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# Embrace Digital Transformation in Pipeline Operation

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# O&G Pipeline Industry Imperatives

## Industry Drivers & Schneider Electric Differentiation

### Public safety and environmental regulations

Most highly distributed, highly available solution with defense-in-depth security layers

Proven Control Room Management applications to enable regulatory compliance

### Operations optimization

Proven Liquids & Gas applications for safety, efficiency, and optimization

### Reduced Total Cost of Ownership

Multi-year program to attack TCO and simplify upgrades

## Growing / New Imperatives

### Security ++

Industry leading security to support the most stringent standards and regulations

### Industrial Transformation

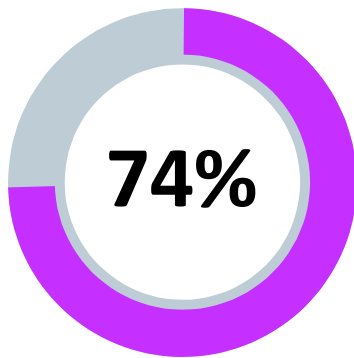
Intelligent Midstream: Unmatched portfolio to deliver integrated Edge to Enterprise solutions

### Sustainability

Helping customers achieve sustainability goals is core to Schneider Electric's mission

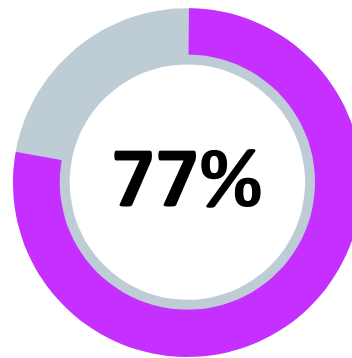


# Digital Transformation



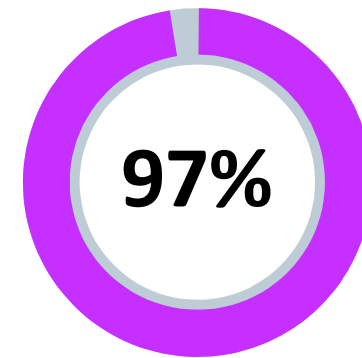
Digital transformation is a top priority for **74%** of organizations.

