



**How Acuvate is helping
Energy (Oil & Gas) Industry
to get the maximum out of DIGITAL**

Johan Krebbers & Poonam Chug

Housekeeping – Asking speaker a question

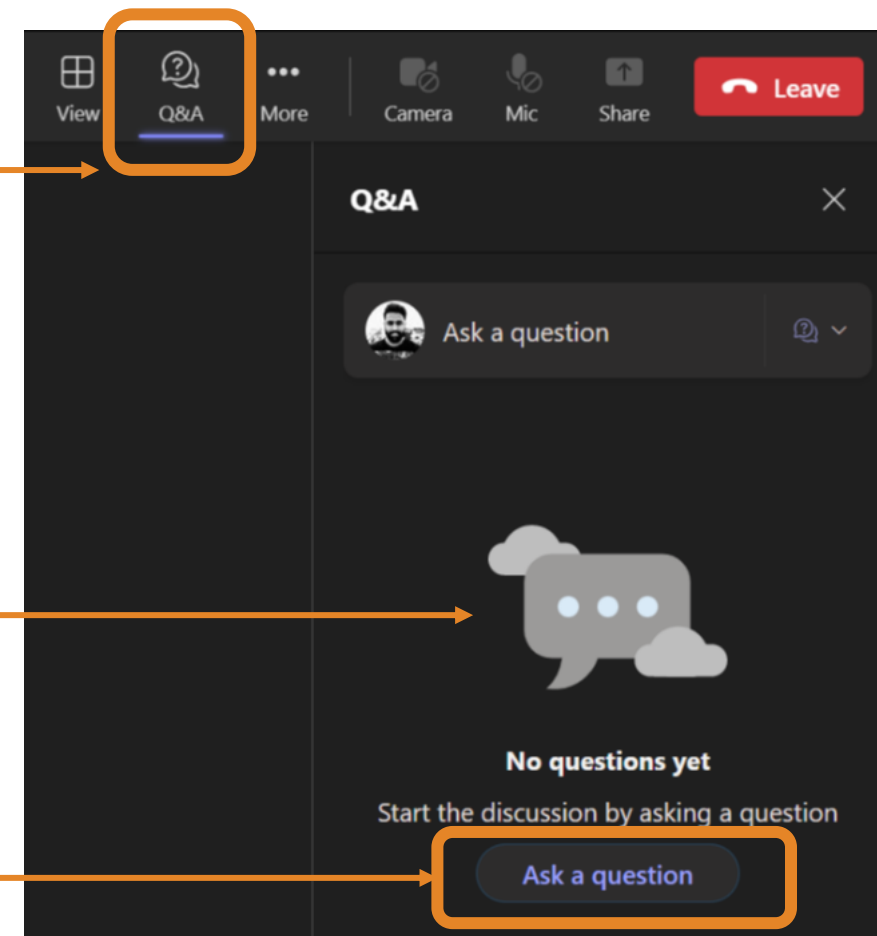
We want to hear from you!

Please submit your questions. We'll reserve time for Q&A at the end of the webinar.

1 To submit questions, click on the Q&A at the top right corner

2 Clicking on the Q&A icon will open a window where you can type your question.

3 Click on the 'Ask a question' button & type your question.



Agenda

- About Acuvate
- Acuvate's famous (7 steps) Standard Digital Framework
- Acuvate's Data Platform for the Energy market
- Examples: Business Challenges in Energy
- Digital Solutions for Energy with Data & AI
- What next? Where to go when you need / more information.



About Acuvate

Acuvate is a global player in next-generation digital solutions & services that modernize, automate and transform enterprise applications. With over **17 years** of experience, we have been enabling our clients globally to steer their digital transformation strategy using **AI, Data & Cloud**.

We build & develop smart & sustainable solutions to help our customers transform their conventional processes to match the next-generation technological trend.

OUR FOCUS

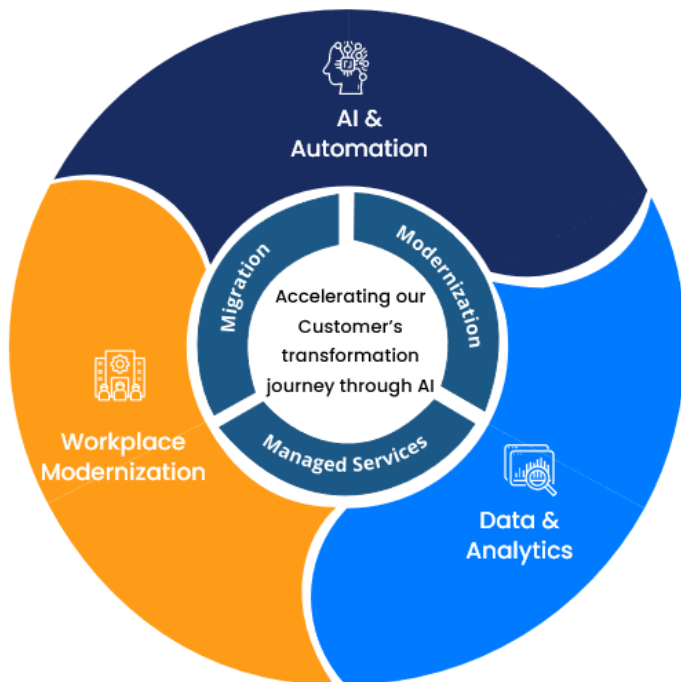
EMERGING TECH



ACCELERATORS



CONSULTING SERVICES



500+
Multi-Skilled Professionals



17+
Years in the Industry



3 Continents, 7 offices
North America, Europe, Asia



Certification & Compliances



OUR GLOBAL CLIENTELE

CPG, Retail & Supply Chain



Oil & Gas, Energy



Manufacturing



Government



BFSI



Healthcare and Pharma



Technology, Telecommunications & Others



TRUSTED BY
200+
ENTERPRISES
WORLDWIDE
INCLUDING
SEVERAL
FORTUNE 500

What is Org Brain?

Acuvate's framework, constructed using Azure Open AI, aims to facilitate enterprises in expediting their AI advancements.

User Personas



Employee

- Can you get me Payslip for last month?
- How do I reset my SAP password?
- Create the JD for a marketing executive role.



Marketing

- Show the market spread for Yummiez chicken soup by region.
- Compare the Yummiez chicken campaign performance in Thailand and Malaysia?



Factory Workers

- Which of my assets had downtime last week?
- Which steam turbine sensors are reading outside normal range?



Factory Supervisors

- Calculate the average Asset Utilization for each month and region.
- What is the average OEE for UAE



Quality

- What is the procedure to perform cleaning in place?
Please tell me about Manual Scanning Systems

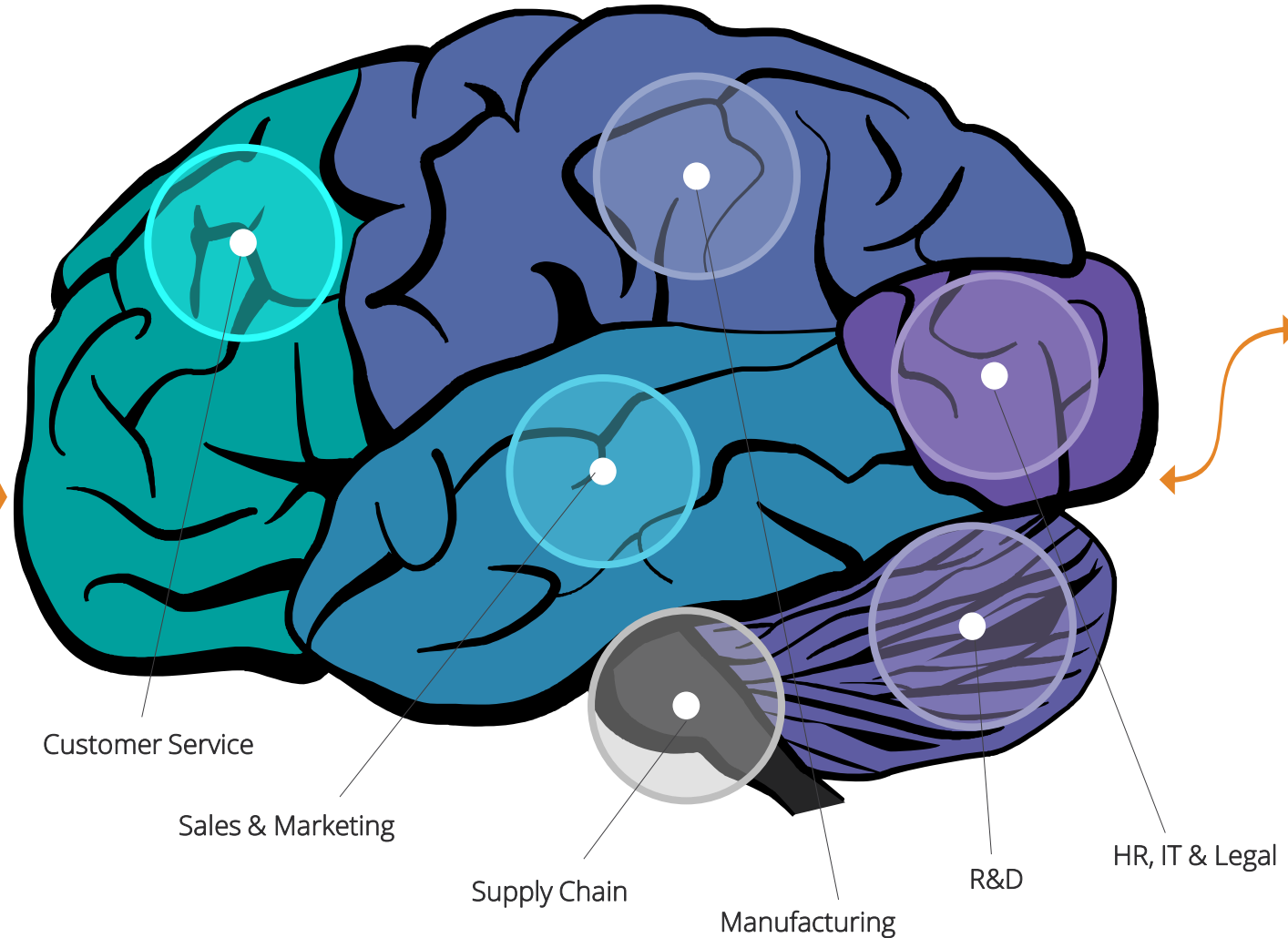
Data Sources

External

- Social Media
- Open Source
- Brand.com
- Retailers / eComm
- 3rd Party (Nielsen, etc)

Internal

- Structured (ERP / LoB)
- Unstructured (File repositories)
- Dark Data (excel files, ppts etc)
- Database/ Data Warehouse



Customer Service

Sales & Marketing

Supply Chain

Manufacturing

R&D

HR, IT & Legal

Participating in Polls

Your opinion is valuable to us!
Please take part in our polls to help us understand your views.

