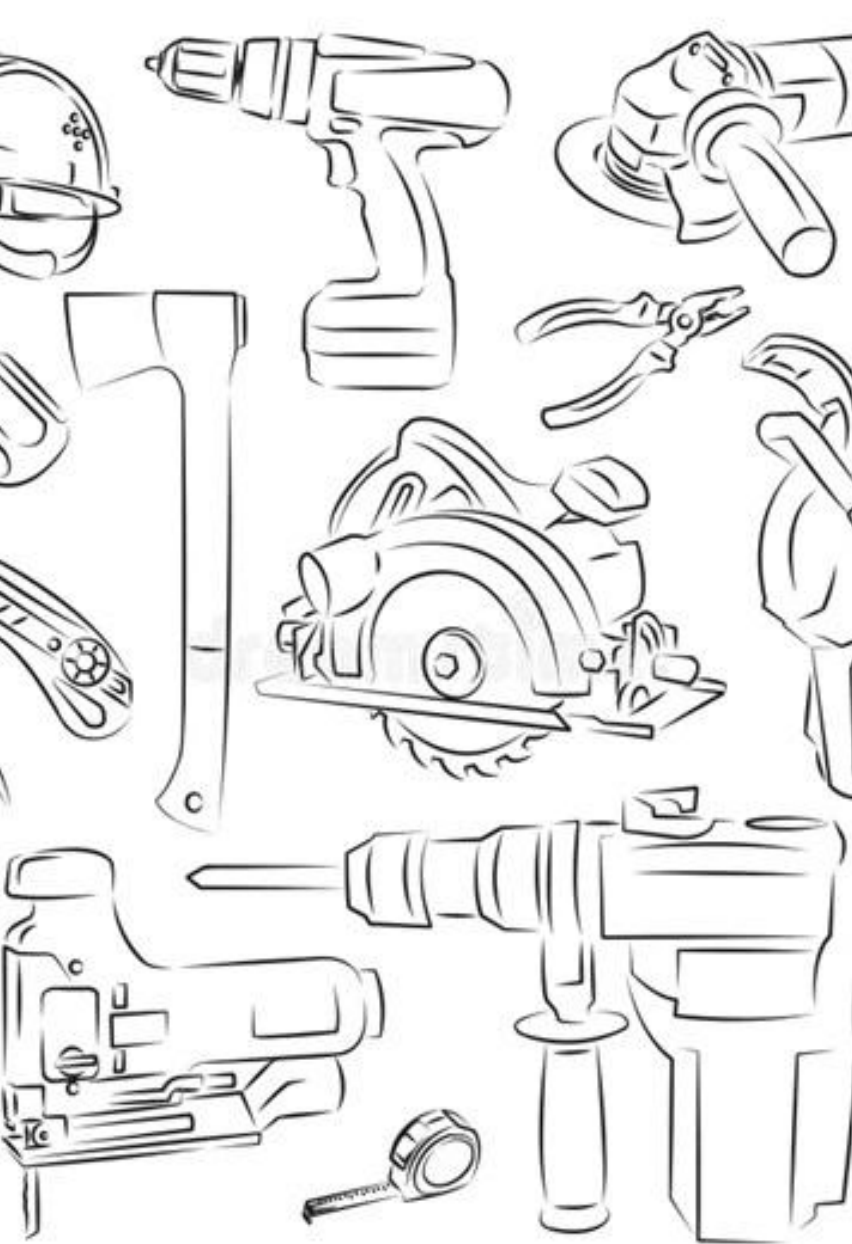
### Results

- Framework to operationalize solutions involving time series data and other relational data sets.
- Internal development of analytical and predictive models that will scale to multiple sites.
- Potential for 3% truck efficiency and 1% operator lower costs with improved asset health and lower carbon emissions.