Source: Flexera



**77%** of companies have already started their digital transformation.

Source: McKinsey & Company

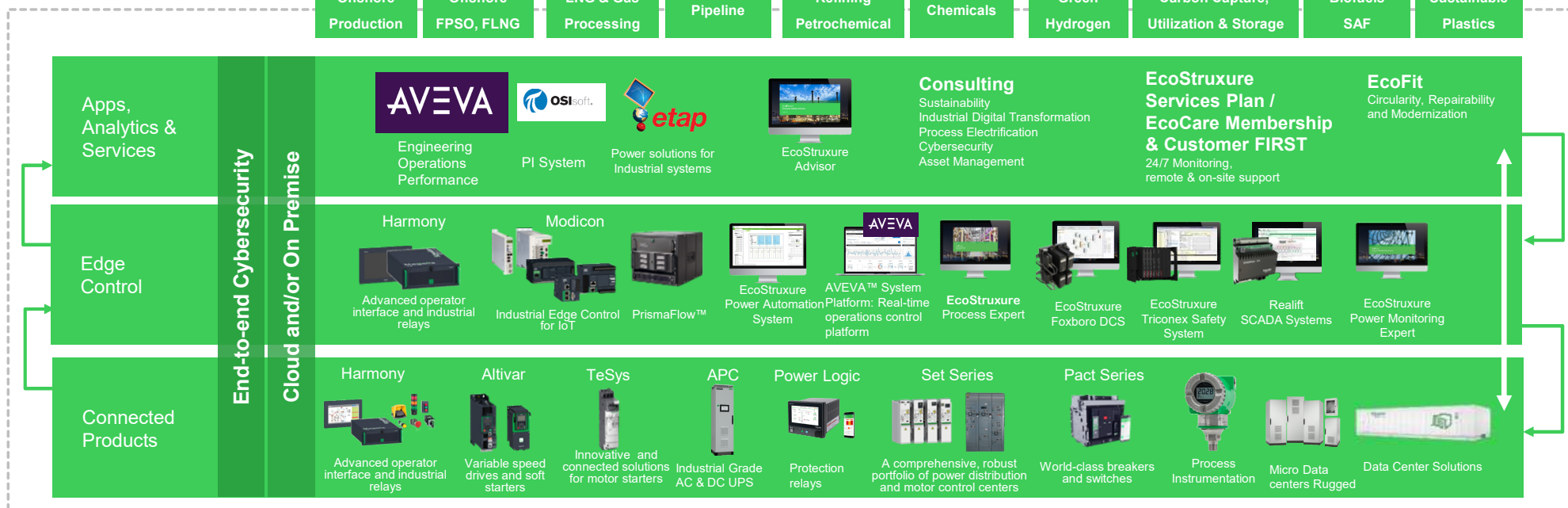


**97%** of companies say the COVID-19 pandemic sped up their digital transformation initiatives.

Source: Twilio

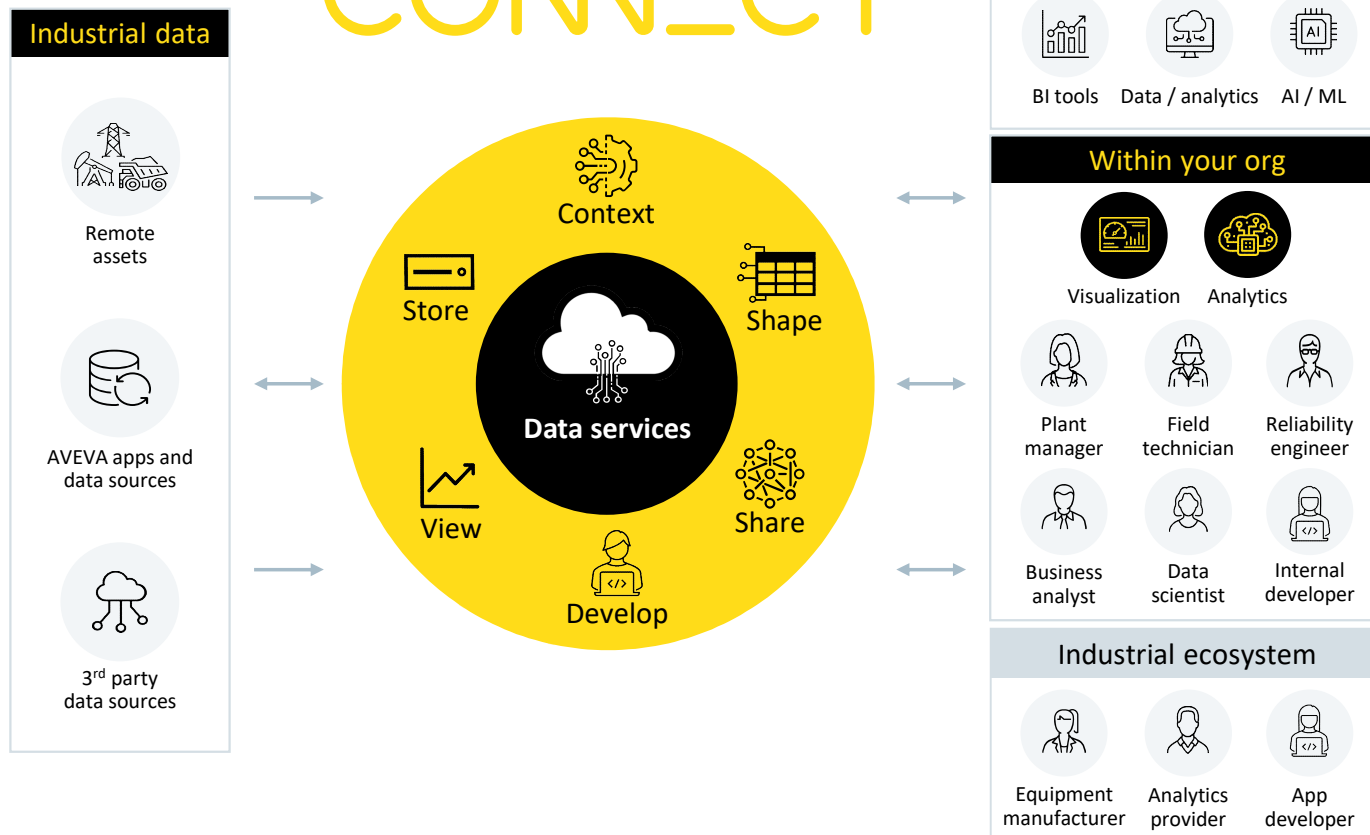
