OCTOBER 24 2023

# Unlocking the Power of Curiosity with IOTA Vue

## Revolutionizing Data Visualization for Cost-Efficient Knowledge Pursuit

Petter Moree & Sasha Jones

# Chapter I: What brought us here?

Unlocking the Power of Curiosity

# 1400 BC Spreadsheet Tablet, Iraq Nippur

# 1700 BC Vitlyckehällen, Bohus, Sweden

# 300 BC Painting - Proof of the Pythagorean Theorem (Euclid)

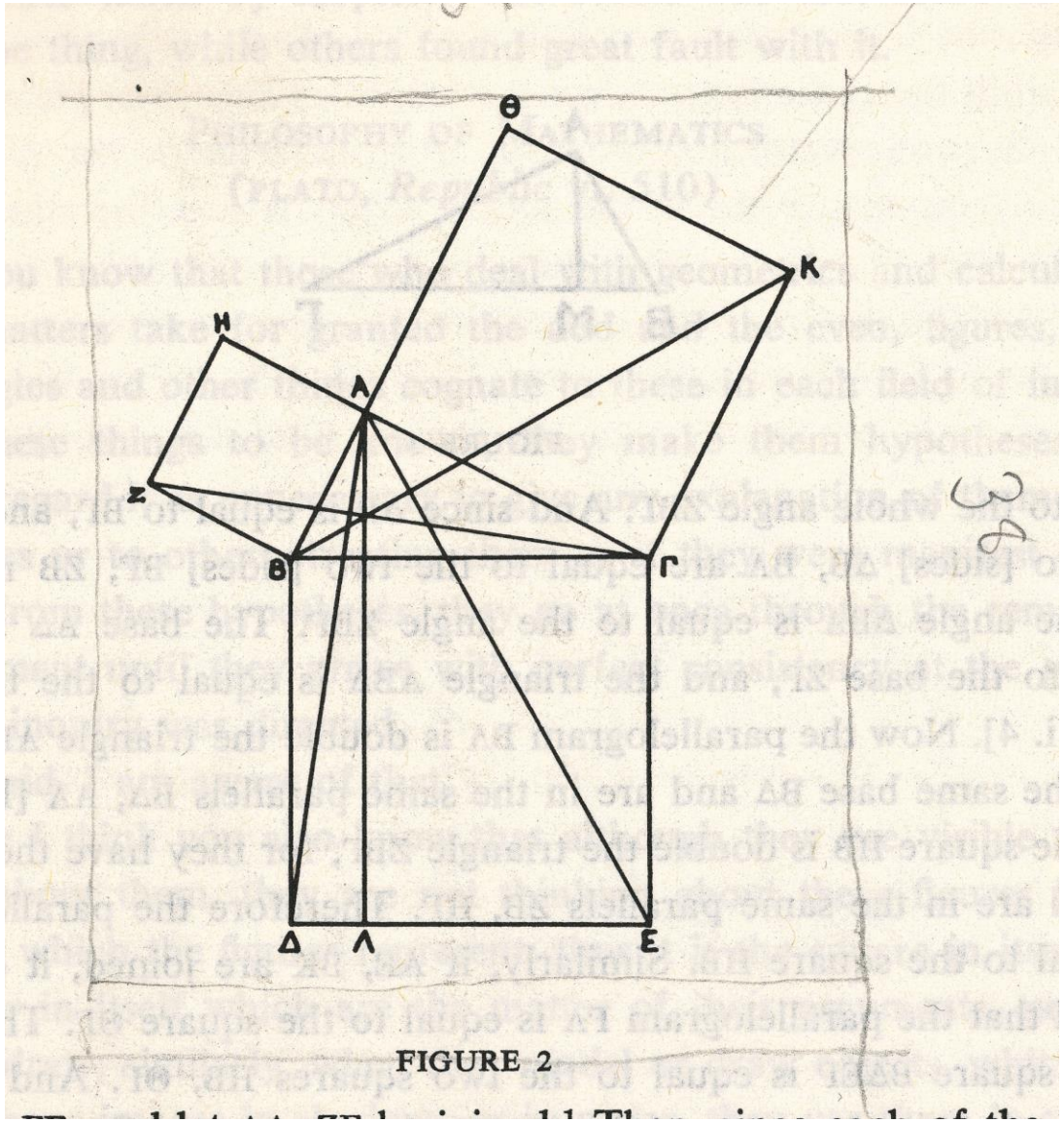
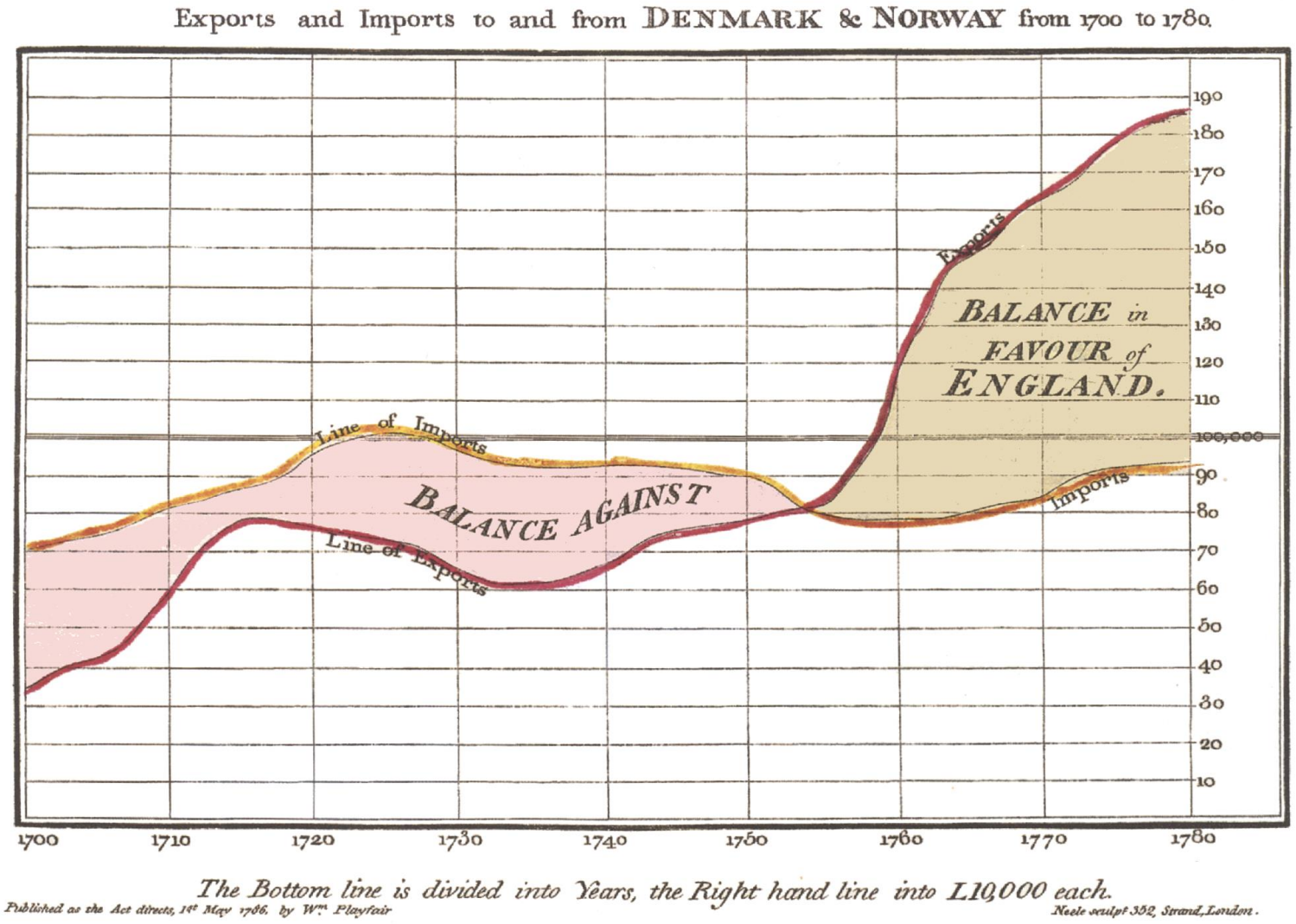