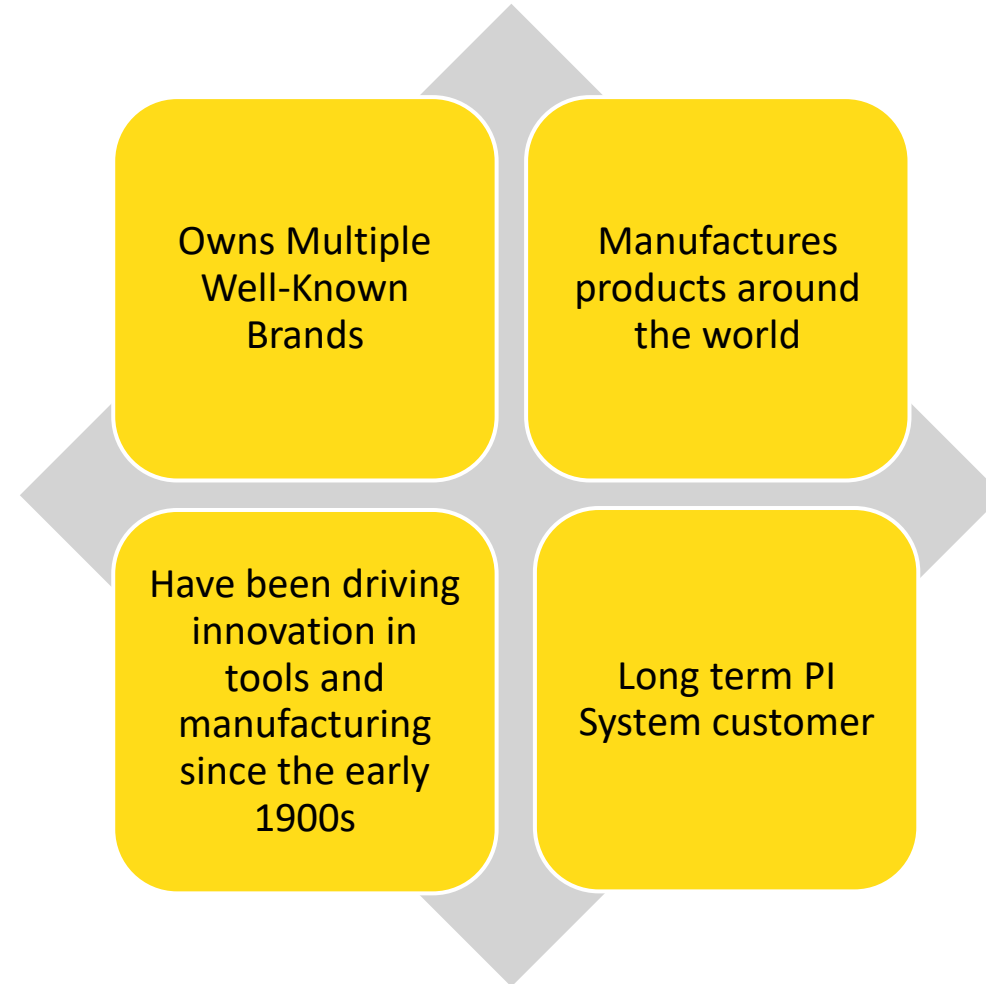


*“ Leveraging CONNECT data services to seamlessly query time series data in the Databricks environment will open the door to many use cases where disparate data sets exist ”*