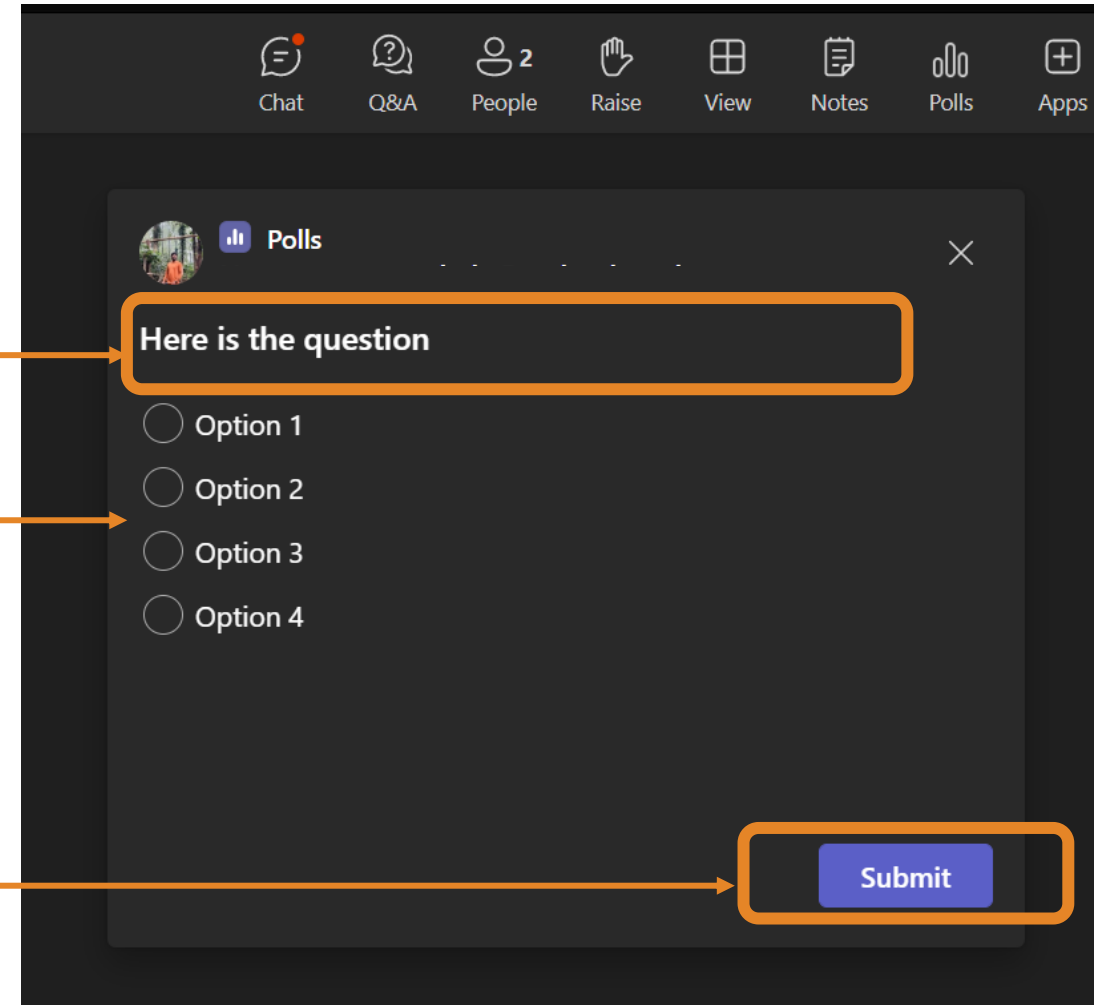
1 Submit Your Vote:

A new window will pop up with the poll question.

Choose your answer from the provided options

2 Confirm Your Selection:

After selecting your option, make sure to hit the 'Submit' button to record your response..





Poll 1

Which of these emerging technologies do you

believe holds the most

promise for transforming

the Energy (Oil & Gas)

industry



Walk us through

Acuvate's End to End

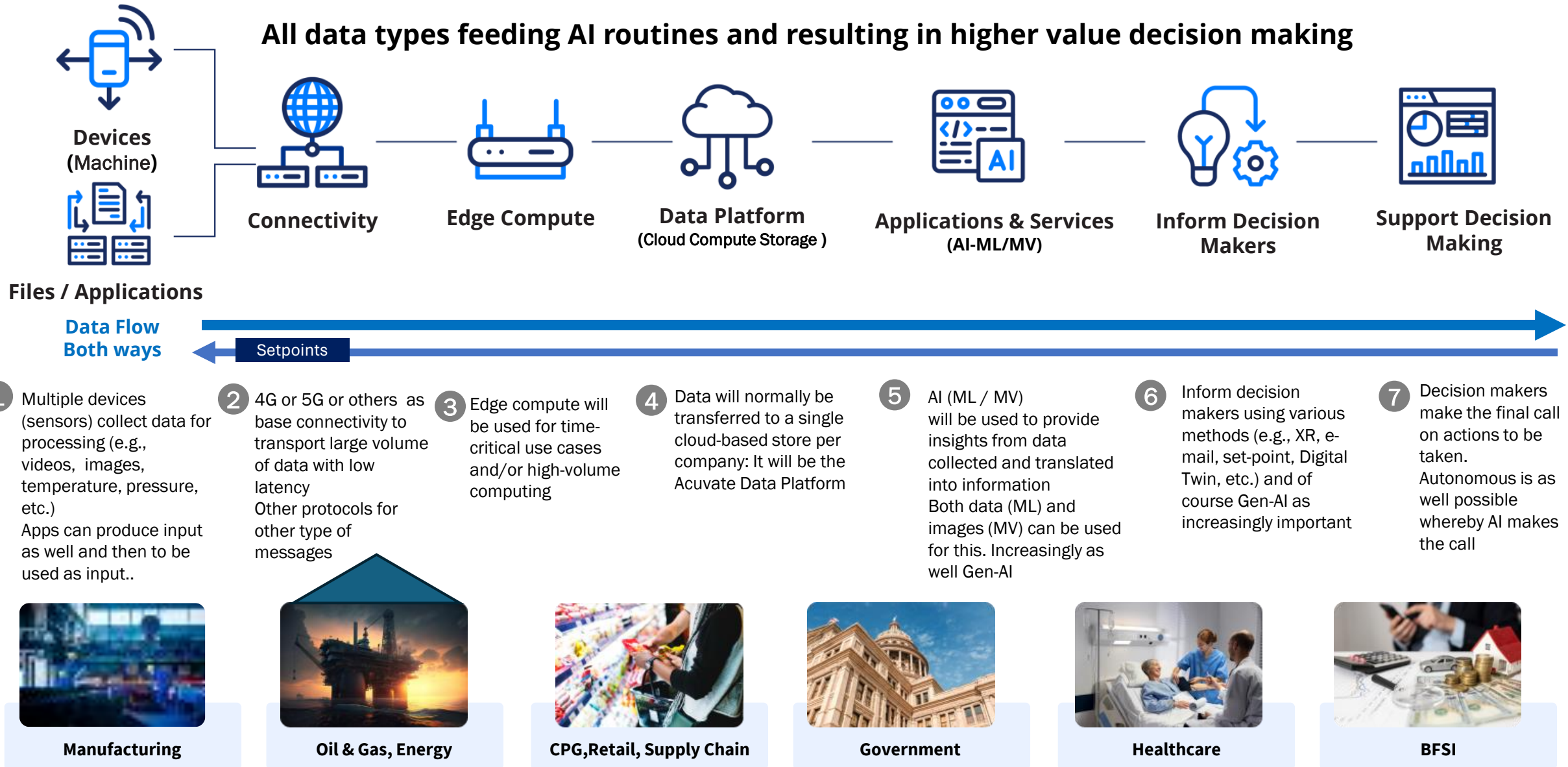
Data Services

Acuvate's End to End Data Services

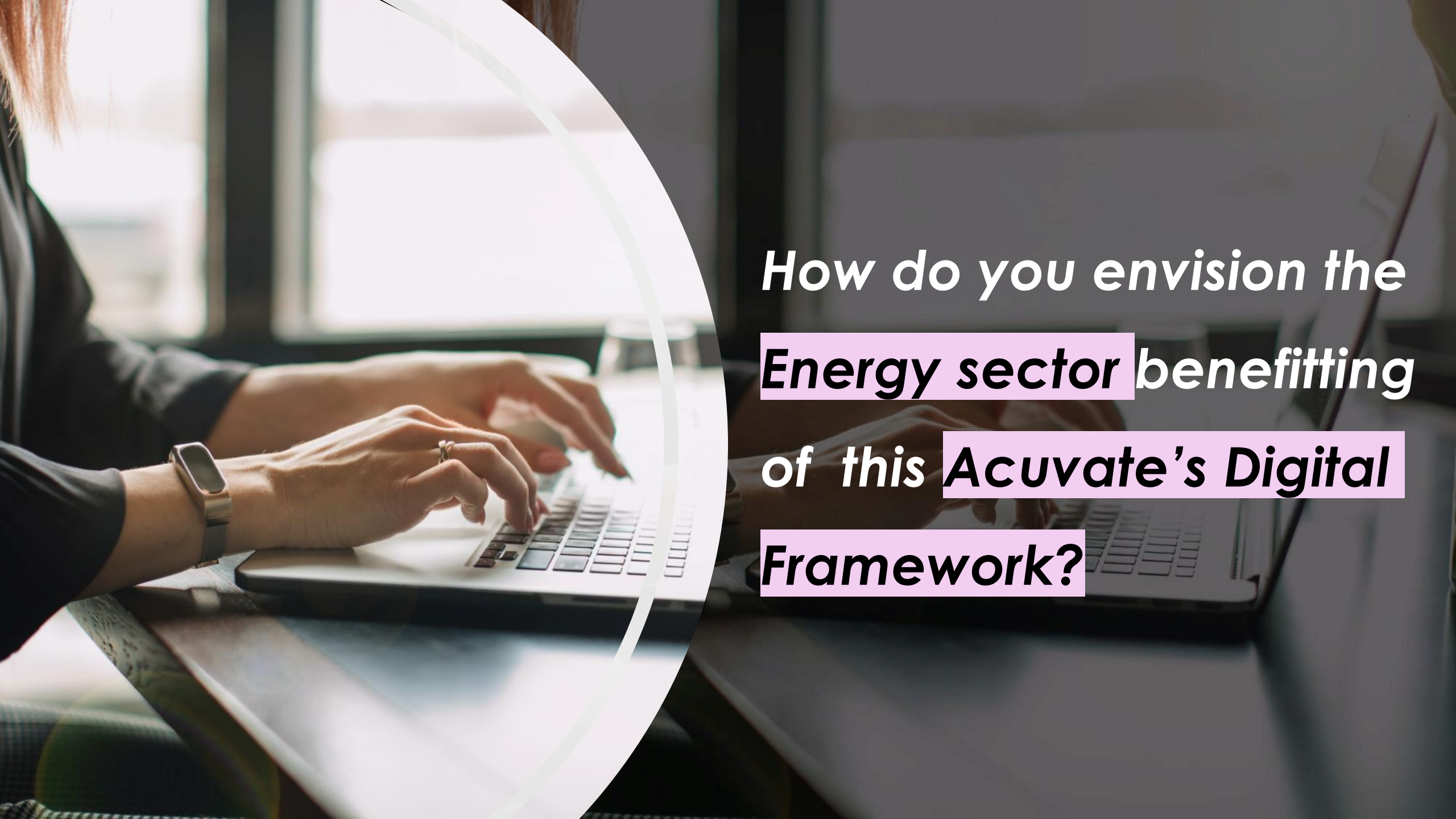
- **DIGITAL** driven.
- **End to End:** From collecting the right data as input to getting maximum **Business value** out of each process.
- **Need for increased Speed** and Efficiency drives Demand for **Realtime** execution of business workflows.
- Our prime focus initially at **ENERGY & MANUFACTURING**, but growing towards other Industries.
- **Scalability** important given the expected **explosive growth of data**.
- Being able to exploit latest **AI (ML / MV / GEN)** developments.
- OT and IT support.
- Getting ready for **Digital Twins**.

