



# Improving Profitability & Reducing Operational Risk with Digital Twins & PI AF

Andrew Soignier, PE (Louisiana)  
Head of Industry Solutions  
Element Analytics, Inc.



# Abstract

- The top chemical, oil and gas companies have been at the forefront of Industrie 4.0, Digital Transformation and IIOT revolution. While many have made significant investments in the latest IIOT and Automation platforms, they have been struggling to deliver the significant value promised to their organizations. However, each of their journeys has uncovered the same major obstacle, continuous operations data readiness, which was standing in the way to achieve their goals.
- In this session, Element Analytics will share specific use cases and examples where their clients have removed this roadblock through the use of Digital Twins & PI AF data models. In addition, Element will cover the process of rapidly designing and building, as well as, the overall benefits of maintaining and sustaining these data models to unlock investments targeting both profitability improvements and the key factors that reduce operational risk.



# Company Overview

Element Analytics is unlocking the world's industrial data, making it easy to achieve **new levels of operational performance.**

Element makes **operations data easy to use** and rapidly turns it into actionable reliability, productivity, and sustainability insights.

ELEMENT ANALYTICS™

**Location** San Francisco, CA

**Industries Served** Oil & Gas  
Chemicals  
Mining  
Power Gen & Utilities  
Diversified Industries  
 OSIsoft

**Partners**  Microsoft

**Investors**



Analytics Energy Management Security  
Regulatory Compliance Time Series Real-time Event Frames  
**Digital Transformation**  
Open System Asset Health Sensor-based Data IoT  
Operational Intelligence Quality Integrators Connectivity  
High Speed Community Process Scalability Partner  
**Infrastructure** Reliability Enterprise Agreement  
Business Impact Operational Efficiency Safety  
Enterprise Connected Services Ecosystem  
PI System Visualization Asset Framework  
Millions of Streams Big Data Future Data



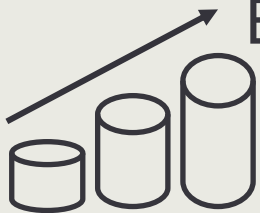
# New Pressures on CIOs



Deliver visibility  
across operations  
value chain



Reduce total cost  
of ownership of  
technology



Enhance value of  
existing system  
investments



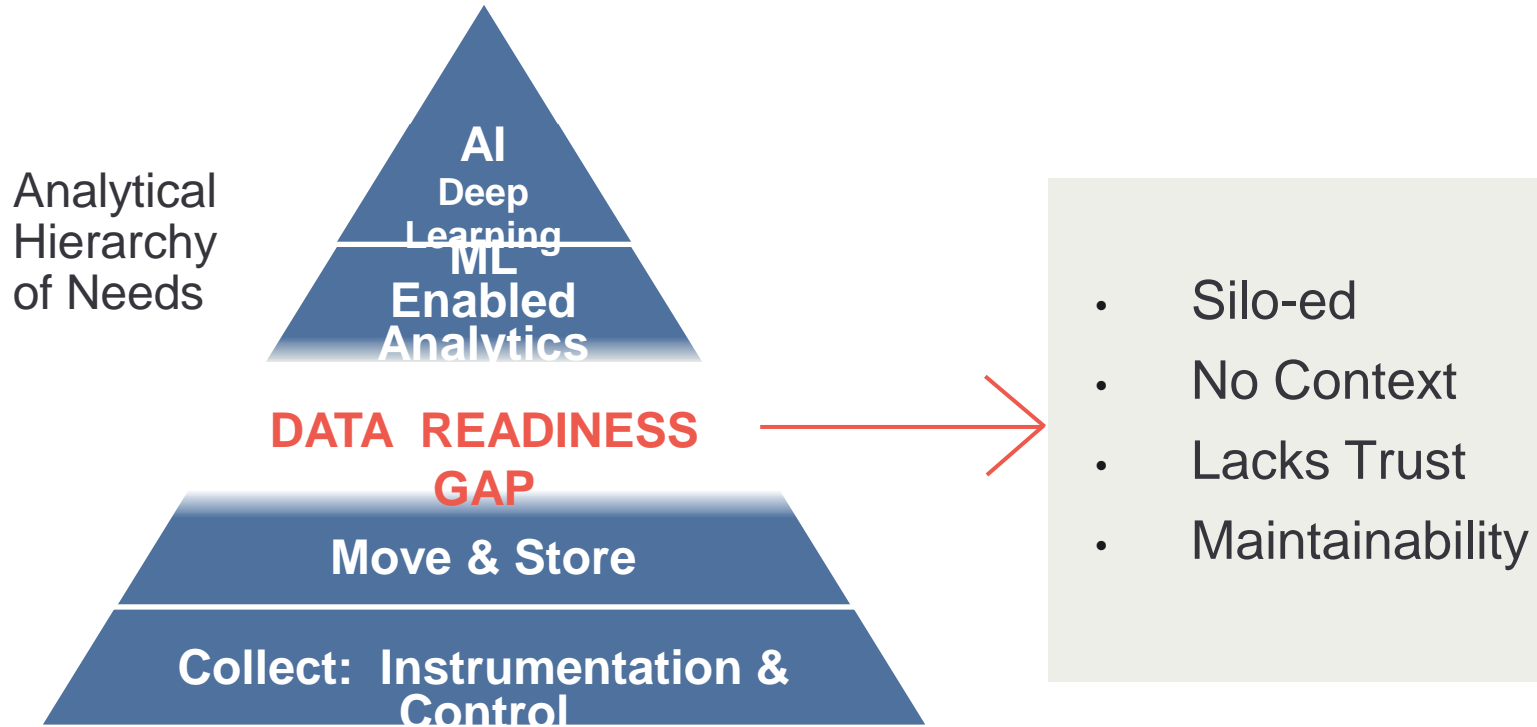
Inherit Operations  
IT / Level 3.x  
systems