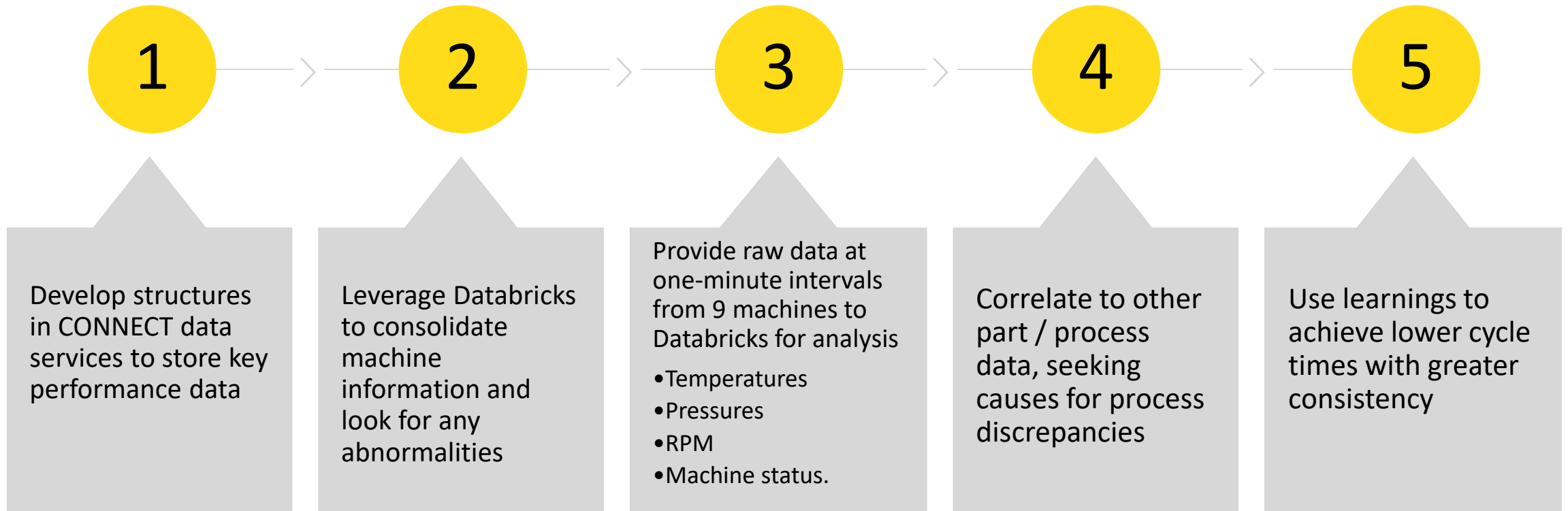
Leading power tool  
manufacturer



# Multinational Tool Manufacturer



# Project Overview





# Business Challenge

Reduce effort and IT services necessary to drive data integration between historical data storage and Databricks. Intended outcomes:



Improvement of cycle time for low performing equipment by **25%**



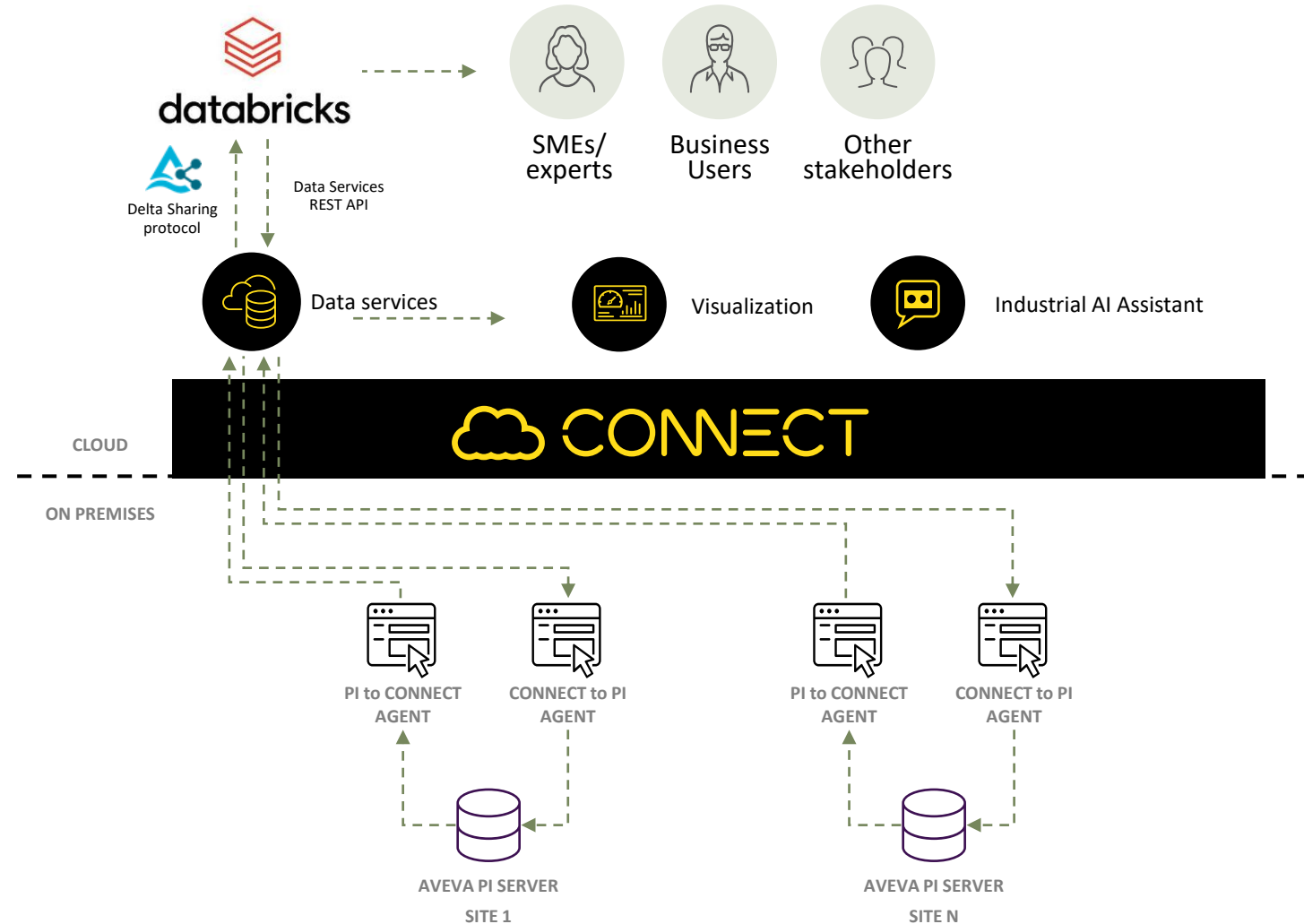
Improvement of cycle time repeatability to **+/- 5%** from machine to machine