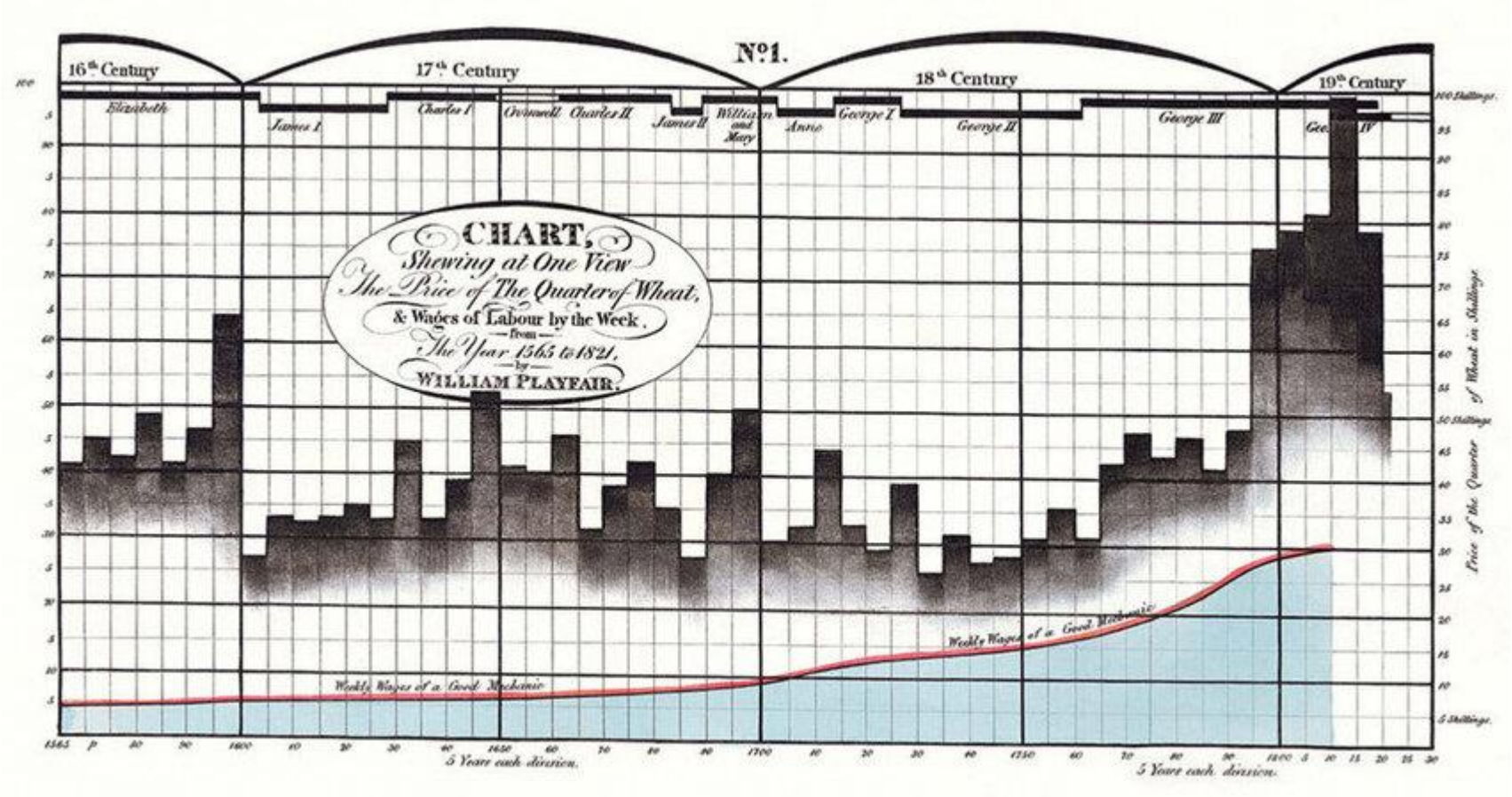

FIGURE 2

# 1500 data **table** Exchequer of Ireland

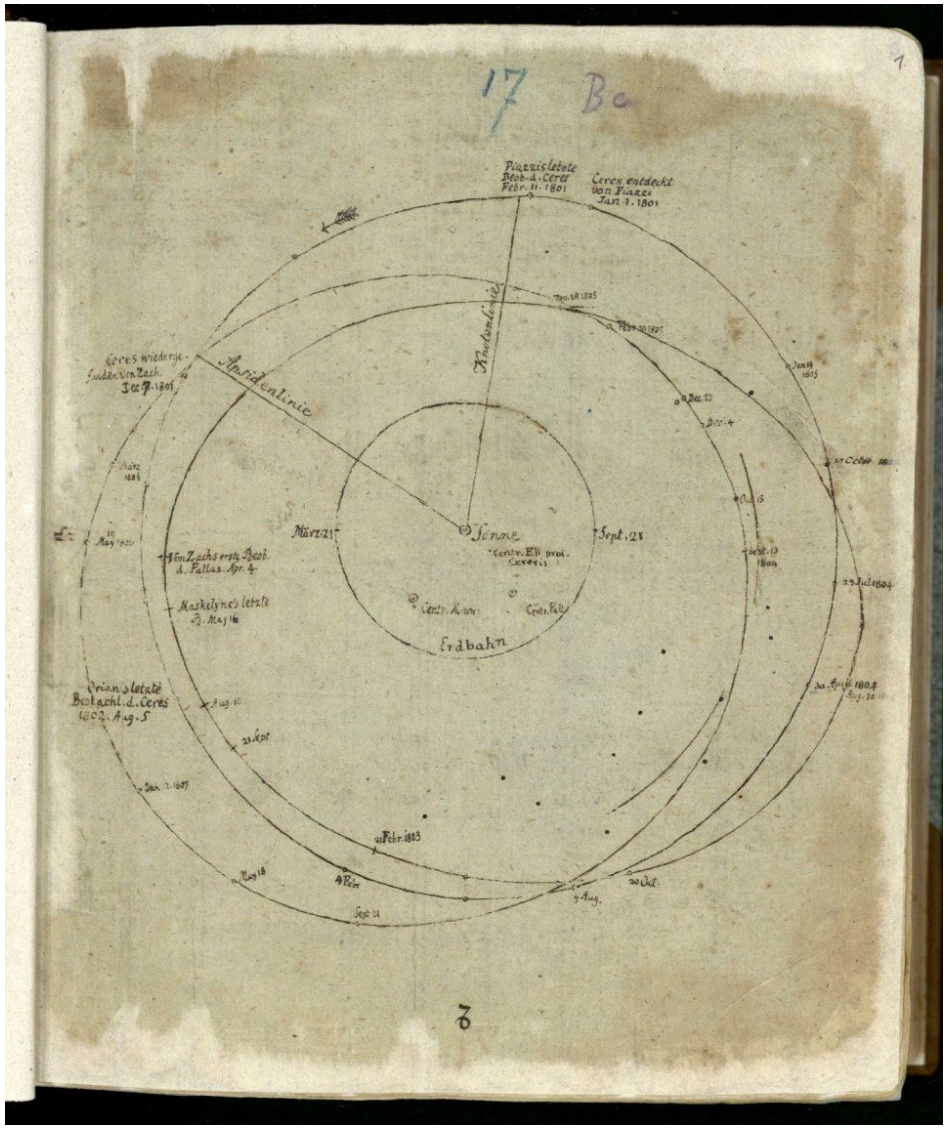
# 1786 W. Playfair – trading in Nordics



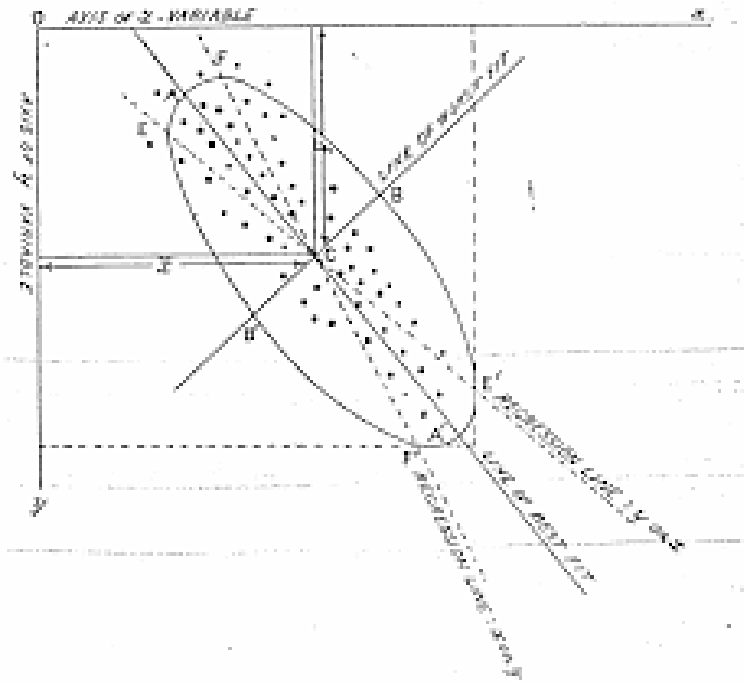
# 1821 W. Playfair – Price of Wheat



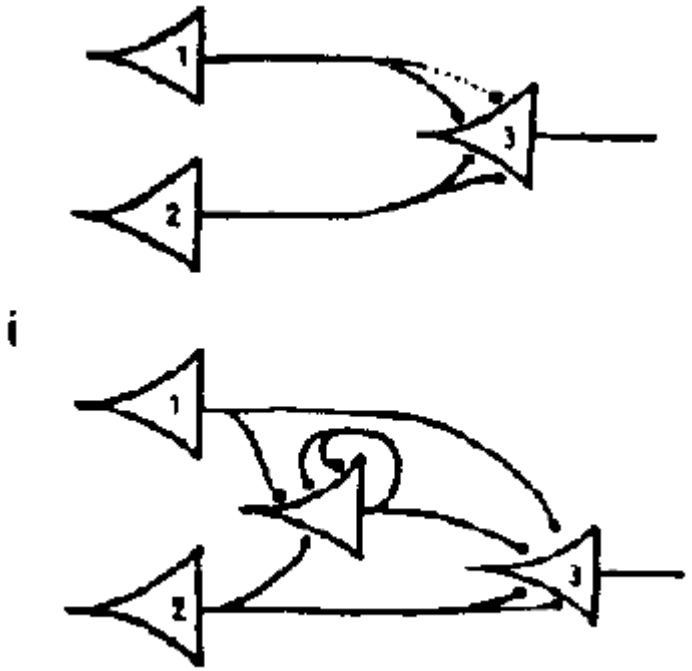
# 1822 Gauss Least Squares



# 1901 K. Pearson – PCA (Principal Component Analysis)



# 1943 W. McCulloch & W. Pitts– ANN (Artificial Neural Nets)



# 1966 H. & S Wold – PLS (Partial Least Squares)

**Algorithm 3** NIPALS algorithm

**Input:** $E_0 = X$

**Output:** $P = [p_1, \ldots, p_H], T = [t_1, \ldots, t_H]$

for all $h = 1, \ldots, H$ do

Step 0: Initialize $t_h$

Step 1:

repeat

Step 1.1: $p_h = E_{h-1}' t_h / (t_h' t_h)$

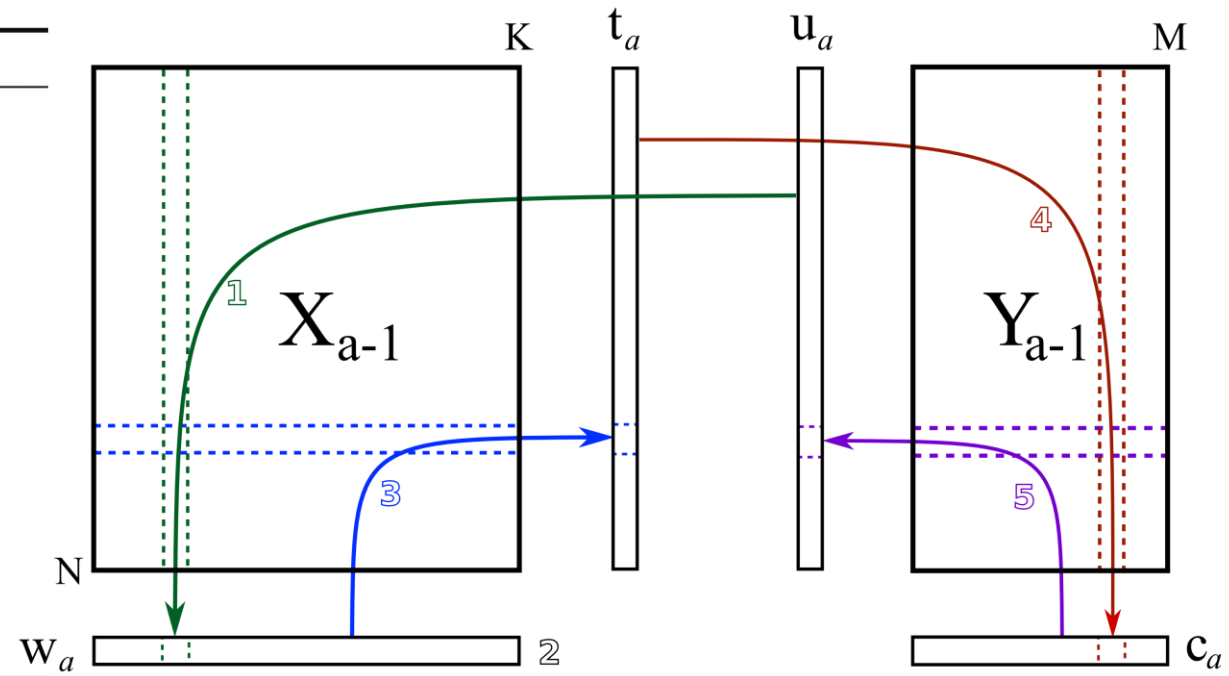
Step 1.2: $p_h = p_h / \|p_h\|$

Step 1.3: $t_h = E_{h-1} p_h / (p_h' p_h)$

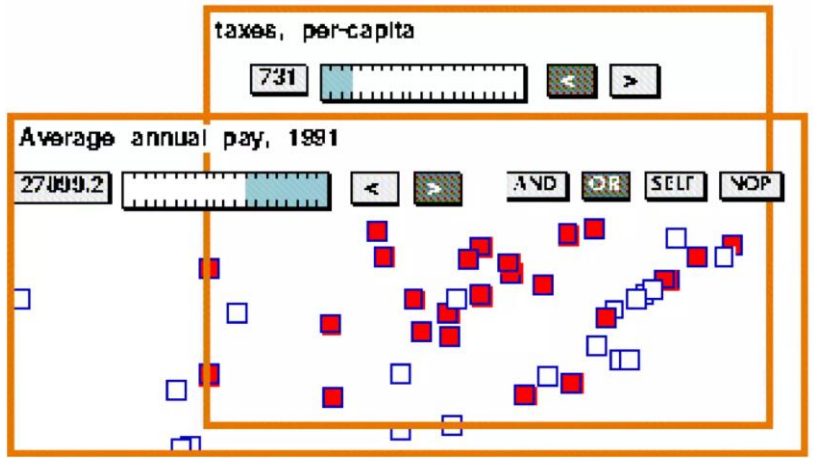
until convergence of $p_h$

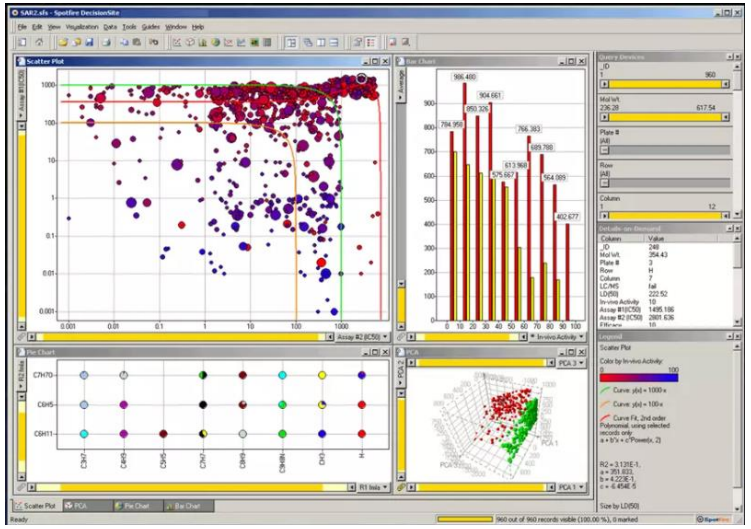
Step 2: $E_h = E_{h-1} - t_h p_h'$

end for



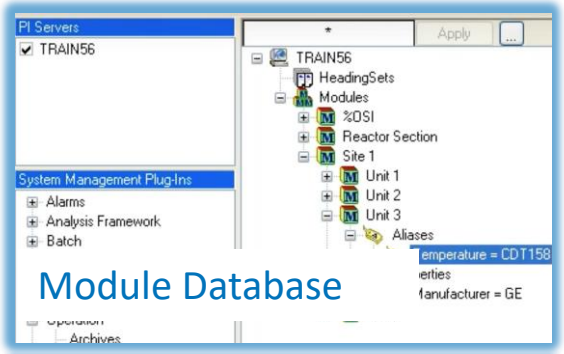
# 1996 C. Ahlberg – Spotfire

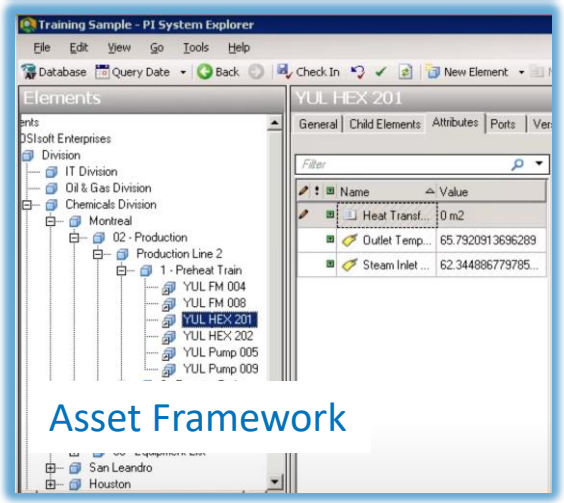


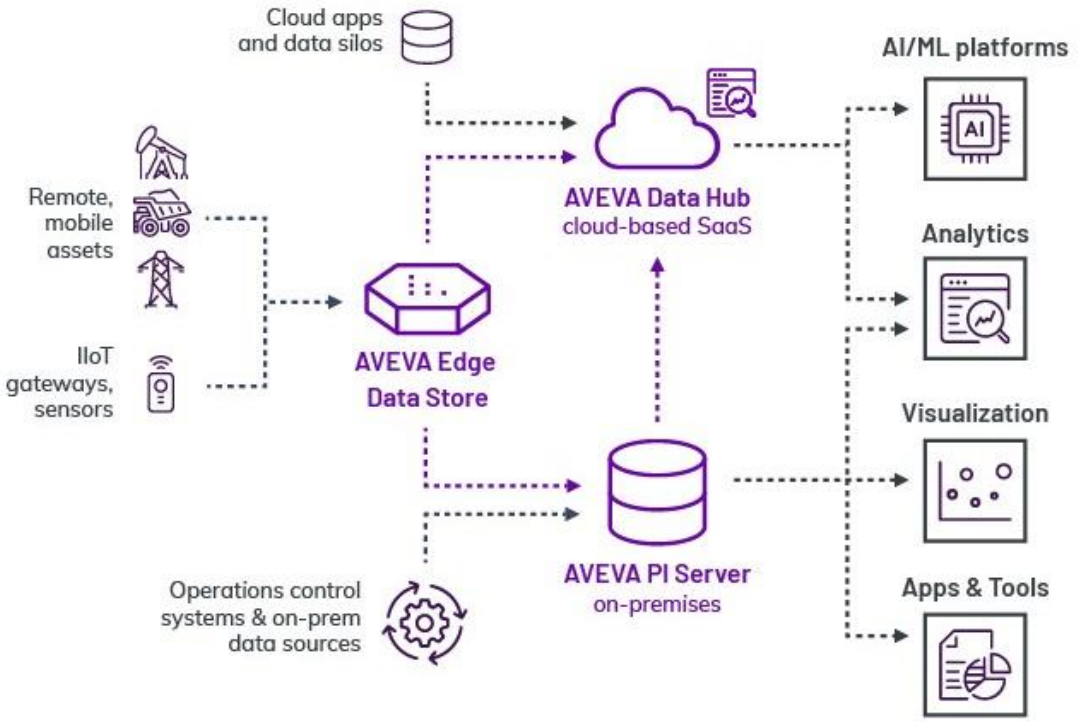



# 1980 J. P. Kennedy – Plant Information (PI) System

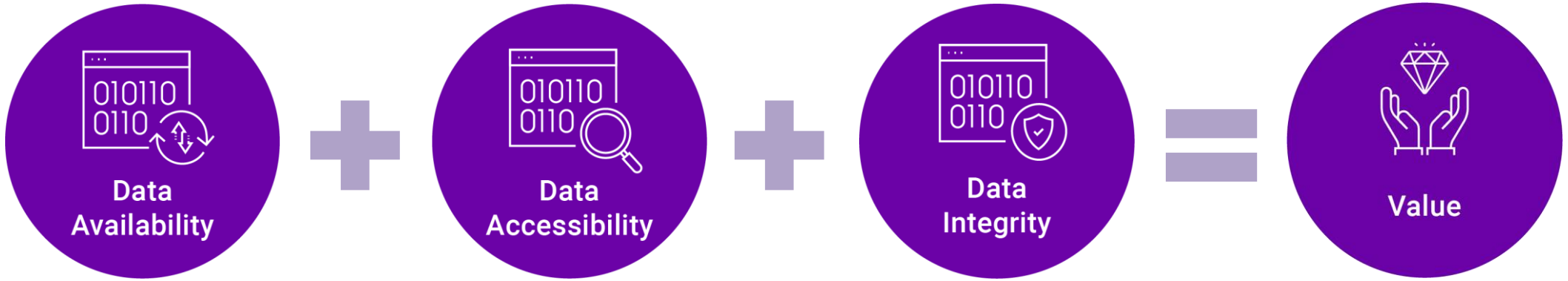
”Data is unique because it is one of the few resources that becomes more valuable the more people consume it”