**ROAD  
CLOSED**

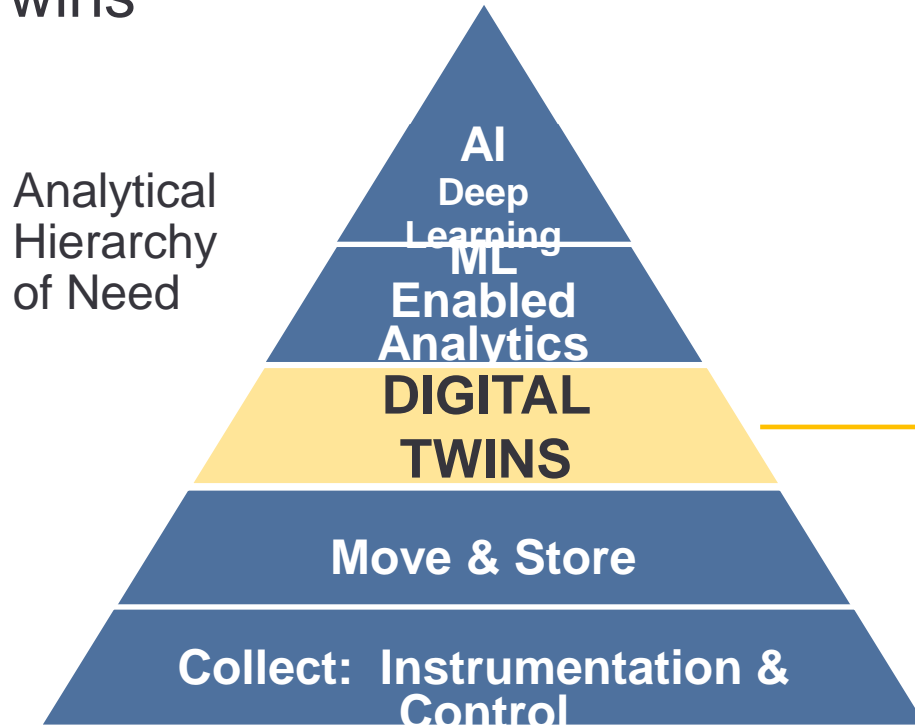


# Challenge: Data Readiness



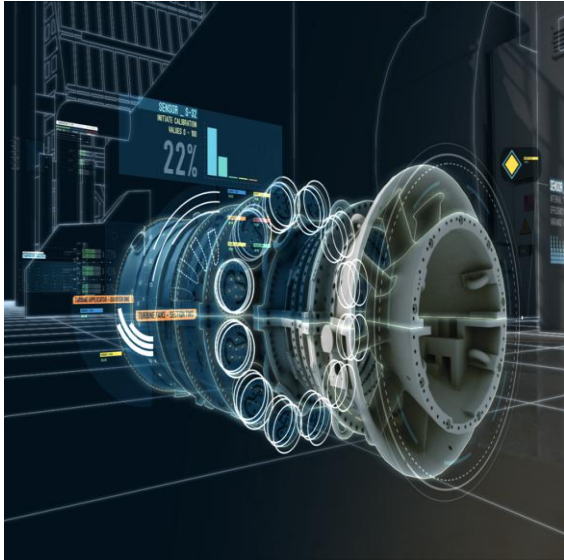


# Solution: Unlock Your Potential with Digital Twins



- Standardized, normalized, object data model
- Handling data quality issues
- Labeling of events
- People and financial relationships