Acuvate's Standard Digital Framework

Acuvate's framework, to Modernize, Optimize and Transform businesses to Digital Decision Automation



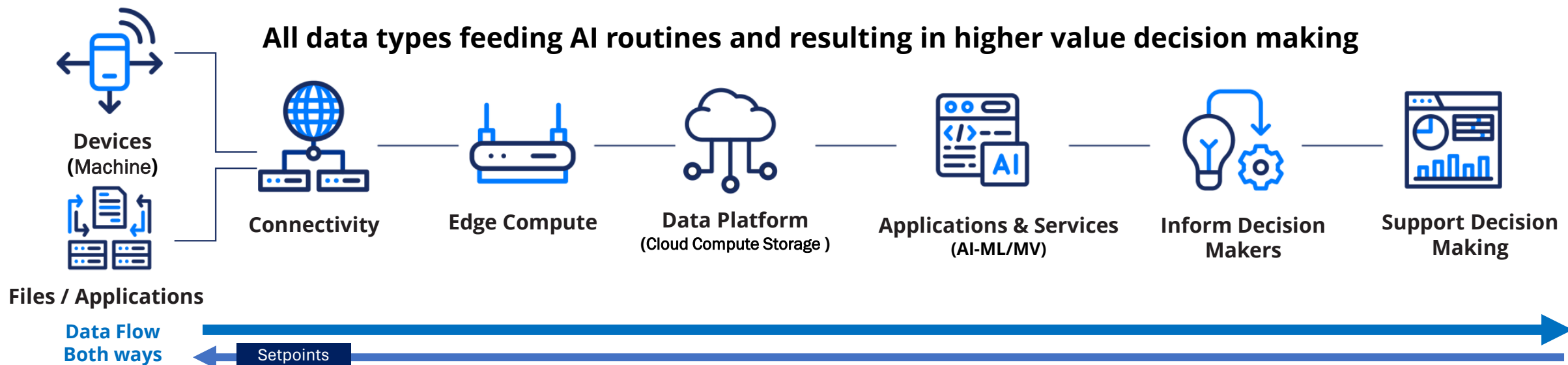
APPLIES TO ANY INDUSTRY / GOV / ETC. BUSINESS



How do you envision the
Energy sector *benefitting*
of this **Acuvate's Digital**
Framework?

Applying Acuvate's Digital Framework for Energy

Acuvate's framework, to Modernize, Optimize and Transform businesses to Digital Decision Automation



- 1 For Energy, good support for Timeseries data is crucial + Linking to Asset Data and P&ID; Using GEN-AI to read / report / analyse your Timeseries data; Input for AI-ML for, for example, Predictive Maintenance.
- 2 Think about 5G for your offshore production platforms
- 3 With Edge real-time support + support robots and drones replacing staff by doing Operator rounds; Spotting problems (leakages) + reading meters, etc.
- 4 Acuvate Data Platform will function as your Company Data Platform with all data (any datatype). is important for your AI activities (step 5).
- 5 Acuvate Data Platform with all data (any datatype). is important for your AI (ML / MV) activities. ML for Predictive Maintenance and MV potential Damages. Increased usage of Gen-AI.
- 6 Start thinking about Digital Twin (step 6) (Operations / Maintenance / Engineering) in step-by-step approach: However, access to all data is important.
- 7 Getting IT and OT closer: In too many companies still too separate and that is not ok since IT can help OT and OT can help IT.



Oil & Gas, Energy



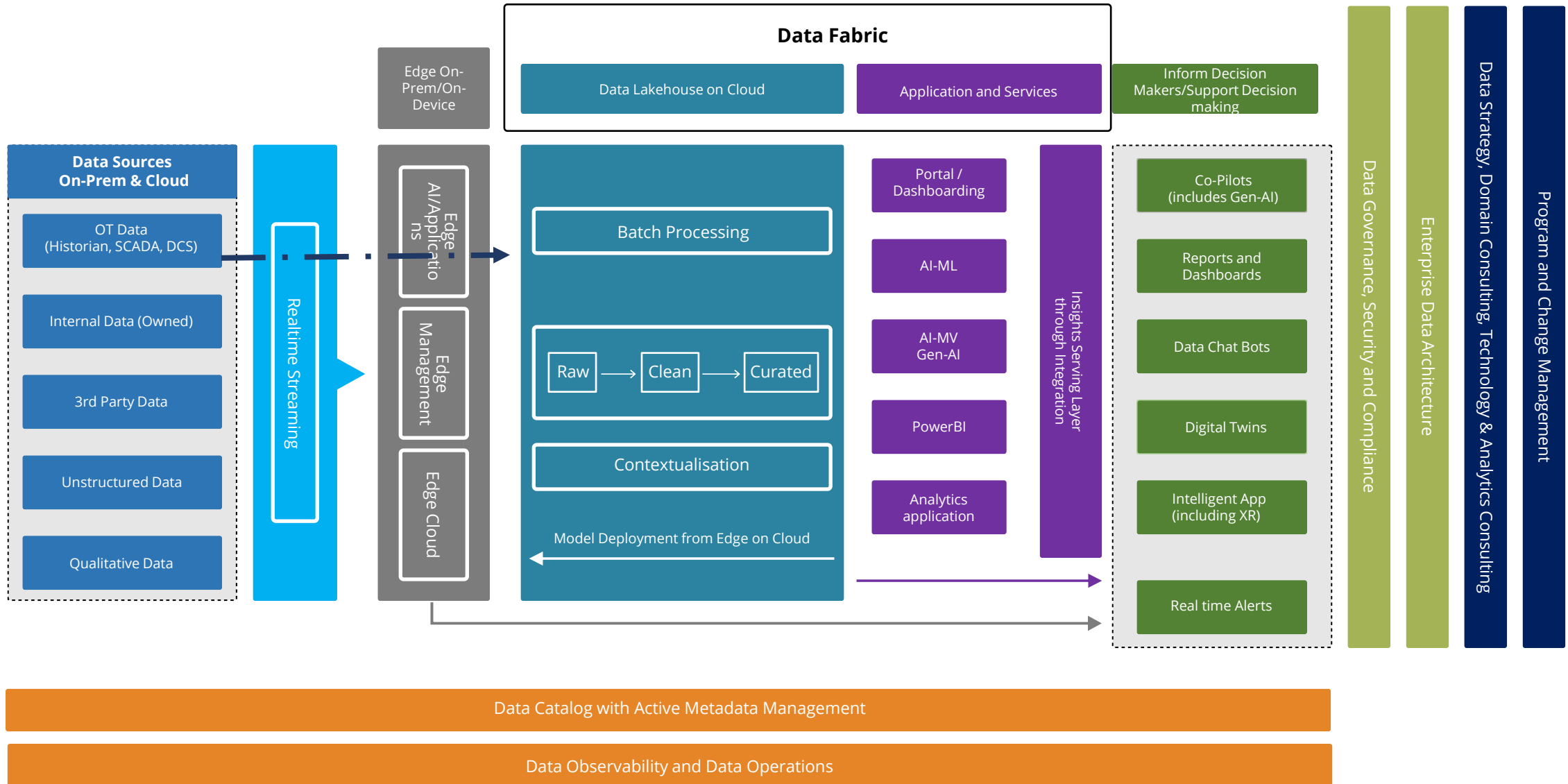
What is

**Acuvate's Industrial
Data Platform?**

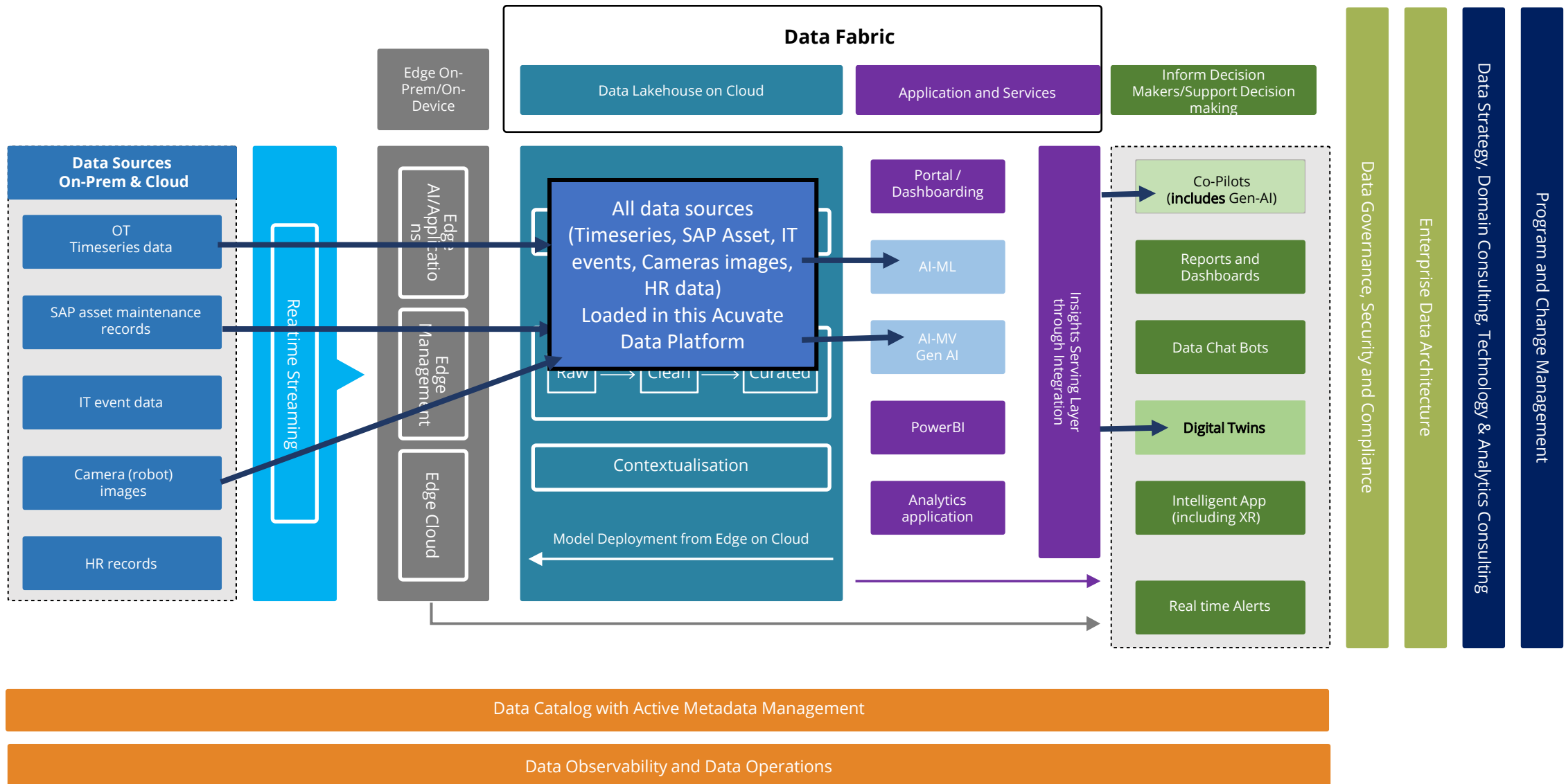
Acuvate's Industrial Data Platform

- **Scalable** to support ever increasing data volumes.
- This version is focused at **Energy** and Related File input data.
- For this reason, there is direct support for your important filetypes such as **Timeseries**, etc.
- Several features to **manipulate your important data types**.
- Full support for **AI (MV-ML) - GEN-AI** modelling and related data / query support.
- Link to **EDGE** version so data can be stored in edge and/or main data platform
- Fully imbedded in the **Acuvate 7 steps approach (see slide 9)**.