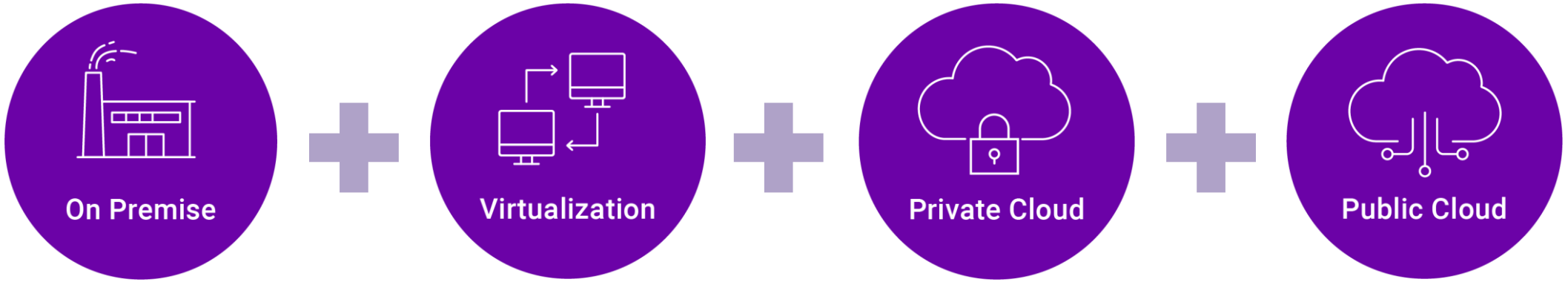



# The fundament

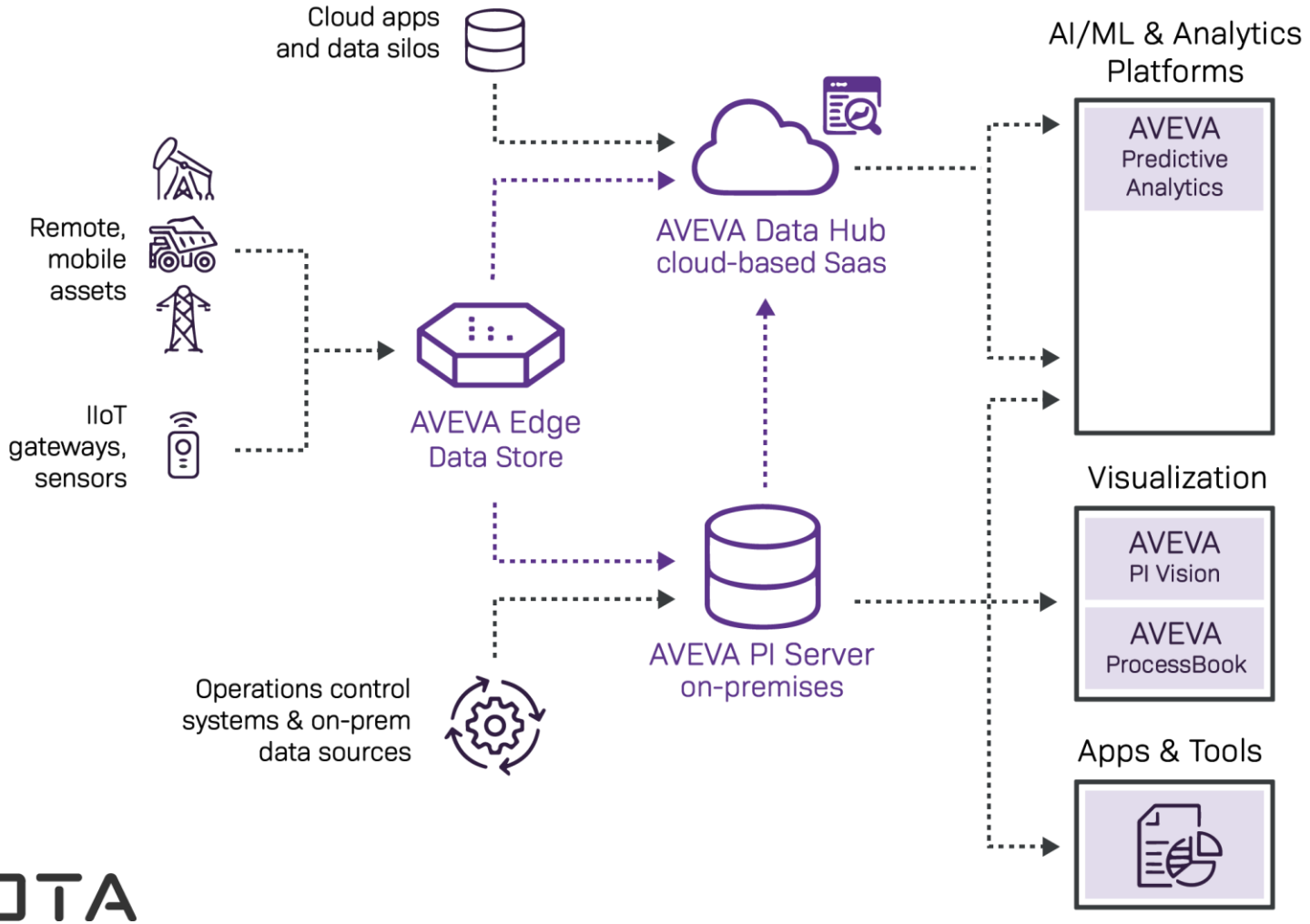


# Technology

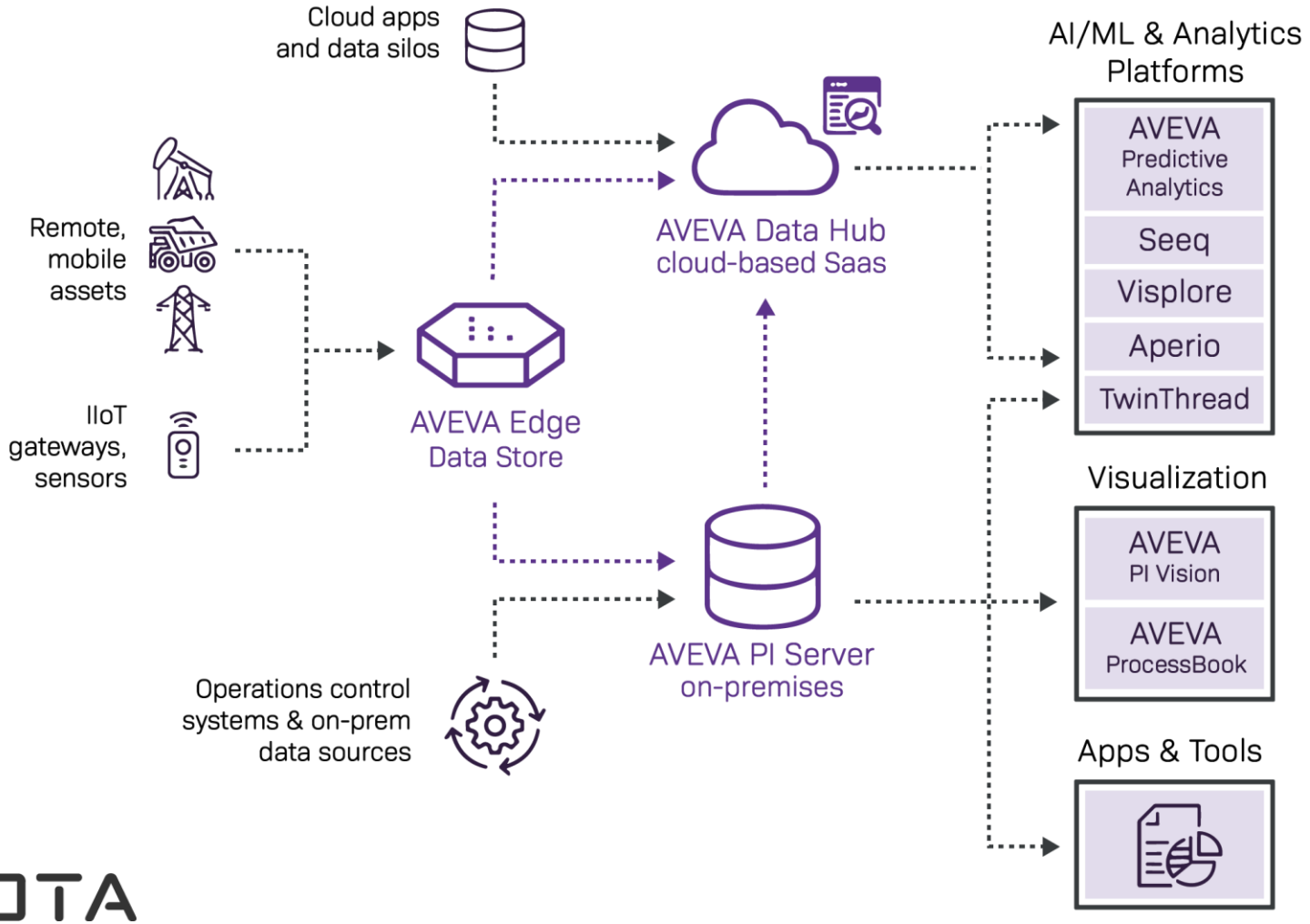
## Hybrid environments



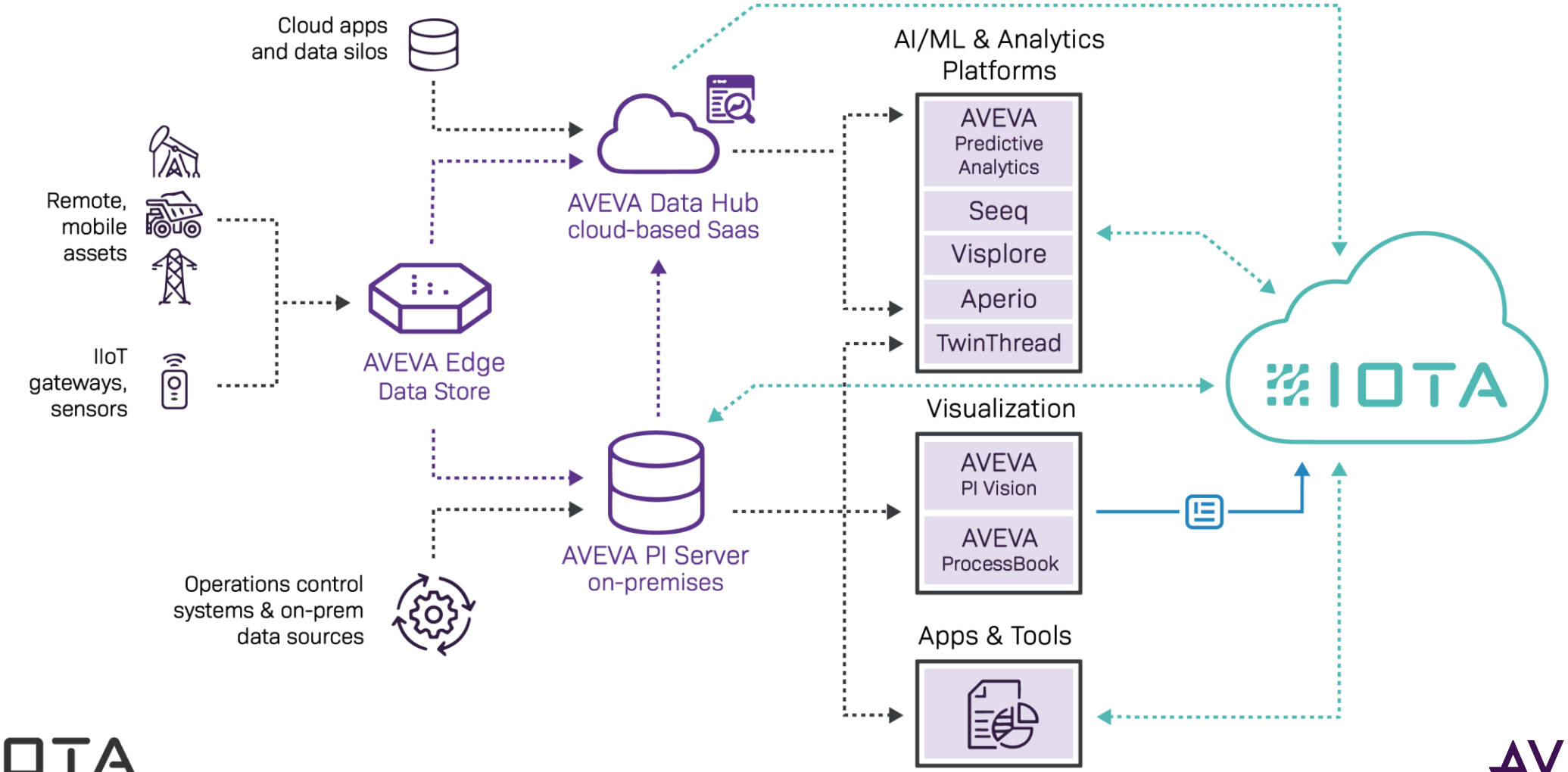
# IOTA Vue and the AVEVA PI System



# IOTA Vue and the AVEVA PI System



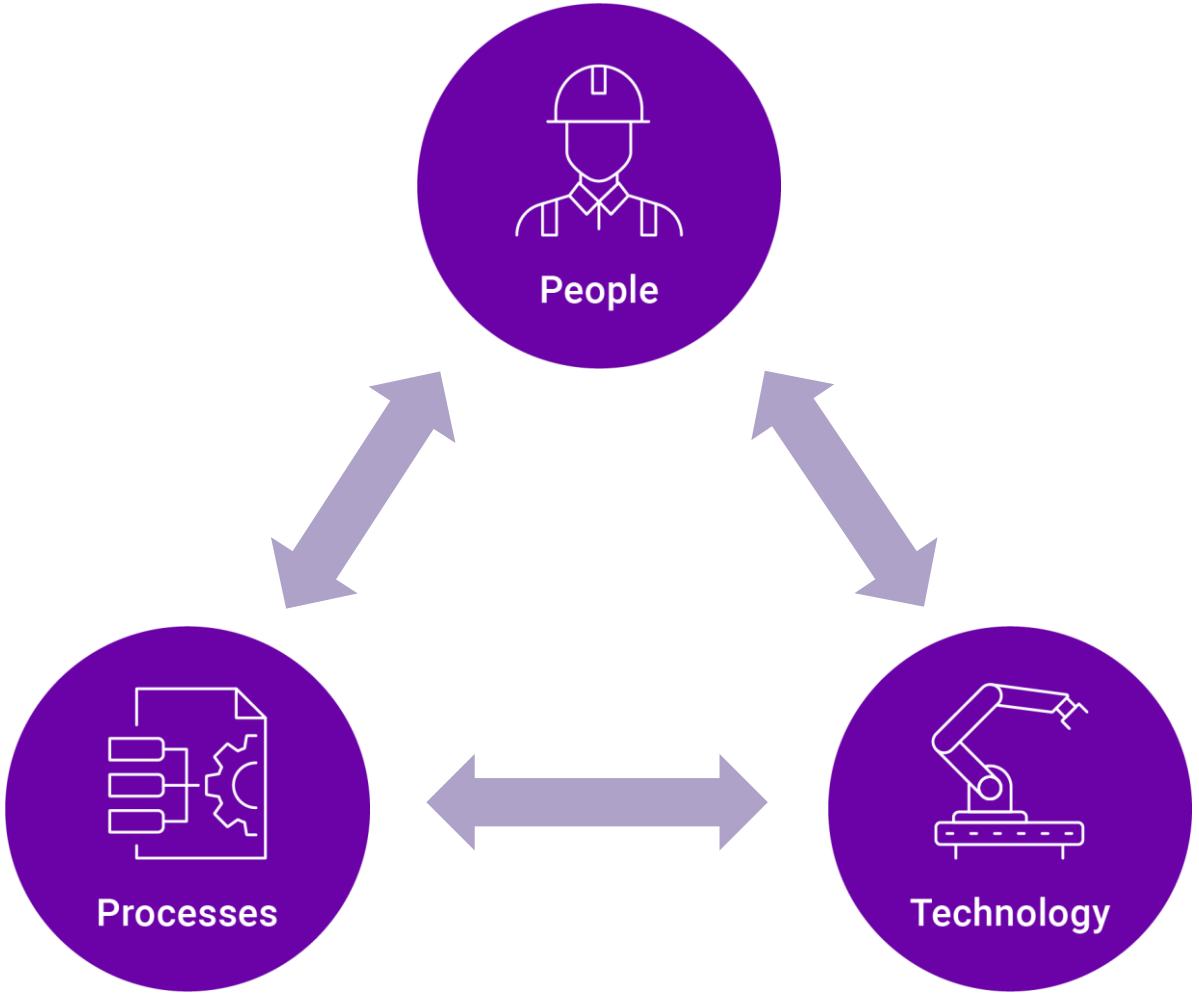
# IOTA Vue and AVEVA PI Data Infrastructure




IOTA

AVEVA