# Schneider Electric Digital Platform

Open, interoperable, and IoT-enabled system architecture



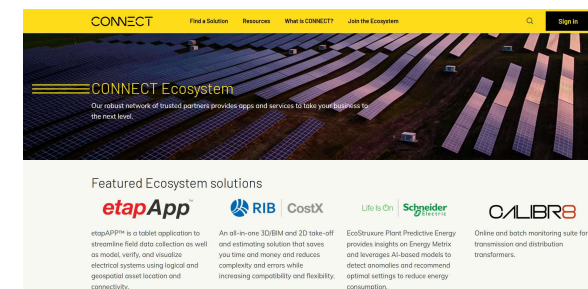
# Industrial Intelligence Platform

## CONNECT

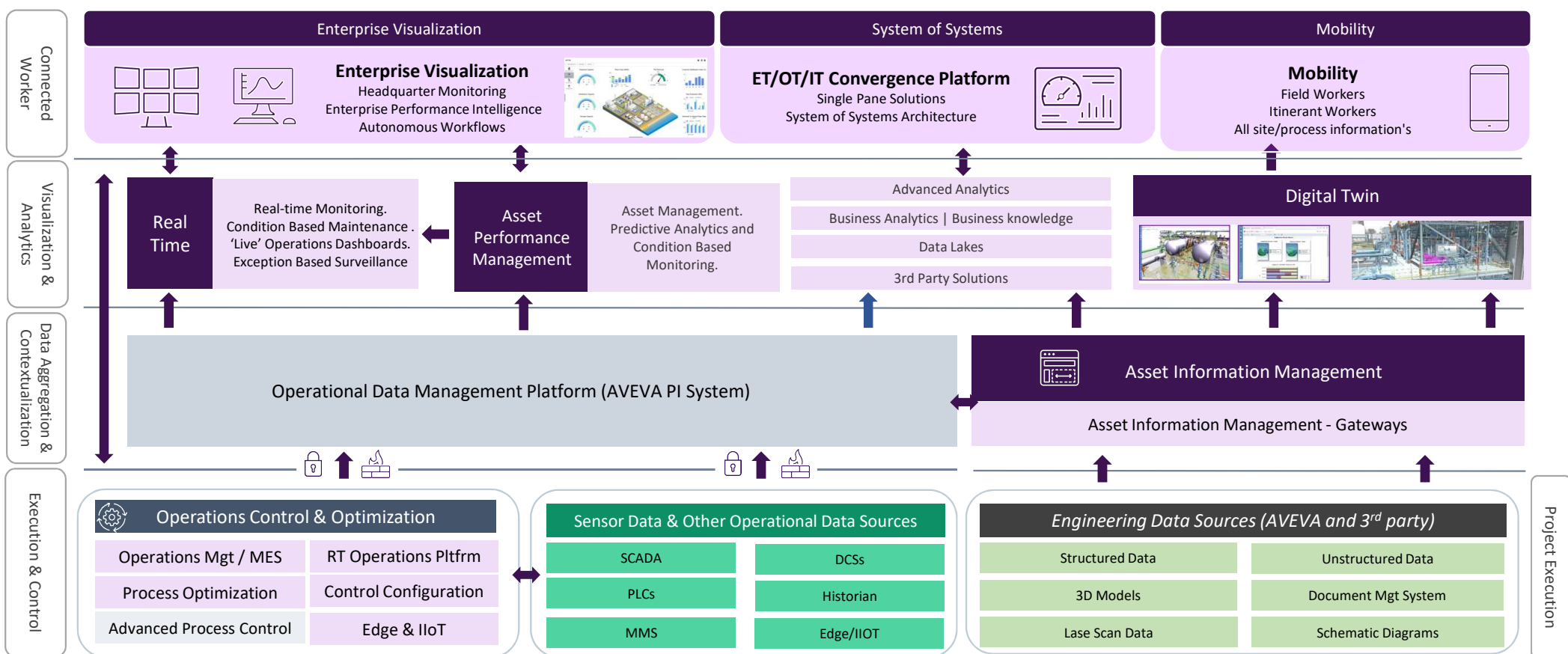


### Aggregate, contextualize, and share real-time industrial data

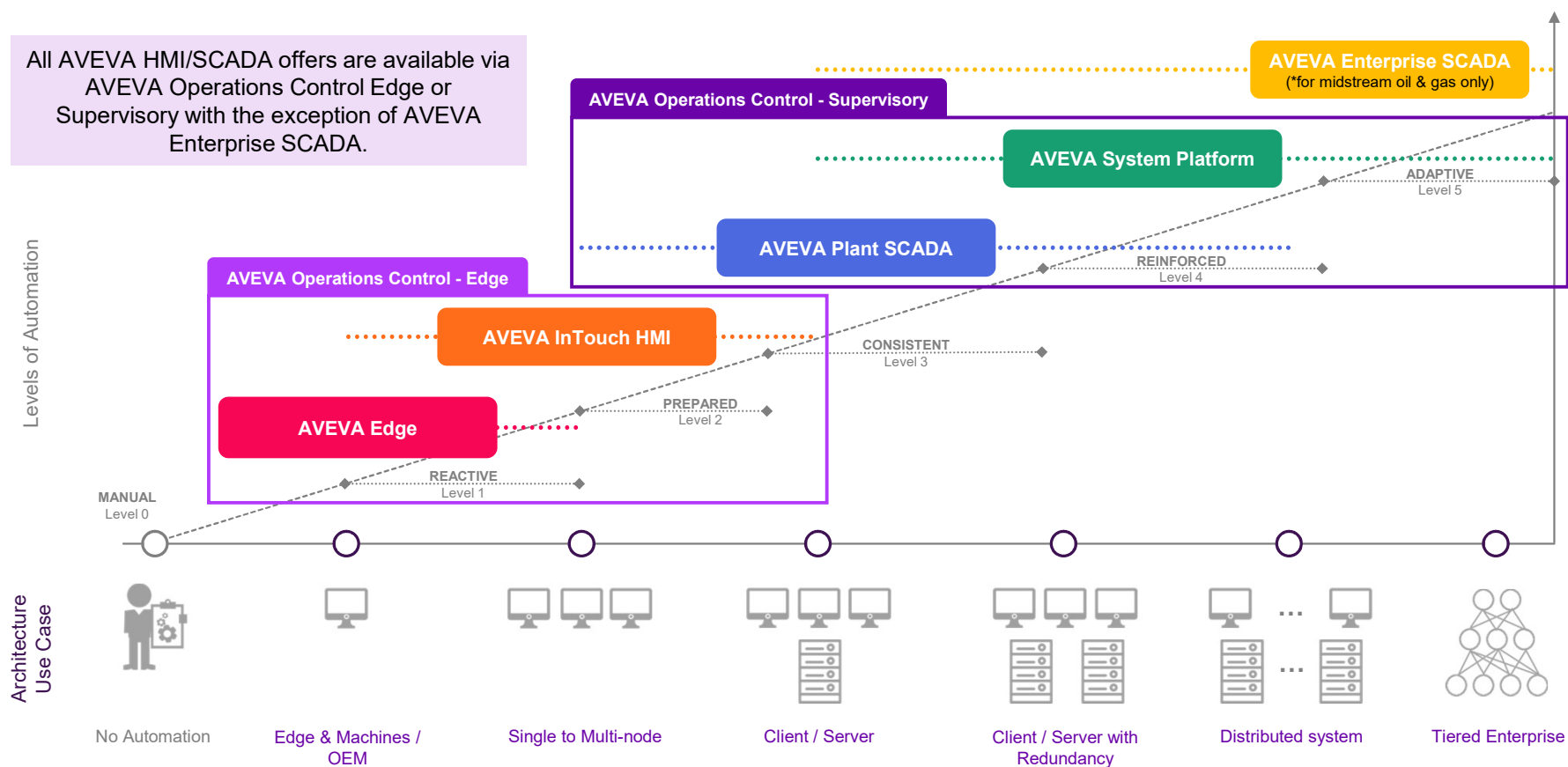
- Build and manage a central data repository for BI, data and analytics, and AI / ML tools
- Securely share your industrial information with authorized users, extending the use of your existing data beyond your organization's four walls
- Enable 3rd-party providers to access real-time industrial data for customized services and applications