Acuvate's Industrial Intelligence Data Platform - Master



Acuvate's Industrial Intelligence Data Platform – Energy Example





Poll 2

In your organization,

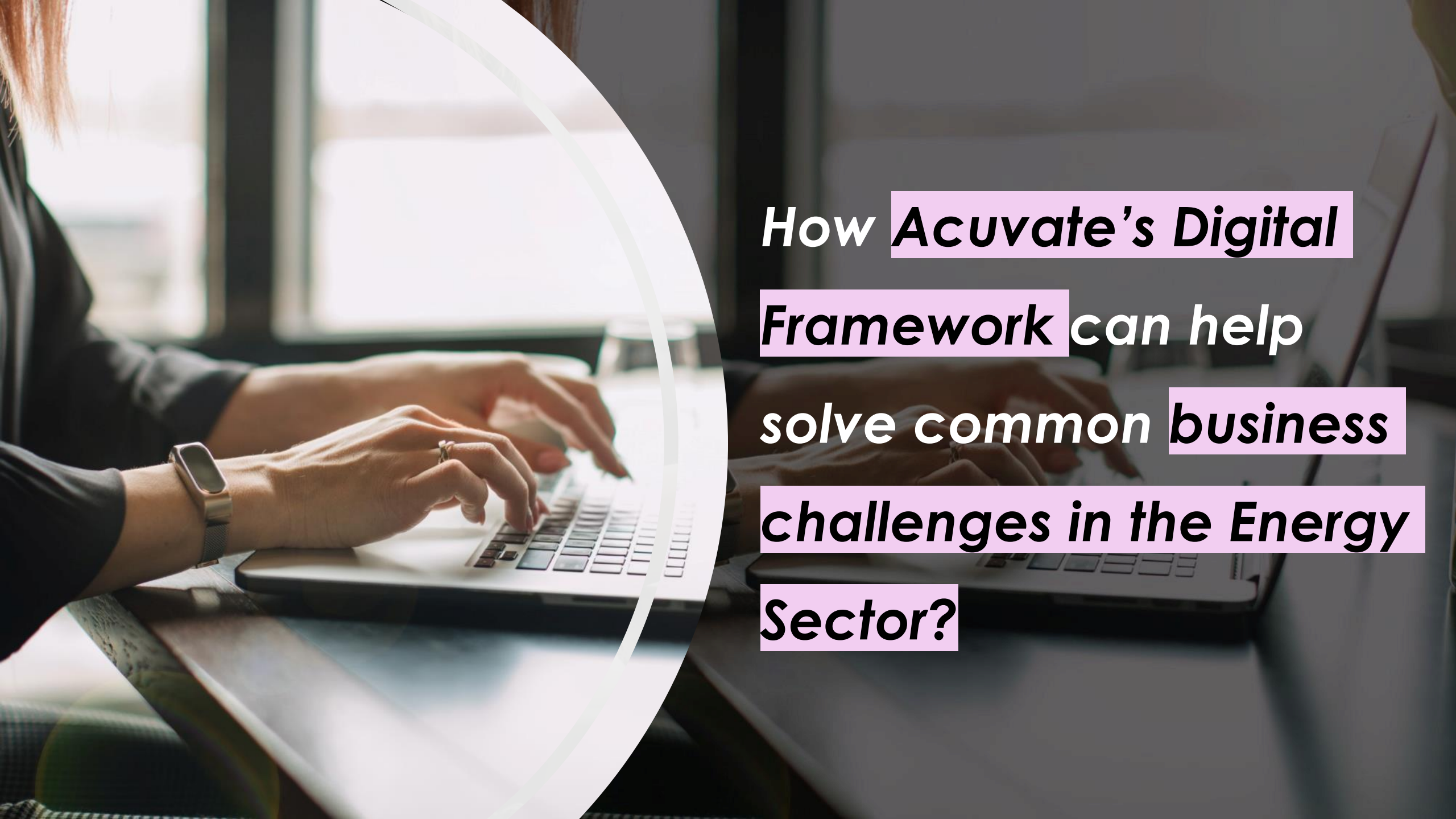
*what is the **biggest***

challenge in adopting

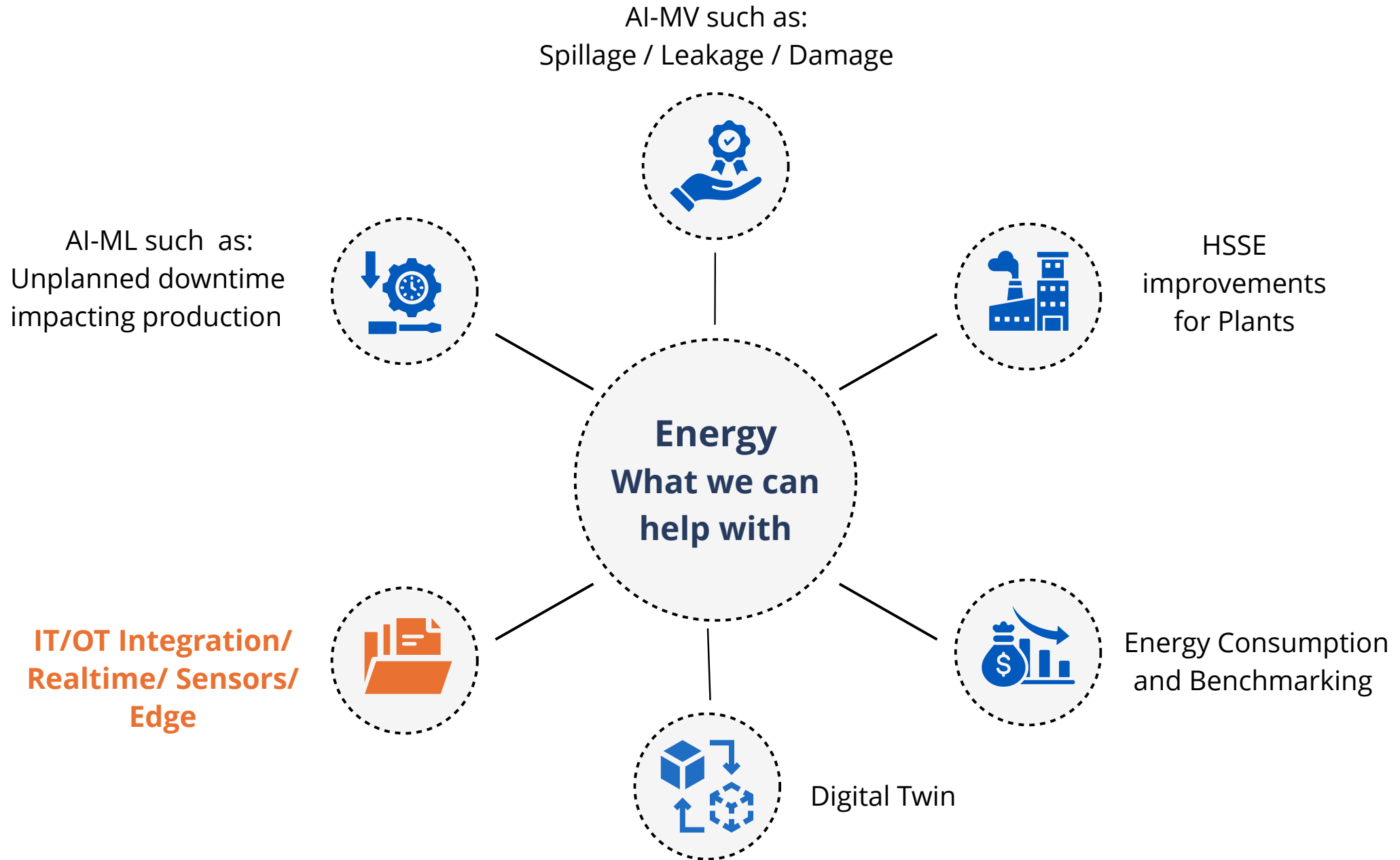
digital transformation

strategies within the

Energy sector?



How Acuvate's Digital Framework can help solve common business challenges in the Energy Sector?



IT (Information Technology)

IT is standards based such as WIFI; 4G/5G; Intel; MS Windows, LPWAN (Low Power Wide Area Network), etc.

There is a trend making the reporting Data collection part of the IT set up since it does not need the more stringent OT availability requirements; The latter are meant for all processes driving process automation and therefore running the actual facilities.

OT (Operational Technology)

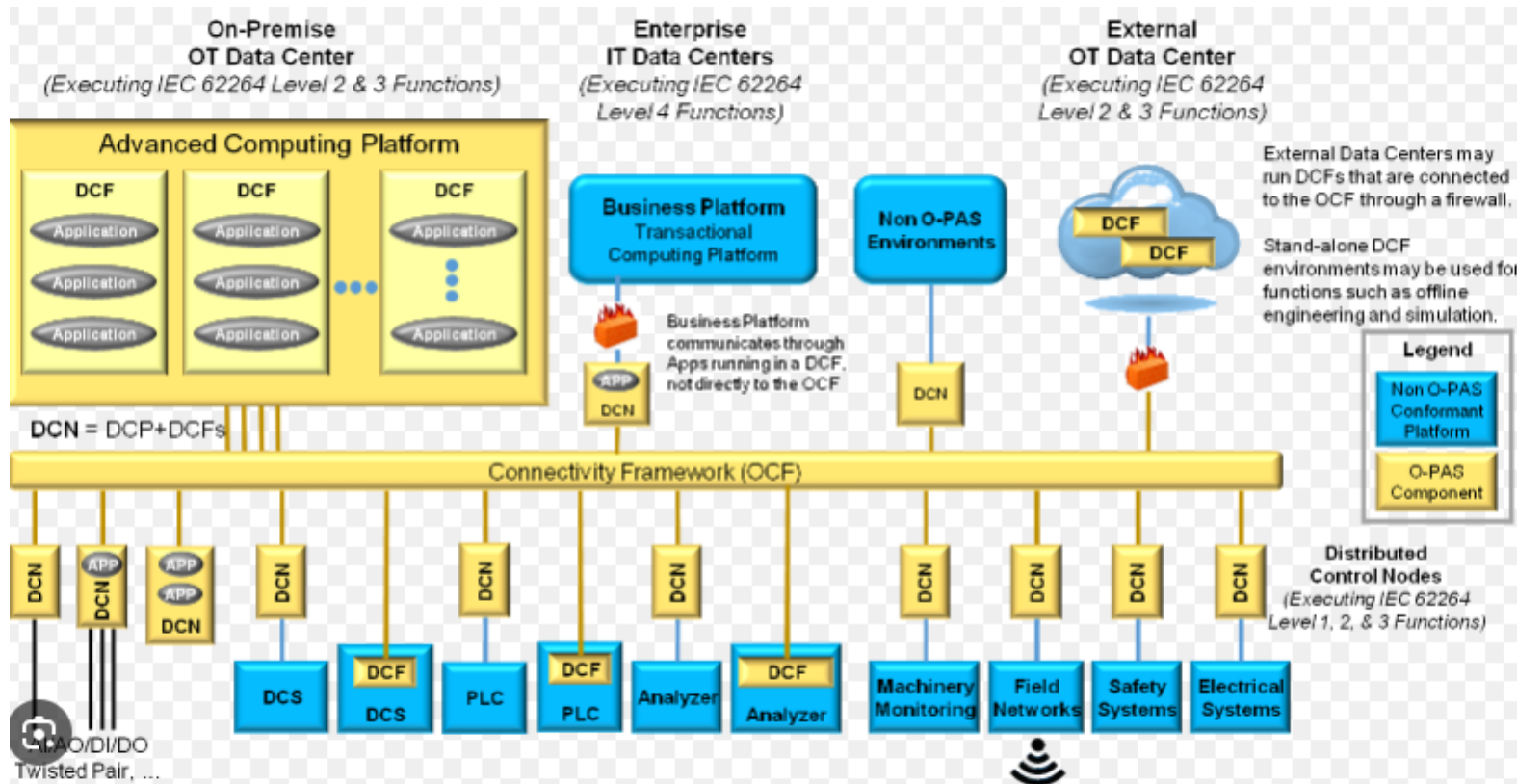
And relates to all activities used for running critical processes underpinning the plant: For example the Process Control Domain (PCD) for Energy companies driving their process automation.

OT is still mainly proprietary based, whereby mixing and matching of equipment of different suppliers often is not allowed ie PCD based on Siemens or Honeywell or Yokogawa, etc. equipment. This means less flexibility and higher cost.