# The Digital Twin Solves Key Organizational Challenges



- ✓ **Deliver visibility across operations value chain**
  - Unlock operations data for any system to any stakeholder
- ✓ **Reduce total cost of ownership of technology**
  - Optimize engineering, IT and SME stakeholders
- ✓ **Enhance value of existing system investments**
  - Leave no sensor behind

# Typical Situation



## Role of PI

- Maximize PI System
- Leverage latest i.e. PI /
- 10K to Millions of tags

## Business

- Improve profit
- Reduce events

## Challenges

- 10+ Assets
- Rapid Build of PI AF
- Maintain & Sustain

# Case Study: Chemical, Oil & Gas Supermajor



*“We spent 5 months trying to manually get data ready for APM, and Element was able to clean it up in weeks.... We’ll use Element to build and maintain data models for upstream assets for this roll-up into APM and many more projects.”* VP Global Reliability

## Challenge

Optimize critical machinery  
and reduce events

## Solution



## Digital Twin System

### Continuous Data Readiness

Algorithms to standardize, contextualize, and instill trust in data

### Data Trust via Machine Learning

Machine learning to identify bad data, resulting in increased trust and improved quality

### Advanced Analytics

Export to Data Lake and PI AF data models to empower decision-making

# PI Asset Framework is Essential

Treat  
data as an asset  
by creating a digital  
twin

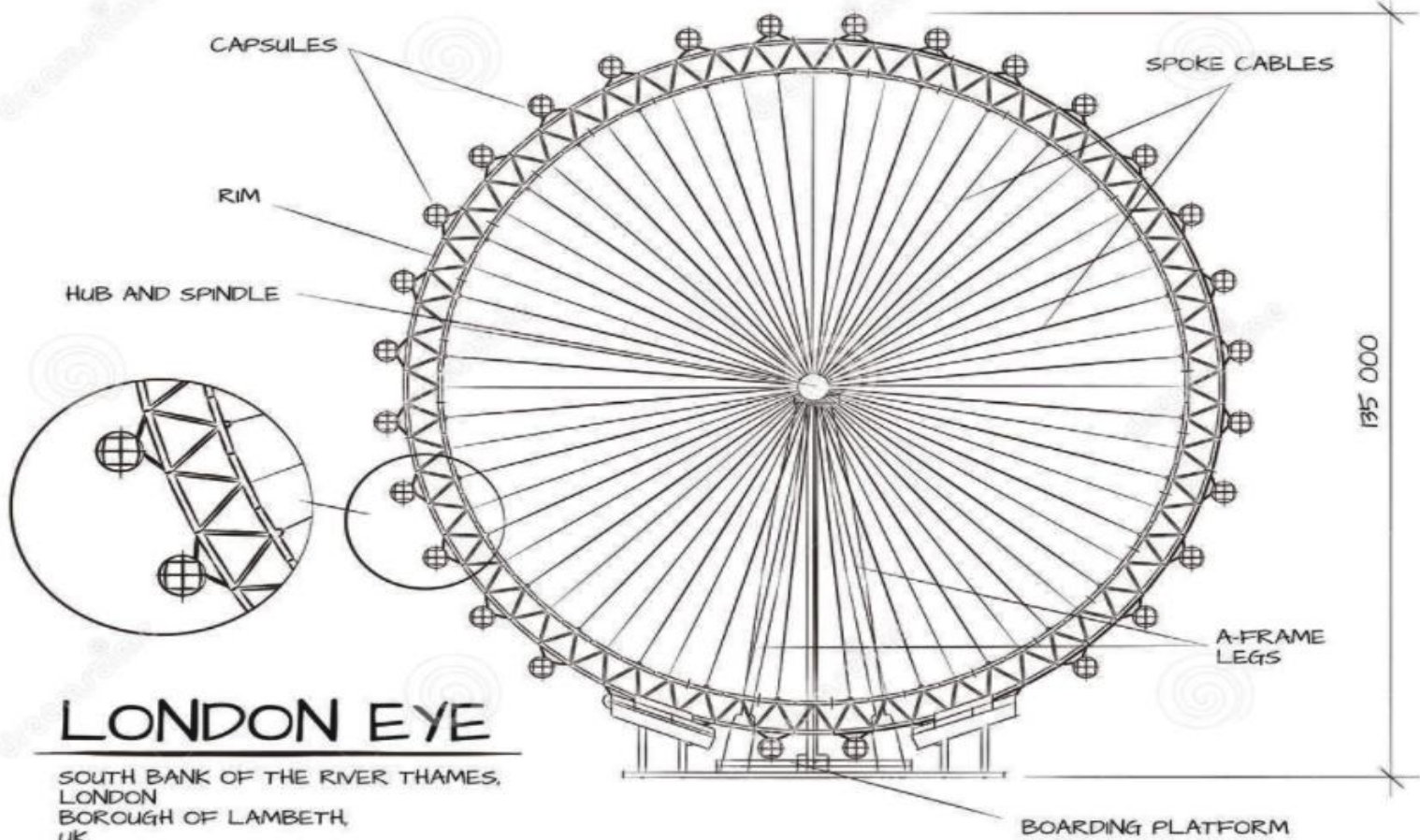


Establish processes  
for  
maintaining and  
sustaining



Provide a  
step change  
by empowering the  
business to easily  
obtain and share  
data