Reduction of time needed to analyze and diagnose machine problems by **50%**

# Lighthouse Architecture & Integration Benefits

- Fast Integration – 3 weeks
  - Data views
  - Virtual table
  - Analysis in Databricks
- No custom data pipeline necessary



# Consolidating and sharing machine data with Databricks for troubleshooting and optimization

## Challenge

- Securely stream near-real-time equipment data from PI System to CONNECT and Databricks, reducing cycle time by 25% on underperforming equipment and improving repeatability to  $\pm 5\%$  across machines.
- Multiple factors influence the coating process, with data stored in PI systems and other sources essential for analytics. A central repository is needed for integration.

## Solution

- CONNECT is used as a central cloud-based repository for process data. It provides a source of this data to Databricks and CONNECT visualization services.

## Results

- **CONNECT serves as a central hub for process data, delivering it to Databricks for integration with other system data, reducing data curation time by 50%.**
- **Framework for multiple use cases and multiple data sources.**



# Q&A

# CONNECT



# databricks

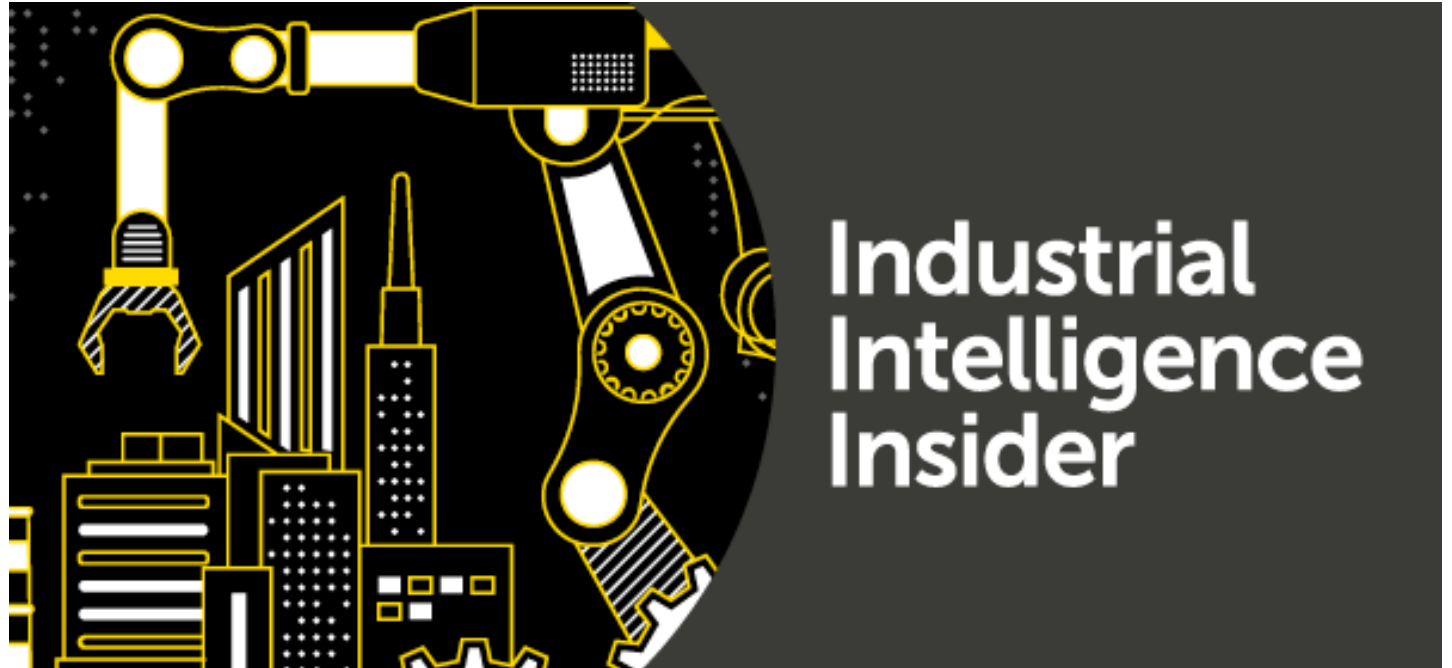


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- Event details
- And more!



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