Given the criticality OT service levels are more stringent.

IT and OT → OT (Energy) future developments

Some years ago a trend has started to make OT also standards based" One example: The O-PAS™ Standard is a "standard of standards" developed by the Open Process Automation™ Forum (OPAF). The standard defines an open, interoperable, and secure architecture for industrial process automation systems.



Sample O-PAS architecture

TO BE AWARE OF:

- Standards based
- Mix and match of hardware suppliers possible in future
- Non critical items such as reporting → IT based
- IT based eqp is lower cost than OT based eqp
- Includes satellite support (direct sensor to satellite connection)
- Process Control Domain (firewalls / managed (Timeseries) data out)
- New standards for interfacing

Acuvate will advise on when to use IT and when to use OT based facilities

Examples of sensors (indoor and outdoor)

Different types of sensors



Acuvate will advise on what sensor to use when



- MONITOR:**
- Battery powered:
One Year or more
 - Supports various network configs including satellites
 - All data (IT/OT) stored in Acuvate Data Platform
 - Sources: Fields, Platforms, drilling, transport, wells, etc.
 - Intrinsic safe
 - Monitoring volumes
 - Bi-directional
 - Support for broad spectrum of interfaces

When to use Edge:

- **Low latency and/or high data throughput is/are needed**
- **What:**
 - Compute + Storage very close to where data is collected → Allows for realtime response.
 - Compute + Storage in the same region as where data is collected → MS Azure, etc. Cloud based.
 - Single platform (ideally Open Source) for all use cases.
 - Fully remotely managed.
 - Also 5G with support for low latency → 5G has the lowest latency in this market and therefore important.
 - Support for INTEL / AMD / NVIDIA / ARM processing → Dependent on use case.
 - Different resilience levels.
 - Drones / Robotics (+camera): Collecting images and analyzing realtime (5G + Edge-AI-MV).

Edge usage examples:

- (Remote) Inspection: Using drones with cameras + realtime MV analysis.
- Leakage / Spillage: Using robots spotting it + realtime MV analysis.
- (Remote) platform support & management eg drilling / Production.
- (Edge) Quality Control: Immed action in case of non-compliance without Stopping production line.

Acuvate will advise on what edge server to use when





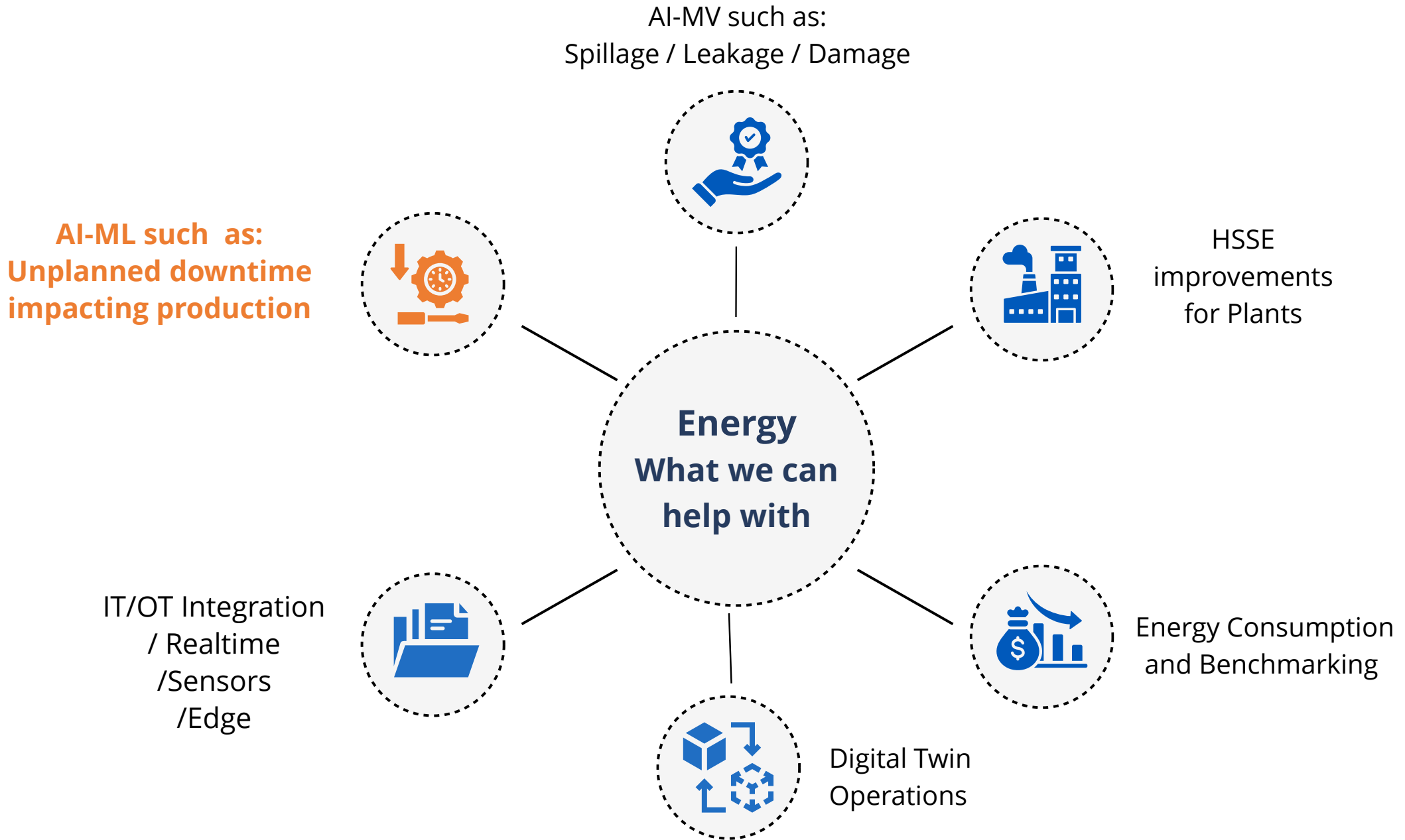
Example 1:

- Drone with **5G camera (your sensor)** flying over onshore Production areas.
- Cameras images are set in **realtime** to nearby **Edge device**,
- **AI-MV (Machine Vision)** on Edge analyses the data immediately and **immediate actions** are initiated in case of leakages / spillage.

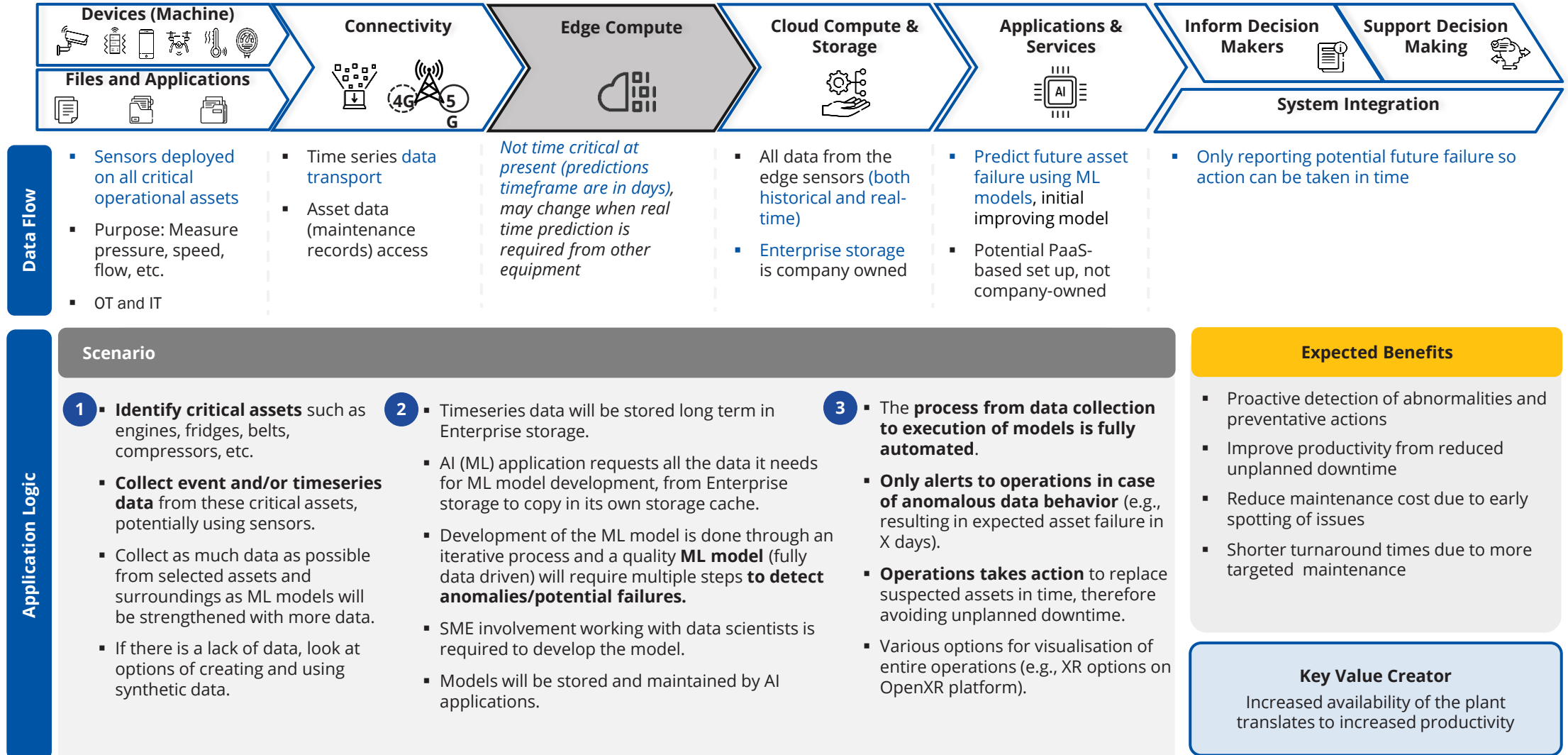


Example 2:

- Robot (with intrinsic safe support) with **5G camera (your sensor)** walks on offshore Gas production platform (does Operator round).
- Camera images are sent to **Cloud based enterprise Data Platform** (in case not time critical).
- **AI-MV analyses the data** for Meter Readings / Damages / etc. and in case of issues (like meter readings out of range) **informs Operations**.