# Engineering to Operations Architecture



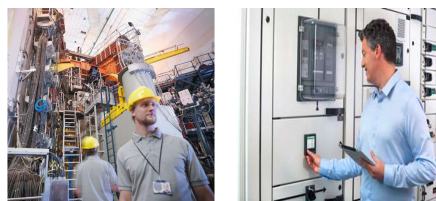
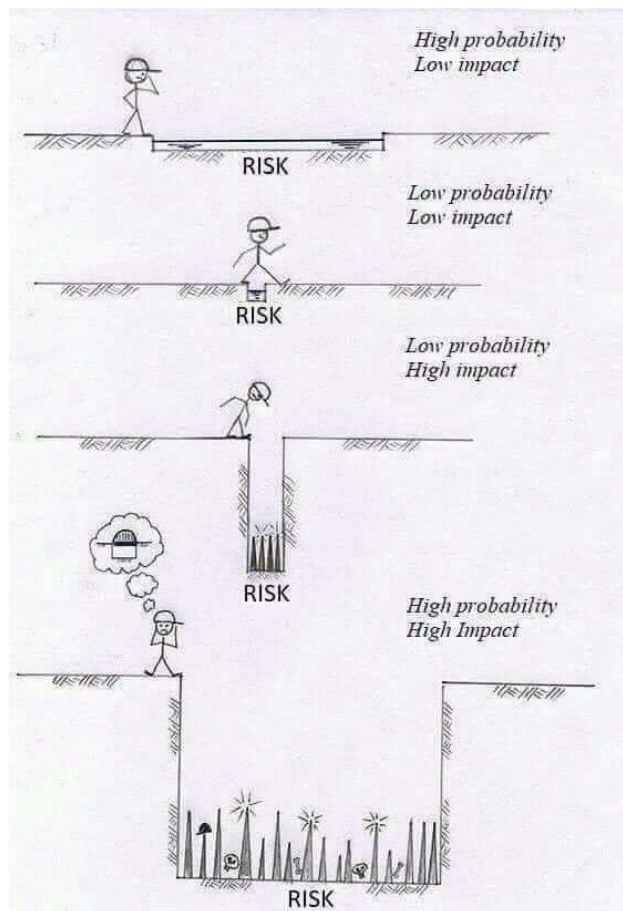
# SCADA-Portfolio Overview