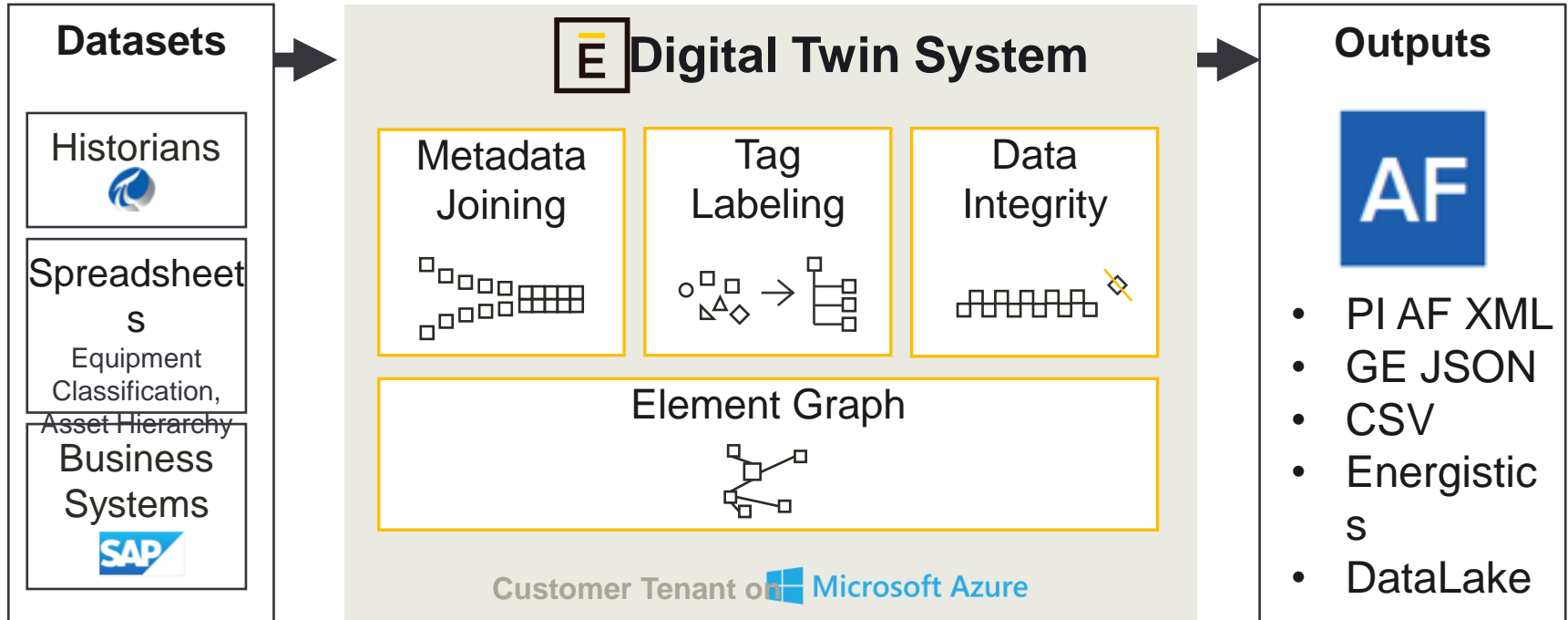
# LONDON EYE

SOUTH BANK OF THE RIVER THAMES,  
LONDON  
BOROUGH OF LAMBETH,  
UK

BOARDING PLATFORM