# People – Technology – Processes



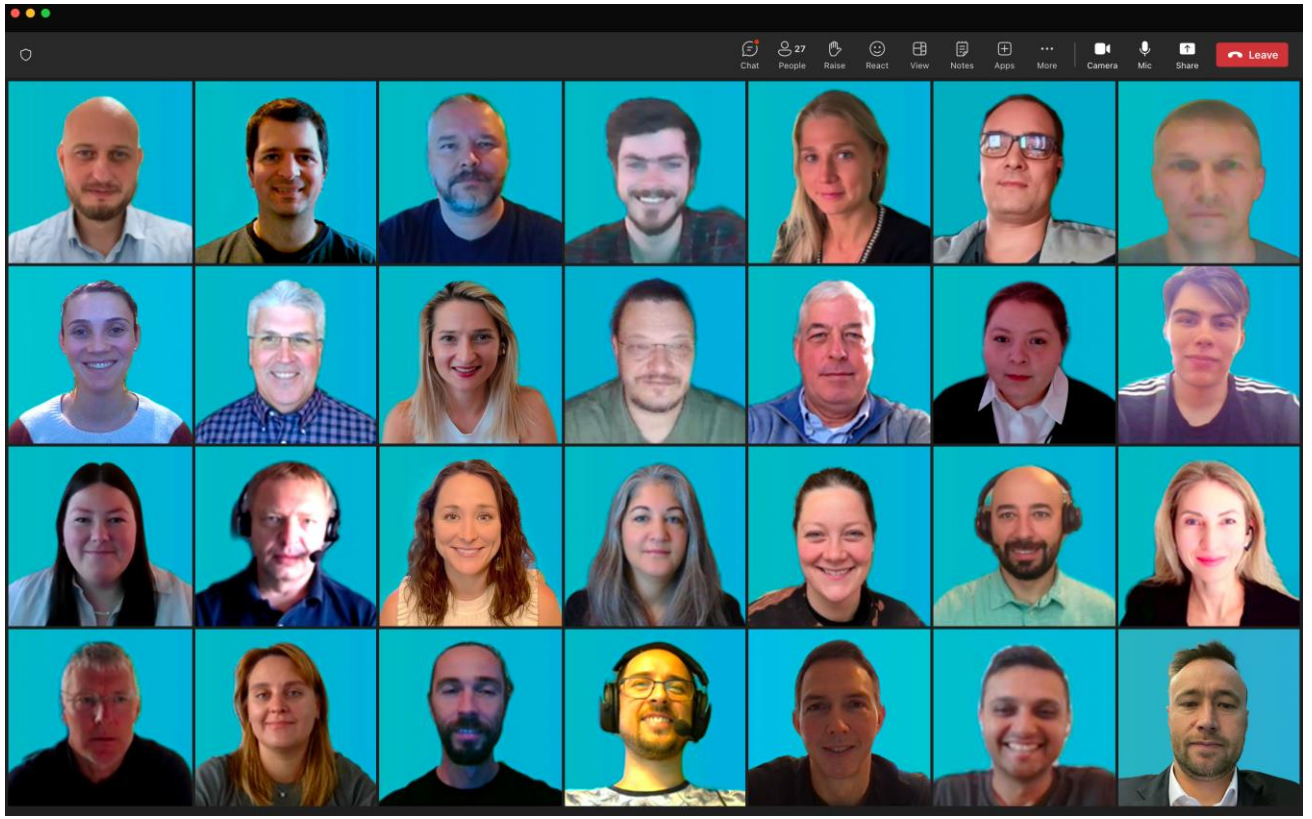
# People of IOTA

## Hundreds of man years of relevant experience

- Across Industries
- Data, Analytics and Visualization Technologies

## Team of leaders and experts from:

- OSIsoft and AVEVA
- Seeq
- SAP
- Umetrics



# Chapter II: From curiosity to discovery

# Pathway to discovery

**Explorer**

**Initiative**

**Executive Support**

**New Environments**

**SME Tools of Choice**

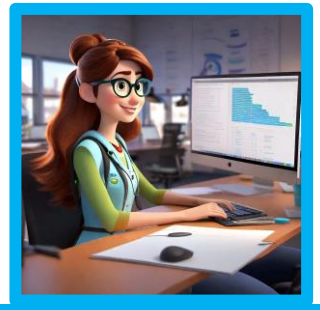
**Enabling Platform**

**Discovery!**

**Adoption**

# Pathway to discovery

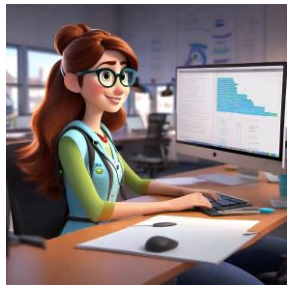
**Explorer**



- Process engineer
- Data analyst
- Data scientist
- Shift supervisor
- Maintenance engineer
- Operations manager
- Mechanical engineer
- Colleague
- Intern
- Your manager
- Your team member
- You