Unplanned Downtime Impacting Gas Offshore Production



Before: Fixed-interval + Conditional Maintenance

- Fixed: Less conditional awareness
- Conditional: Risky, maintain only failure sign shown
- Machine shutdown for manual data/alarm collection
- Longer downtime, less productivity



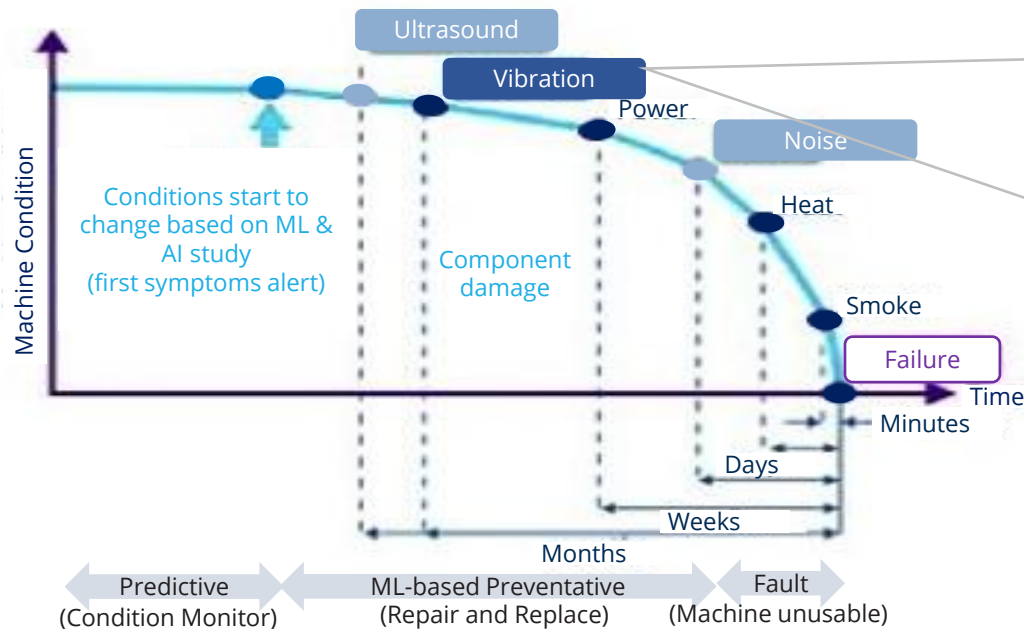
After digitalized: ML-based Preventative Maintenance

- Apply sensors on motor for timely and more frequent data collection
- Apply ML/AI over historical/real time data to predict upcoming machine failures
- Fast exception detection and troubleshooting; Longer service life
- Stop the machine if exceed warning threshold (E2E Latency: < 10ms)

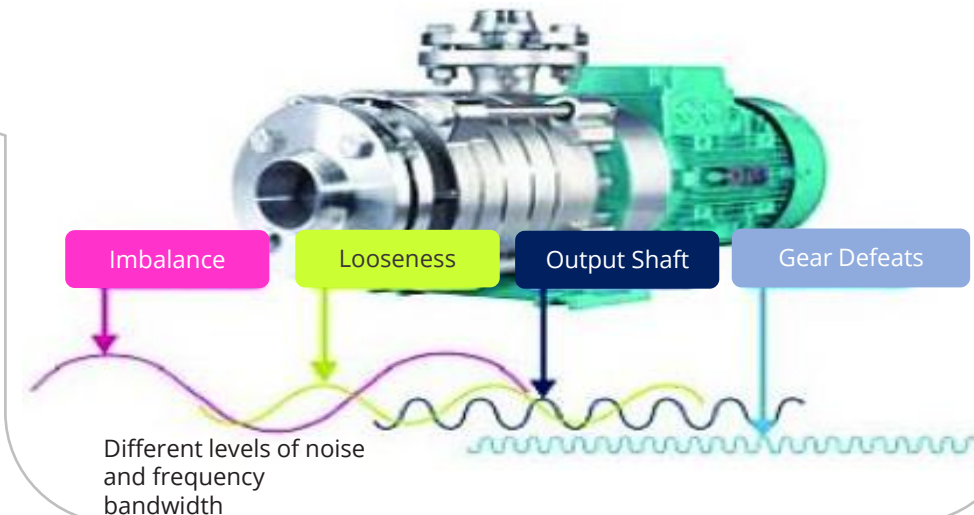
01

In preventative maintenance, sensors are available to monitor all aspects of motors, allowing to see damaging trends over time

Deterioration curve and related machine condition signals



Amount of energy / frequency spectrum in vibration of motor with its relative machine's faults



AI-MV such as:
Spillage / Leakage / Damage

AI-ML such as:
Unplanned downtime
impacting production

HSSE
improvements
for Plants

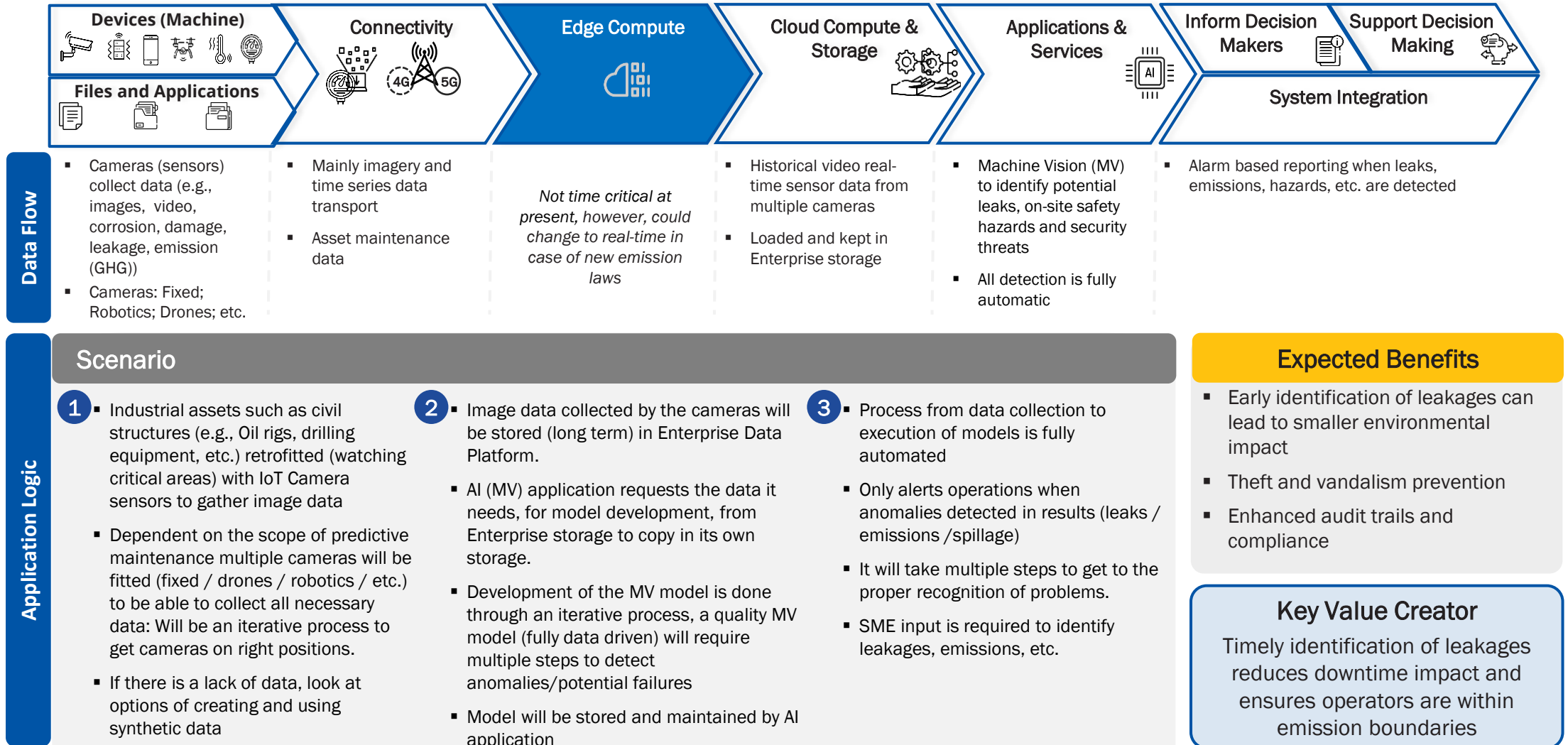
IT/OT Integration
/ Realtime
/Sensors
/Edge

Energy Consumption
and Benchmarking

Digital Twin
Operations



Leakages leading to safety hazards and negative environmental impact



Leakages leading to safety hazards and negative environmental impact



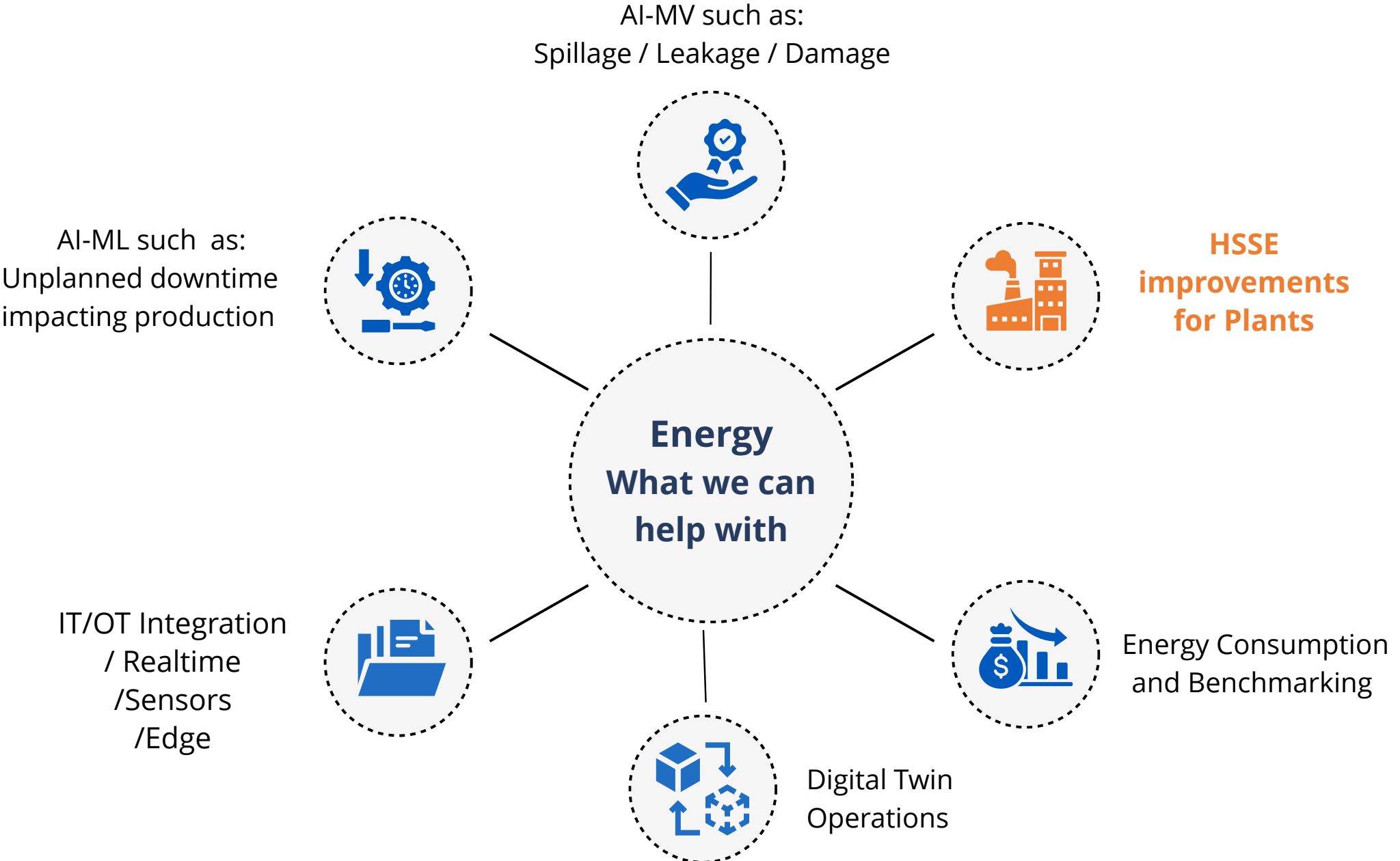
Intrinsic safe robots



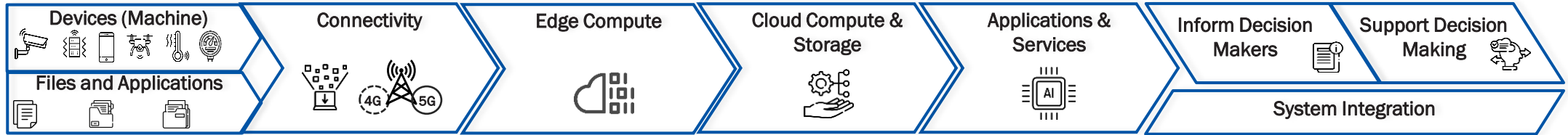
Performing Operational Rounds

- AI (Machine Vision) as the prime AI technology to analyze video images.
- When using 5G ready cameras images go realtime to edge or cloud for AI (MV) processing and then realtime action can be proposed or taken (autonomous).
- It will take time before AI (MV) gives the quality results you expect but when mature you get far better results then from Operators (sees leakages much earlier). Also role for GEN-AI.
- Robotics (Robots and Drones) play an increasing important role here.