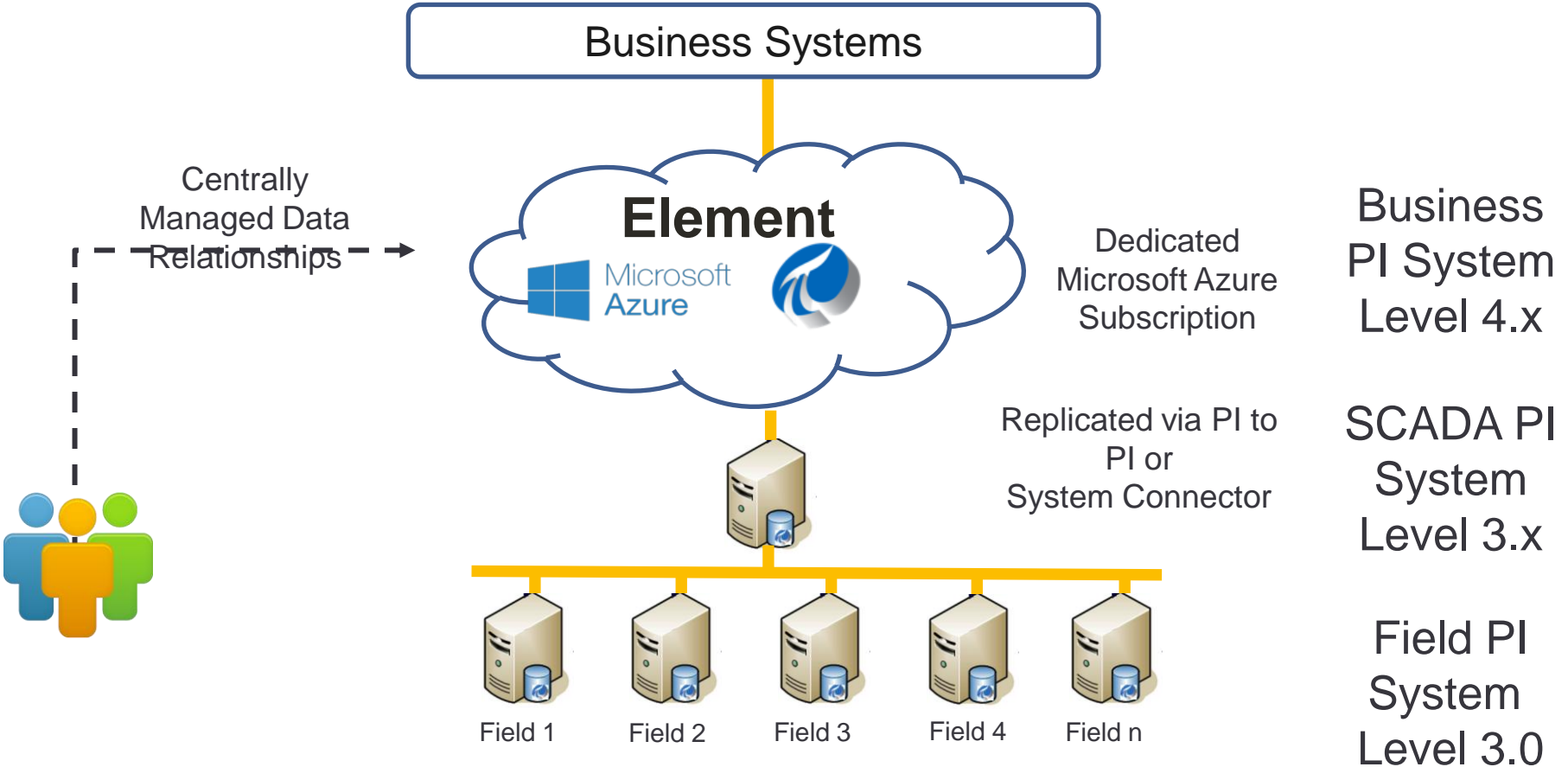
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# Leverage PI AF: Connect, Design, Build, Maintain & Sustain