# Pathway to discovery

**Explorer** **Initiative**

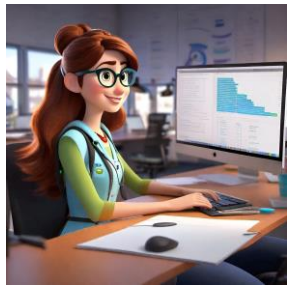


- Sustainability
- Asset Optimization
- Energy Optimization
- Maintenance Strategy
- Cost reduction
- Operational Efficiency

- Health and Safety
- Market Expansion
- Production Optimization
- Digital twin
- Assets of the Future
- Supply Chain Optimization

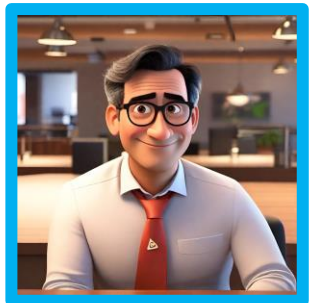
# Pathway to discovery

**Explorer**



**Initiative**

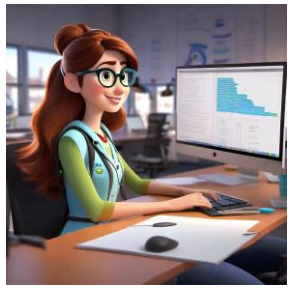
**Executive Support**



- Strategic alignment
- Budget and resources
- Timeline

# Pathway to discovery

**Explorer**



**Initiative**

**Executive Support**

**New Environments**

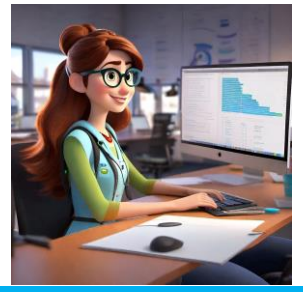
- New for user or new for organization
- Exploring beyond the limits of a single system
- Technology landscape defined by the Digital transformation strategy
  - Data centralization vs distributed approach
  - Synchronization of systems and controls
  - Security and data governance


IOTA

AVEVA

# Pathway to discovery

**Explorer**



**Initiative**

**Executive Support**

**New Environments**

**SME Tools of Choice**

- Geospatial view
- Process Visualization
- Data Science environment
- BI dashboards
- 2D/3D

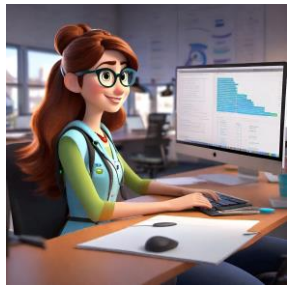
- Excel spreadsheets
- Analytics and calculations applications
- Mobile, remote, collaborative
- Ad-hoc or pre-configured

IOTA

AVEVA

# Pathway to discovery

**Explorer**



**Initiative**

**Executive Support**

**New Environments**

**SME Tools of Choice**

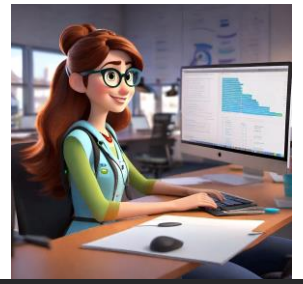
**Enabling Platform**


Future proof technology

- Data Availability – work natively with on-premise, private and public cloud data infrastructures – AVEVA PI Server, AVEVA Data Hub, Snowflake, Azure, Google Cloud platform, AWS, SQL-based and other data sources
- Data Accessibility – provides self-service access to any data of any type (tags, assets, events, batches and data tables) from any device
- Data Integrity - connect directly to the source providing trustworthy data to end users