Lowering number of HSSE incidents



Data Flow

- Cameras (fixed / drones / robotics / people) and sensors capture real-time behavioural, asset and facility insights
- (all images)
- Video, imagery and sensor data transport
- Time-critical: Edge AI camera will identify anomalous behaviors and defects in facility.
- Other data is stored in the cloud.
- All collected data stored in Enterprise storage
- AI applied to detect potential threats and hazards and ensure compliance (PaaS)
- Alert-based notification of suspicious activities

Scenario

Application Logic

- Cameras, sensors and edge devices installed throughout the facility to gather high-resolution video and imagery data.
 - Drones are deployed to increase coverage (including hard to reach areas) and transmit live data through 5G.
 - Camera coverage drives the quality of the HSSE coverage.
 - Cameras should have High-Definition image quality.
- AI (MV) models created using the data gathered to manage infrastructure, staff and operational risks.
 - Data processed by AI at 5G edge generates real-time virtual fencing for automated occupancy management (e.g., lifting of goods).
 - Machine vision (5G-based) can detect real-time potential threats.
- Automated compliancy to safety standards such as OSHA, IOGP 577, CCOHS
 - Actionable insights generated can provide decision makers with recommendations to prioritise specific tasks
 - AI-generated inspection checklists and emergency response plans

Expected Benefits

- Worker safety (real-time monitoring & hazard alert)
- On-site worker safety compliance/ PPE/ cost reduction
- Increased productivity (reduced hazards/ accidents)

Key Value Creator

Reduced number of safety incidents and related work absenteeism with improved staff morale

Machine Vision Provides Real Time Security Inspection for Early Detection

AI for Personnel Safety



Outfit detection

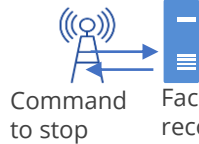
- Identify outfit of employees whether meets safety protection standards, such as safety helmets, purifier caps, workwear, and insulation boots.



Geo-fencing

- Camera + AI analytic for detection
- Identify workers and generates alarm if someone enters dangerous zone

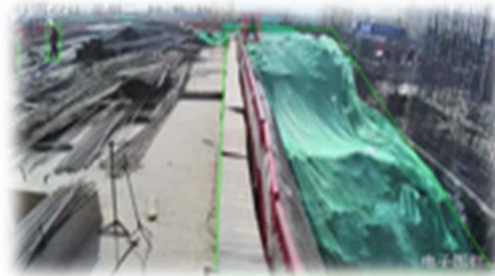
Sending photo



Command to stop
Face recognition



Warning Zone



- Real-time Image recognition monitoring to detect non-compliance of safety regulations
- Generate automated alerts and halt dangerous machinery when trespassing occurs

Pre-warning instead post-incident alert



Behavior detection

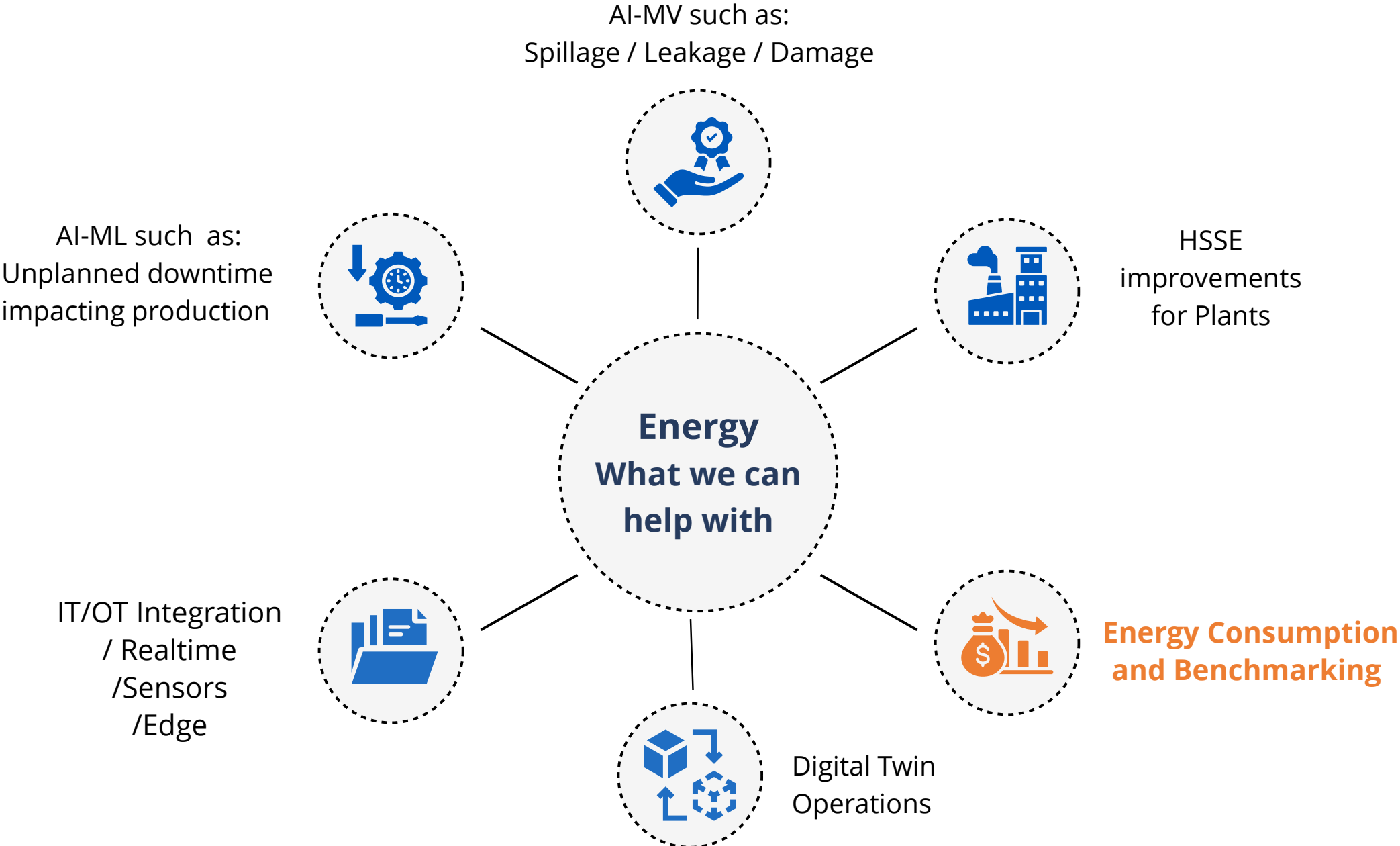
- Camera + AI analytic for detection
- Detect mobile phone usage and smoking



Fire and smoke detection

- Sensors + AI analytic for detection
- Generate alarms when detecting fire or smoke





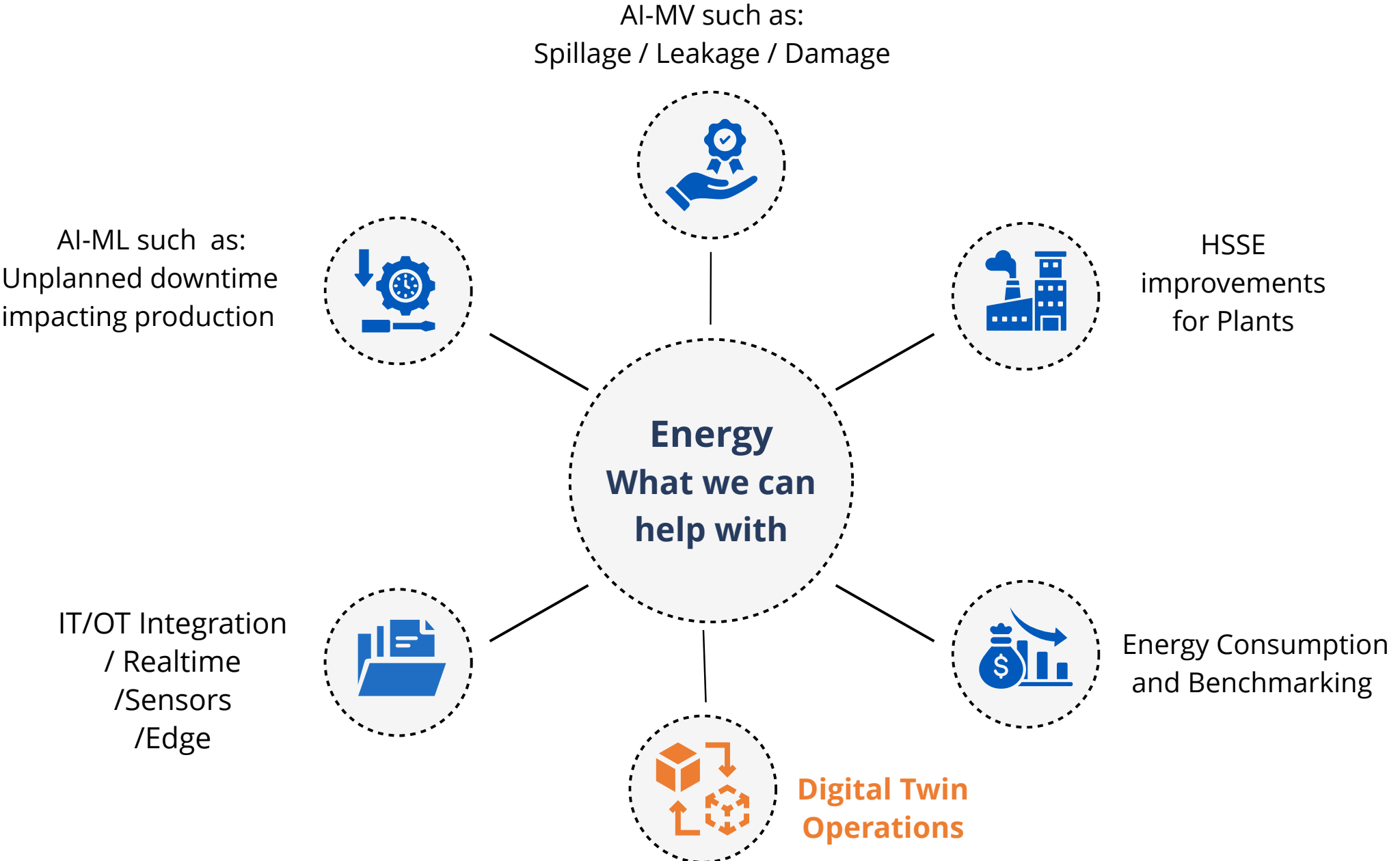
Energy Consumption: Collect data about energy usage of any plant + identify the most consuming parts of the plant using GenAI:

- It is first all about collecting the data: Operational data on energy usage; Do we need more sensors? Which components use most energy; Which components can be switched off, etc.
- Start small and grow with focus at high energy usage parts.