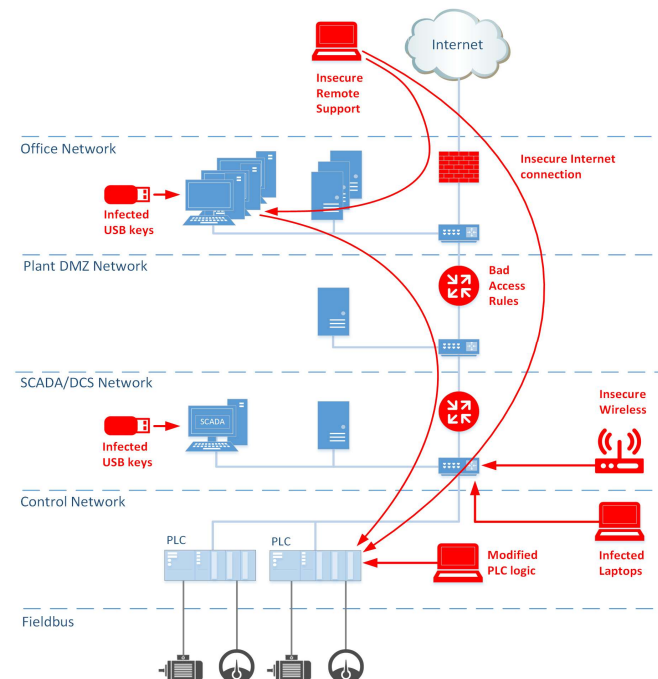


# What is really about?

Cybersecurity is about **Risk Management**



**38% insiders**



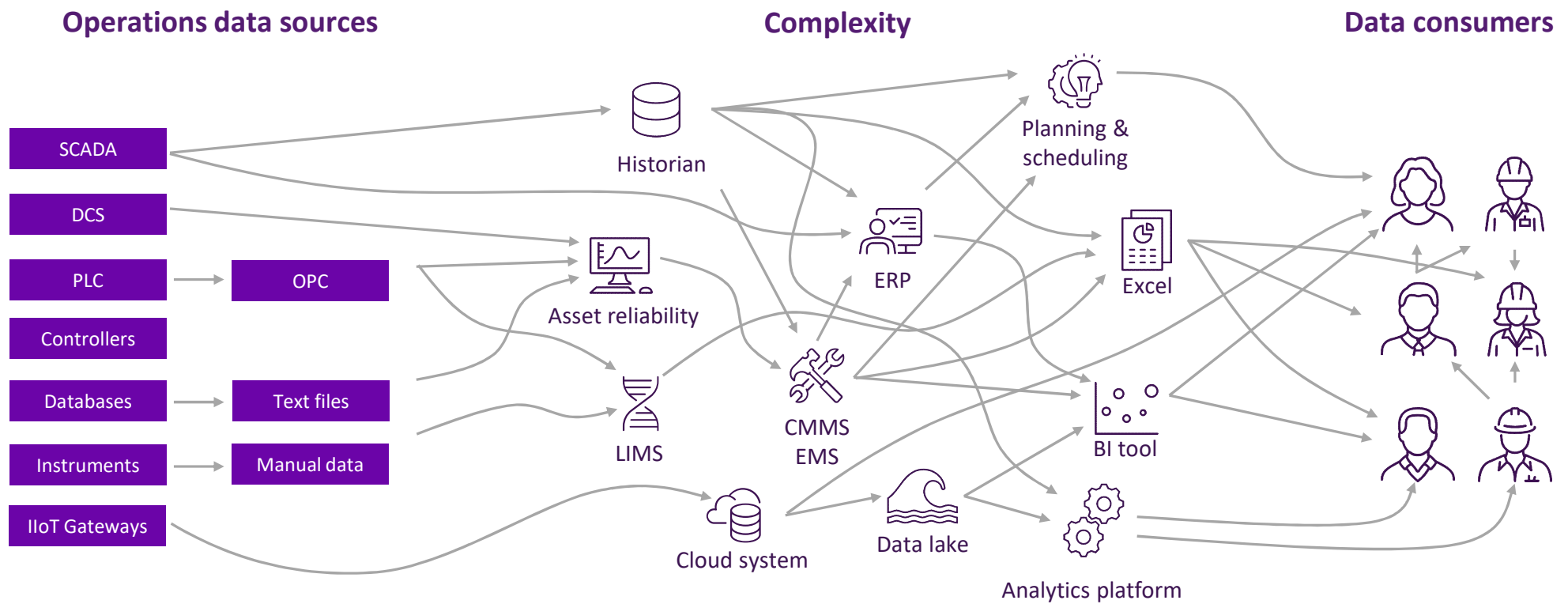
Security Consulting – Design & Implementation – Maintenance and Management

Services	Solutions	Recurring
<b>Capability</b> Standard Compliance Assessments Asset and Inventory Assessments Cybersecurity Risk assessments Security Architecture / Security Design • Network Segmentation • System Hardening • Data security • Threat Detection Use cases Cybersecurity Trainings CISO as a Service * Incident Response Planning	<b>Capability</b> Active Directory/User Management Backup and Recovery Endpoint Protection Patch Management Network Segmentation/Firewalls Secure Remote Access Anomaly and Threat Detection Intrusion Detection/Prevention Security Information and Event Management Automated Asset Inventory Cybersecurity Application Platform	<b>Capability</b> Asset Inventory and Visibility Vulnerability & Risk Management Managed Detection and Response Cybersecurity device management • Cyber device health monitoring • Device maintenance and upgrade • Customer Support Cybersecurity KPI reporting Patch deployment