# Pathway to discovery

**Explorer**



**Initiative**

**Executive Support**

**New Environments**

**SME Tools of Choice**

**Enabling Platform**


**Discovery!**

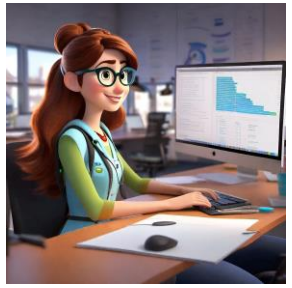



IOTA

AVEVA

# Pathway to discovery

**Explorer**



**Initiative**

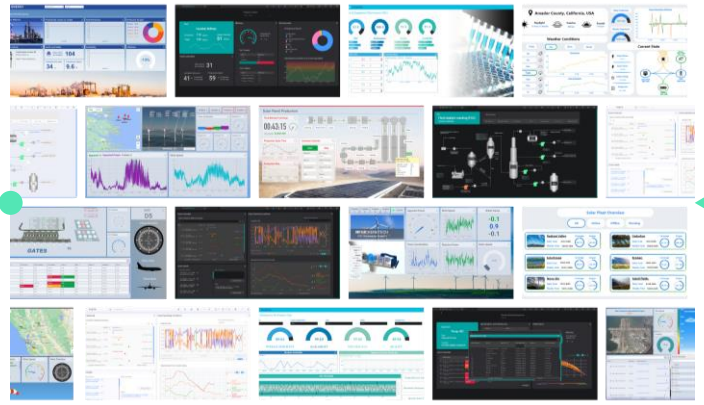
**Executive Support**

**New Environments**

**SME Tools of Choice**

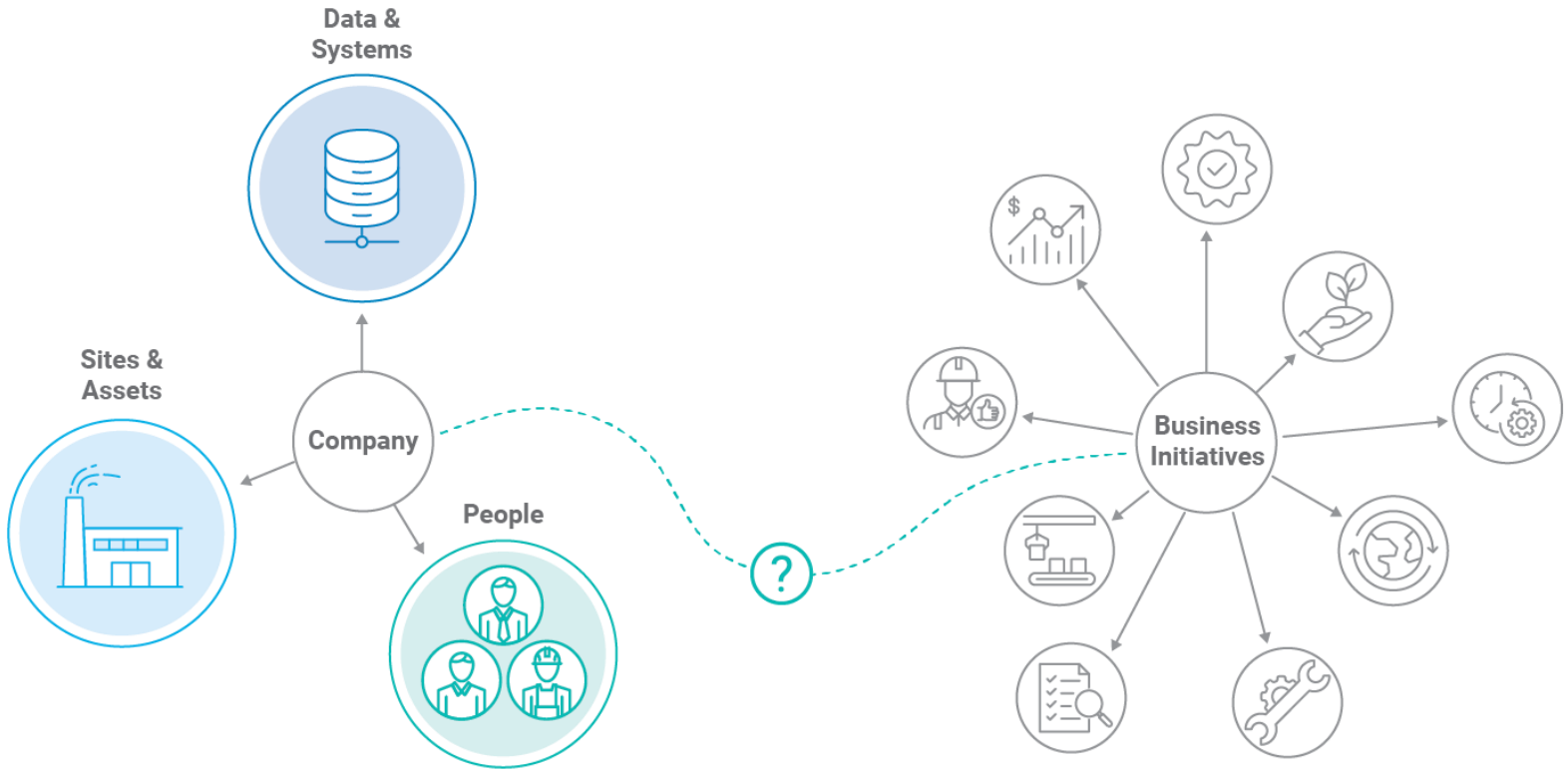
**Enabling Platform**


**Discovery!**

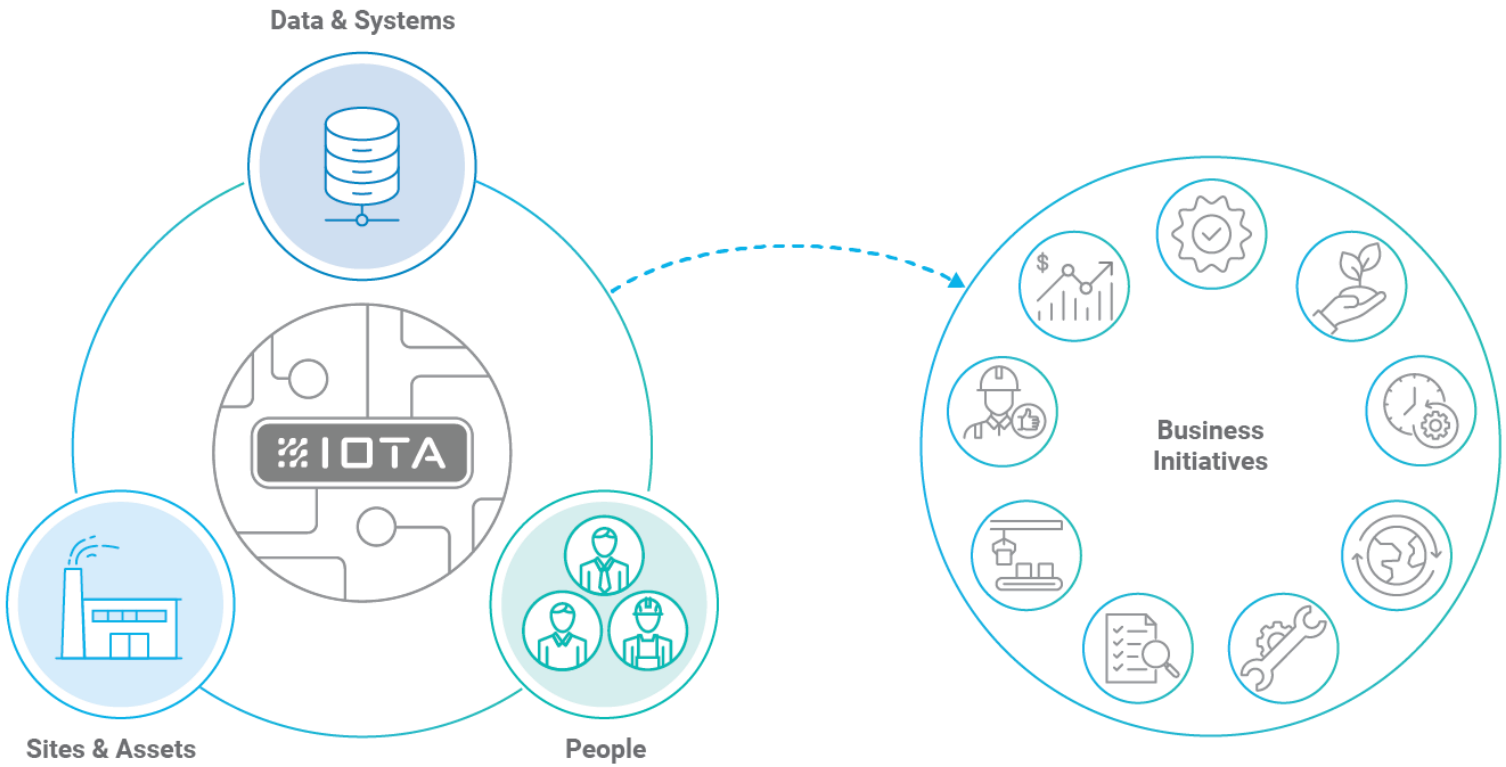



**Adoption**

# Common Landscape



# Enabling Explorers for better discoveries



# Sasha Jones

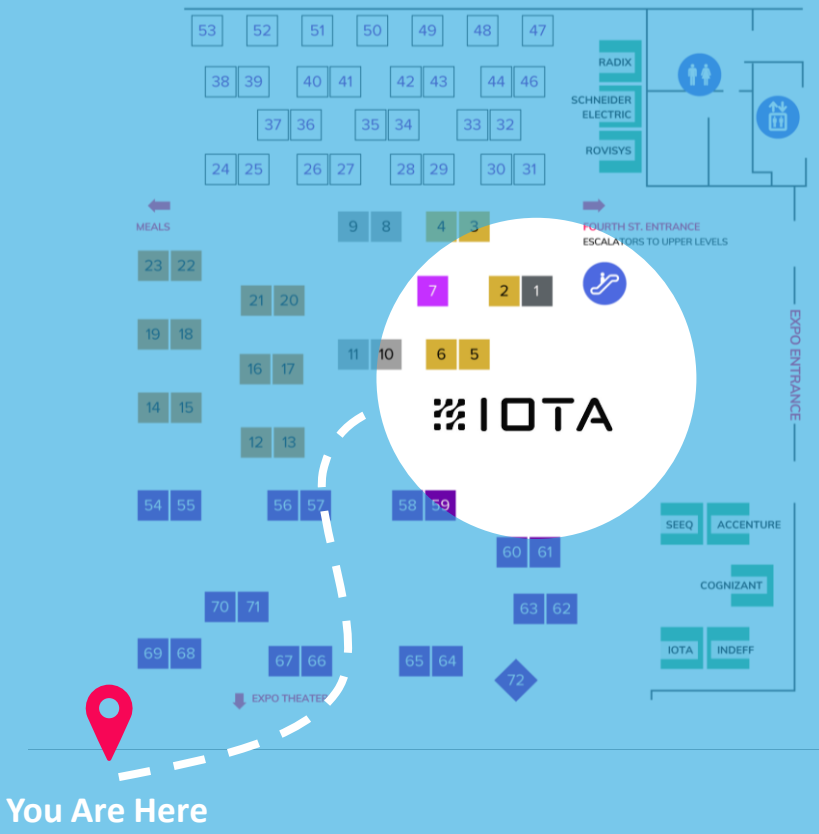
## Lead Technical Advisor

- IOTA Software Inc.
- sjones@iotasoft.com

# Petter Moree

## Managing director, EMEA

- IOTA Software Inc.
- pmoree@iotasoft.com



This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.

linkedin.com/company/aveva

@avevagroup

ABOUT AVEVA

AVEVA is a world leader in industrial software, providing engineering and operational solutions across multiple industries, including oil and gas, chemical, pharmaceutical, power and utilities, marine, renewables, and food and beverage. Our agnostic and open architecture helps organizations design, build, operate, maintain and optimize the complete lifecycle of complex industrial assets, from production plants and offshore platforms to manufactured consumer goods.

Over 20,000 enterprises in over 100 countries rely on AVEVA to help them deliver life's essentials: safe and reliable energy, food, medicines, infrastructure and more. By connecting people with trusted information and AI-enriched insights, AVEVA enables teams to engineer efficiently and optimize operations, driving growth and sustainability.

Named as one of the world's most innovative companies, AVEVA supports customers with open solutions and the expertise of more than 6,400 employees, 5,000 partners and 5,700 certified developers. The company is headquartered in Cambridge, UK.

Learn more at www.aveva.com



AVEVA