Energy examples:

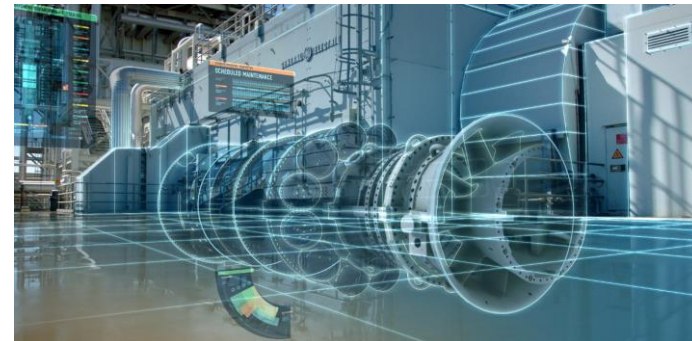
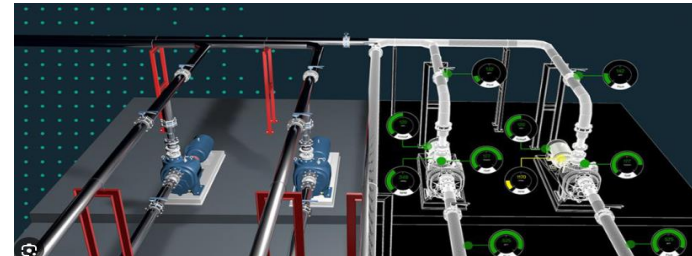
- Do we still need that component being energy inefficient.
- Have we switched off all devices not being used anymore to save energy.
- Are we using devices at optimum energy level?





Digital Twin: Avoiding siloed data which leads to ongoing operational inefficiencies

- Digital Twin should have access to all data sources in Data Platform to ensure that we do get a dynamic Digital Twin 100% aligned with the Physical set up.
- Of-course Digital Twin should integrate well with AI for both ML and MV so the Digital Twin can predict (show) future issues / problems / failures / etc.
- Actively use the Digital Twin to align various data sources to get to a single real time view.
- Over time in Energy Digital Twin to become the most important interface for Operations, Maintenance, Engineering, etc.
- It is important to maintain up to date physical laser scans.
- **Use Gen AI in conjunction with Digital Twin: Gen AI as the overall search interface and for Digital Twin to display the info.**



Streamlining Geoscience Knowledge Capture with AI-Assisted Documentation

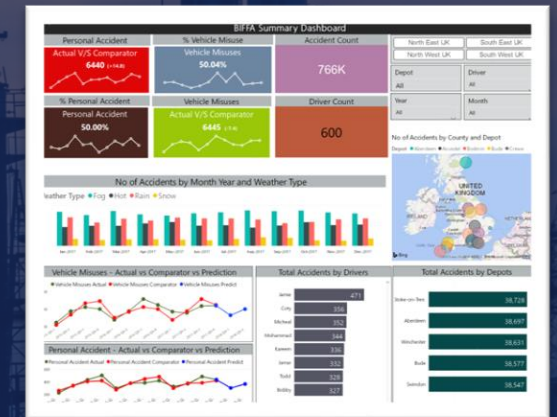
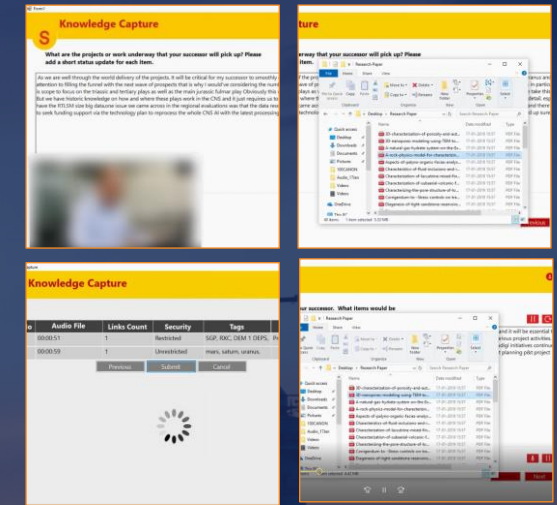
- Acuvate's Knowledge Capture Assistant revolutionizes how geoscientists manage their wealth of data and insights. By employing advanced Conversational AI, the system captures and converts spoken expertise into a structured knowledge base, reducing the manual effort traditionally involved in data documentation.
- It enables real-time voice and text entry, integrates with existing digital knowledge systems, and employs a custom speech and voice model tailored for geological terminology.
- This innovative solution ensures that critical geological information is easily stored, tagged, searchable, and accessible, paving the way for efficient knowledge transfer and continuity within research organizations.

[Read the full case study](#)

UK's Leading Waste Management Company Implements Machine Learning for Enhanced Driver Safety and Reduced Insurance Costs

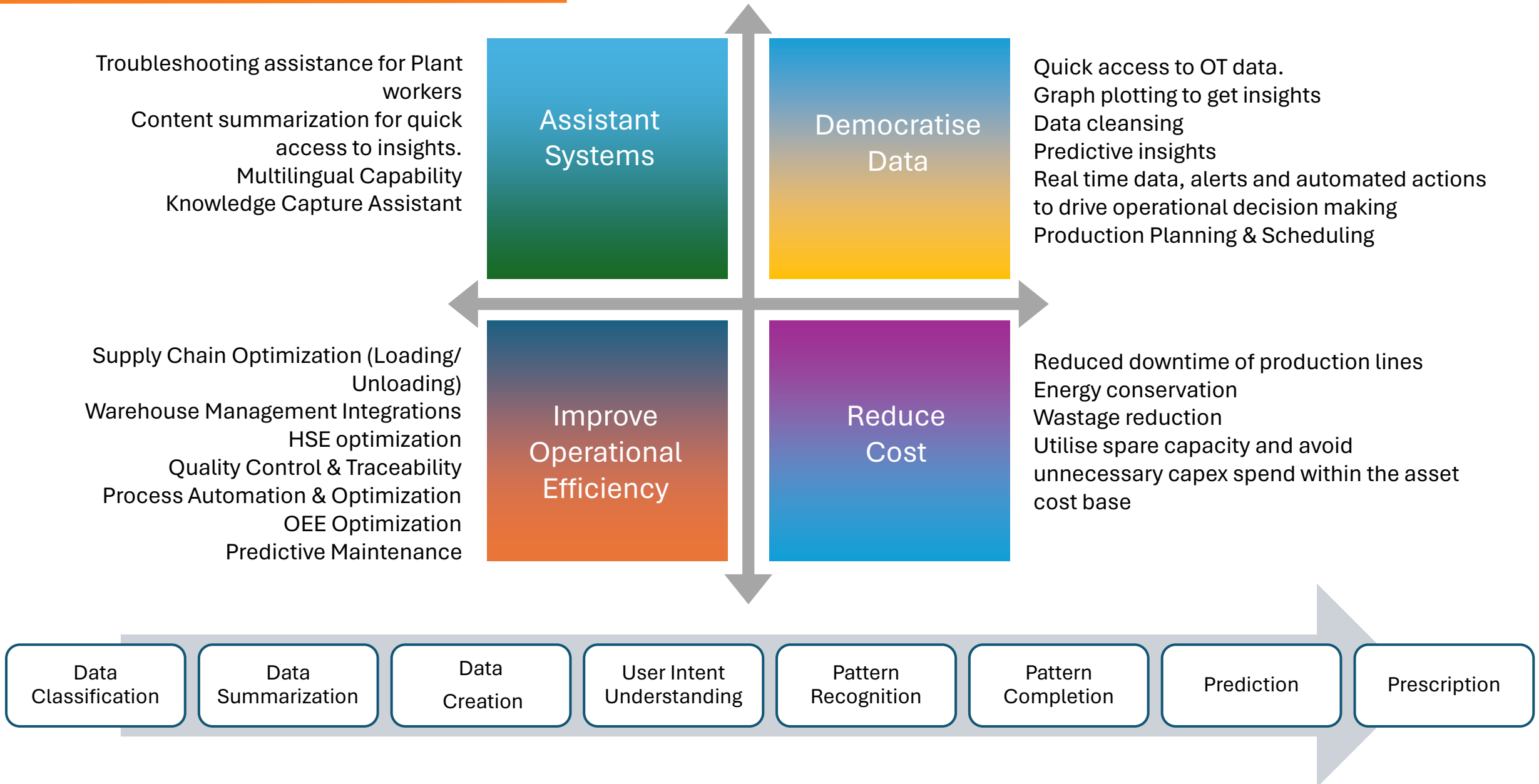
- The waste management company has integrated a machine learning solution to analyze telematics and tachograph data for its fleet of 1300 drivers to predict and prevent driving incidents.
- By forecasting potential accidents and identifying high-risk drivers, the company can focus on targeted training, thereby improving overall driver safety. This proactive approach has led to a decrease in accidents, enhanced driver safety, and a reduction in insurance payouts.
- Future plans include integrating weather data for more refined predictions.

[Read the full case study](#)



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Digital Solutions for Energy with Data & AI





Poll 3

How likely are you to explore **Acuvate's Data Platform and Digital Framework for your **Energy-related projects?****

Talk to Our Advisors

We have Advisors very familiar with the (Oil & Gas) Energy market, all its business elements and the Acuvate approach as explained, at an high level, in this pack.

These Advisors will help you to define the problem / challenge / issue you need to get solved.

Once defined they can give you a first approach how to get this solved.



Scan this QR & connect with Advisors
OR
or Write us at advisors@acuvate.com

We will respond you within 24 hours

Visit our company site www.acuvate.com for all information

ACUVATE

Where Acumen Drives Innovation

We are a global player in next-generation digital solutions & services that modernize, automate and transform enterprise applications. With over 17 years of experience, we have been enabling our clients globally to steer their digital transformation strategy using Cloud, Data & AI. We build & develop smart & sustainable solutions to help our customers transform their conventional processes to match the next-generation technological trend. We have a strong presence in the US, Europe, and Middle East, where we serve multiple ultra-large customers as well as SMBs from various sectors such as Public Sector, CPG, Retail, Oil & Gas, Energy, Manufacturing, BFSI, Healthcare, etc.

We specialize in New-age AI solutions, Migration & Modernization, Data & Analytics, Digital Workplace Solutions - like Power apps, Teams apps, Virtual Agents and more. We have transformed several reputed enterprises globally, including many Fortune 500. With our multi-skilled experts and packaged AI accelerators, we deliver unparalleled efficiencies and accelerate time-to-value for our customers.

Contact: info@acuvate.com



THANK YOU

acuvate[®]
... where Acumen drives Innovation

UK's Leading Waste Management Company Implements Machine Learning for Enhanced Driver Safety and Reduced Insurance Costs

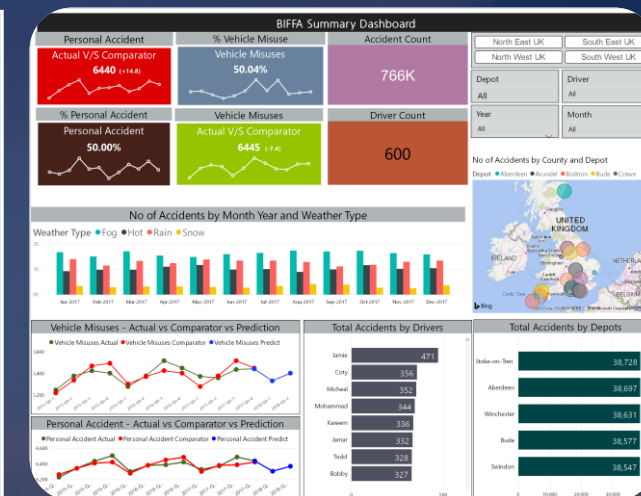
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[Read the full case study](#)

Global Oil & Gas Major Optimizes Site Surveillance & Safety with Acuvate's Site Monitoring Solution

- A leading global oil and gas company has implemented Acuvate's site monitoring solution to enhance the surveillance and safety of its multiple oil and gas sites worldwide.
- The solution simplifies the management of site operations, ensures safety standards are maintained, and activity is monitored effectively, thus reducing the need for extensive human resources.
- Key features include clear zone definition, a unified dashboard for site supervision, an alert monitoring system, and fast emergency evacuation processes.
- This technology has significantly improved the efficiency of site managers, supervisors, and administrators, and has led to improved safety for site workers and the workplace

[Read the full case study](#)



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