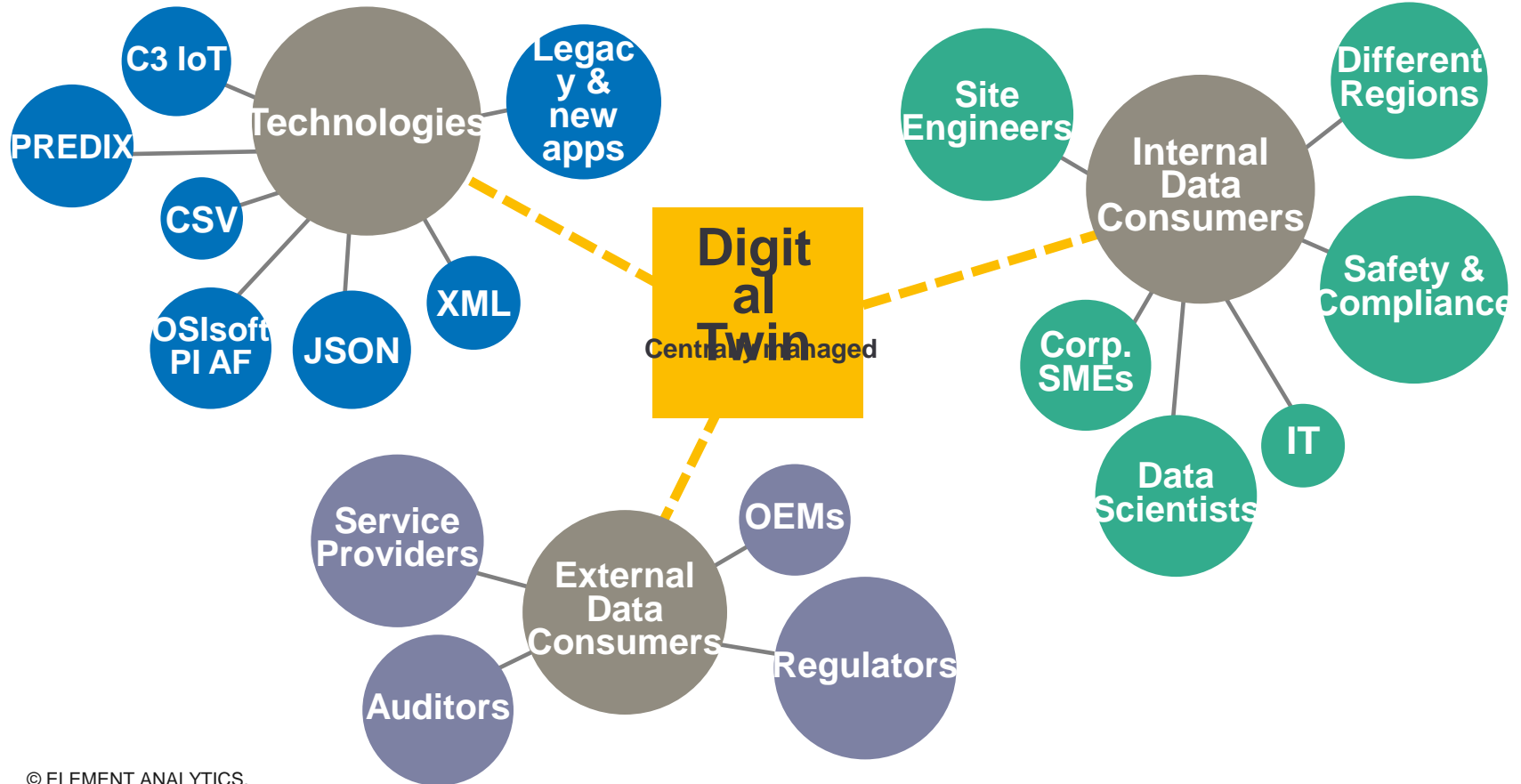


# Securely Leveraging Microsoft Azure Cloud





# Unlimited PI AF with Flexible Digital Twin



# Driving Value across IT and Operations



## IT

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50x speed-up in building PI AFs



Efficient and Accurate Maintenance of AFs



Increase Value of Existing PI Investments

## Operations

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Improve Efficiency



Ensure Data Integrity



Enable Rapid Collaboration

# Andrew Soignier

[andrew@elementanalytics.com](mailto:andrew@elementanalytics.com)

Head of Industry Solutions  
Element Analytics, Inc.



감사합니다

Danke

谢谢

Merci

Gracias

**Thank You**

ありがとう

Спасибо

Obrigado