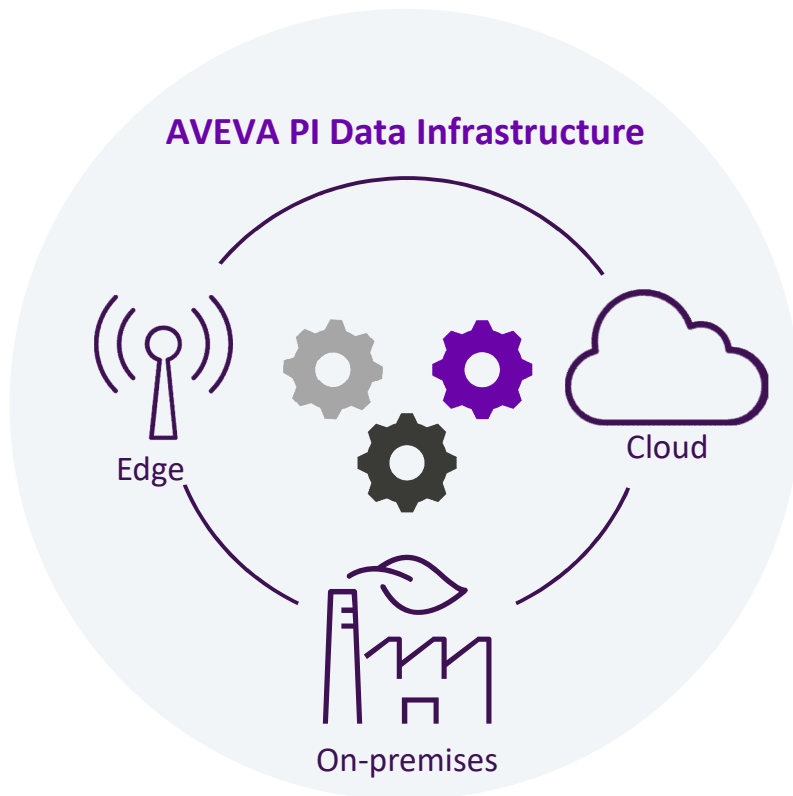
\* Custom/Specialized



# How is Complex Operation Data



Grease the wheels across your data infrastructure



**Send data between AVEVA PI Server and CONNECT either way**

**PI to CONNECT Agent:**

- Centralize, scale, and synchronize important assets and real-time streams.
- Perform history recovery.
- Monitor transfer status and health statistics.

**CONNECT to PI Agent:**

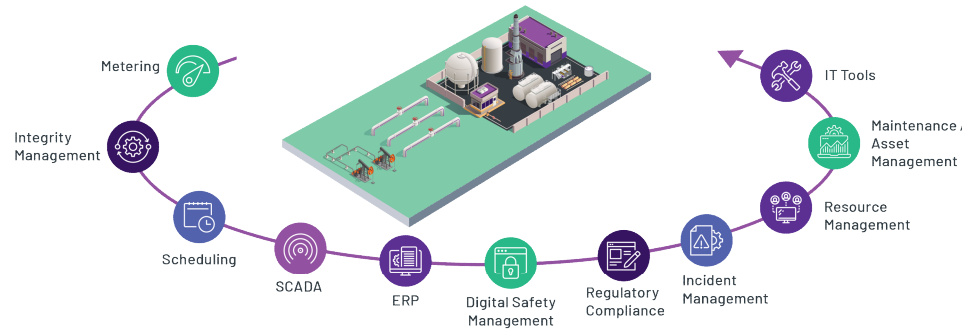
- Move real-time, historical, and future data streams, including from CONNECT communities between operations environments and enterprise.
- Supports backfilling and transfer to high availability collectives.
- Manage CONNECT to AVEVA PI Server data flows centrally from the cloud.

# Enterprise Pipeline Management System

Drill down by site to individual assets using hierarchical navigation and intuitive visualization

Detailed operational analysis to maximize operations efficiency and ensure resource availability

Holistic view of impacts from upstream and downstream operational disruptions or outages



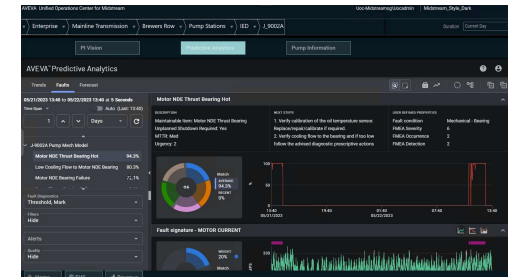
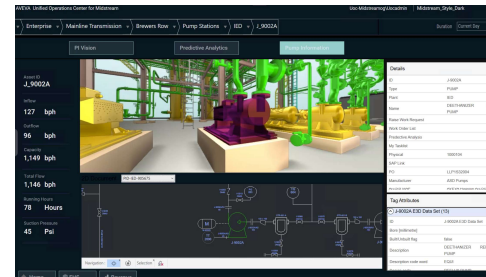
Merge data types to understand deeper context between various aspects of operations

Innovative approach to alarm management, emphasizing actionable alerts

Real-time visibility to critical events as they occur, improving responsiveness

- Pipeline Operations
- Pipeline Supply Chain
- Regulatory Compliance
- Field Operations
- Digital Safety Management
- Operator Training
- Energy Accounting
- Asset Management
- Alarm Management
- Leak Detection
- GIS Systems
- Government Systems
- Weather
- Scheduling
- Customer Billing
- Security Cameras & Access
- Emergency/Crisis Response

## Unified Operation Center for Midstream



# Schneider Electric Pipeline Solution

## Most Trusted Pipeline Management System Globally

### Leader in USA

AGL Resources (Southern)  
Boardwalk  
BP Pipelines  
Centerpoint Energy  
Chevron  
Colonial  
Dominion  
Enbridge  
ExxonMobil  
Koch  
NiSource  
National Grid/Keyspan  
Phillips 66  
Shell Pipeline  
TransCanada (TC Energy)  
PG&E  
Williams  
Kinder Morgan  
Washington Gas  
Semptra  
EnLink  
Eversource

### Leader in Canada

TransCanada  
Enbridge  
Plains Midstream  
Kinder Morgan  
Pembina

### Leader in Latin America

Petrobras / Transpetro  
Pemex  
Cenegas  
Ienova / Gasoducto Agua Prieta  
Fermaca  
Gasoducto Norte (Carso)  
Ecopetrol  
PDVSA  
TGP  
TGN  
Petroamazonas

### Strong Presence in Europe

Gas de France (GRTgaz)  
Gasunie (Netherlands) – AGMS  
Snam Rete Gas (Italy)  
SGI - Edison  
BOTAŞ (Turkey)  
IGDAS  
DESFA (Greece)  
Bunde-EtzelPipeline (Germany)  
CLH  
National Grid (UK), SGN (UK)

### MEA

ADMA-OPCO  
Takreer  
Gasco Abu Dhabi  
Gasco Egypt  
Kenya Pipeline  
Saudi Aramco

### Australia

Australia Pipeline Authority (APA)  
Caltex  
DBP  
Epic

### Russia and CIS

CPC (Russia-Kazakhstan)  
Alashankou  
Kazakhstan-China Pipeline

### Leader in China & Key References in APAC

Sinopec - China  
PetroChina - China  
CNOOC - China  
Kogas (Korea)  
Sui North (Pakistan)  
Sui South (Pakistan)  
Reliance (India)  
Pertamina (Indonesia)  
TTM

# Leak Detection System

For Single Point Mooring - Submarine Pipeline



## Customer Challenge

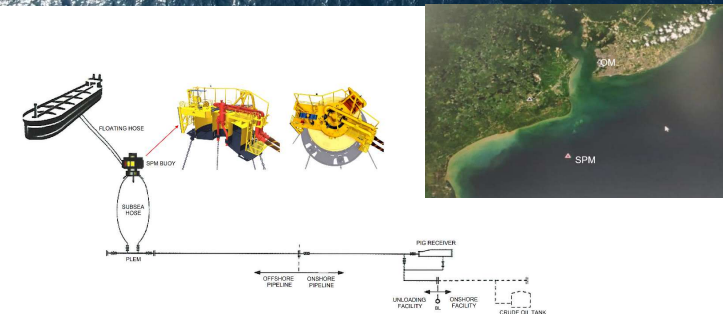
- Pipeline leak detection between Single Point Mooring (SPM) and Onshore Receiving Facility (ORF)
- Reliant currently on visual inspection of underwater pipeline in very sensitive environmental area

## The Solution

- Implementation of AVEVA Pipeline Integrity Monitor Real-time Transient Model based Leak Detection, integrated with SCADA, pipeline instrumentation, RTU's, CCTV, and communications
- Monitor pipeline integrity from three (3) Single Point Mooring Platforms to their onshore facilities
  - AVEVA PIM
  - GeoSCADA
  - Pressure, Temperature, Flow Transmitter
  - CCTV
  - Solar Power Components
  - Communications
- Implemented by Schneider Electric Indonesia with guidance from their partner, AVEVA

## Customer Benefits

- Quick detection of crude oil leaks into harbor reducing the liability and cost of environmental cleanup
- Improve the safe operation of tanker loading
- Overall protection of the environment
- Enhanced integration with products and software reduced engineering, deployment time, total cost of solution



**EcoStruxure™**  
Innovation At Every Level

Apps,  
analytics,  
and services



GeoSCADA



Aveva PIM

Edge  
control



SCADAPack

Connected  
products



Pressure  
Transmitter



Temperature  
Transmitter

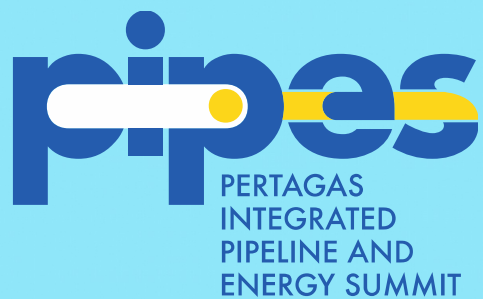


Flow  
Transmitter



Charge  
Controller





# TERIMA KASIH