

SYNERGY FOR ENERGY 2024

HARNESSING AI & DIGITAL DATA FOR OIL & GAS EXCELLENCE

How Acuvate with partners is helping **Energy (Oil & Gas) Industries** to get the maximum out of **DIGITAL (Transformation)**

26/09/2024



Johan Krebbers
Chief Technology
Officer

Agenda

- **Acuvate base enterprise services:**
 - Acuvate (7 steps) Standard Digital Framework
 - Acuvate Enterprise Data Platform
 - Acuvate Enterprise Gen-AI Platform
- **Acuvate Standard Digital Framework**
 - Explaining each of the 7 steps.
- **Partner introduction**



Objectives for today

- Give information about how to go about Digital Transformation.
- Demonstrate options how to get data out of the field in the Operations Center driving optimized Operations.
- Getting ideas about “low hanging fruit” for your own Digital Transformation.
- Understanding how Gen-AI can also provide real value to Oil & Gas Energy.
- Understanding how Acuvate & Partners can really help you in an practical way.

Acuvate's End to End Data Services

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Acuvate's End to End Data Services



DIGITAL driven.



Need for increased Speed & Efficiency drives Demand for **Realtime** execution of business workflows.



Scalability important given the expected **explosive growth of data**.



OT and **IT** support.



End to End: From collecting the right data as input to getting maximum **Business value** out of each process.



Our prime focus initially at **ENERGY**, but growing towards other Industries.



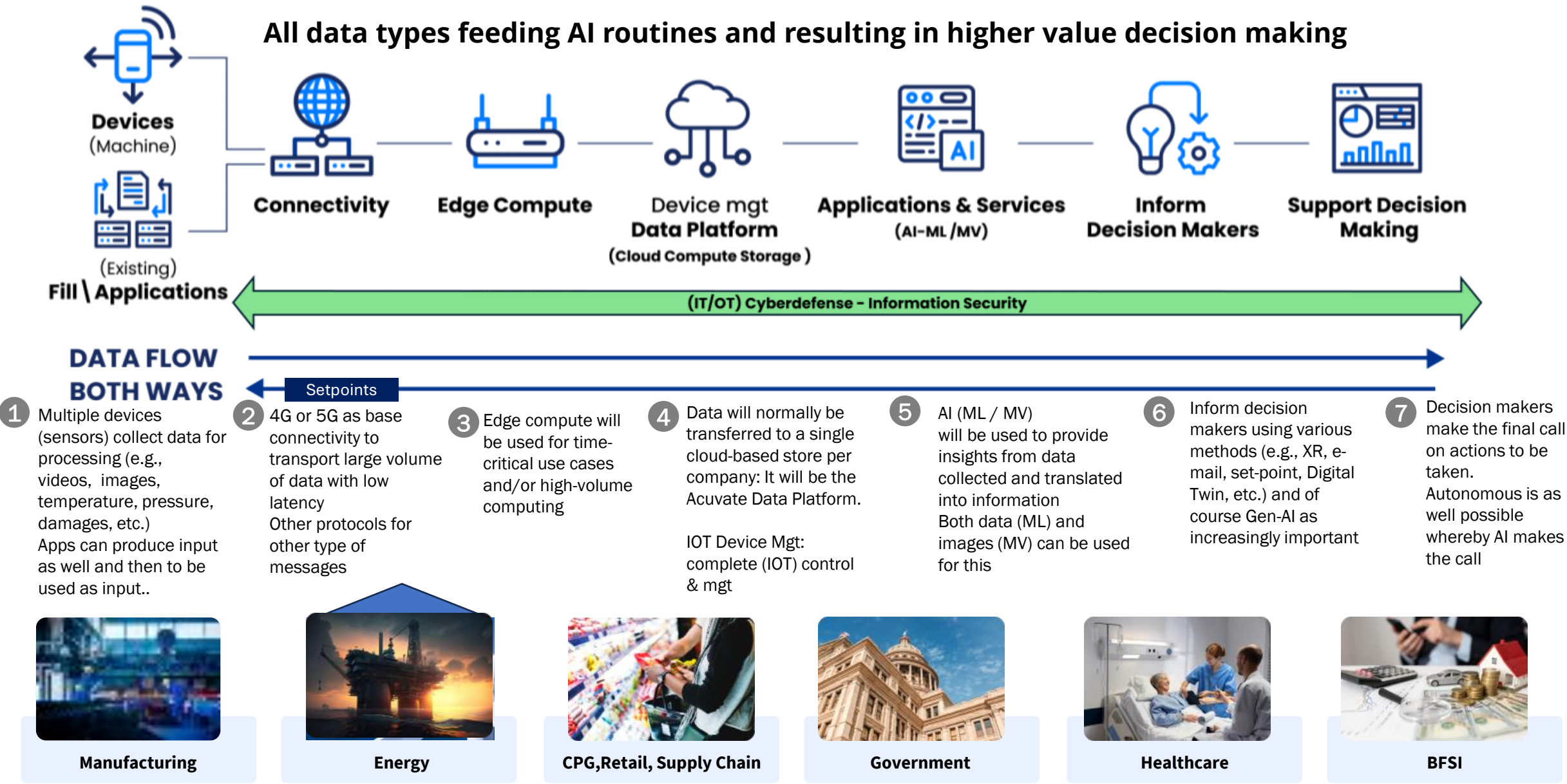
Data quality addressed and therefore being able to exploit latest **AI (ML / MV / GEN)** developments



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

Acuvate's Industrial Intelligence Data Platform

Scalable to support ever increasing data volumes.



For this reason, there is direct support for important filetypes such as **Timeseries** etc.



Full support for AI (MV-ML) - GEN-AI modelling and related data / query support.



Fully imbedded in the Acuvate 7 steps approach (see slide 8).



This version is focused at and Related File input data.



Several features to manipulate your important data types.

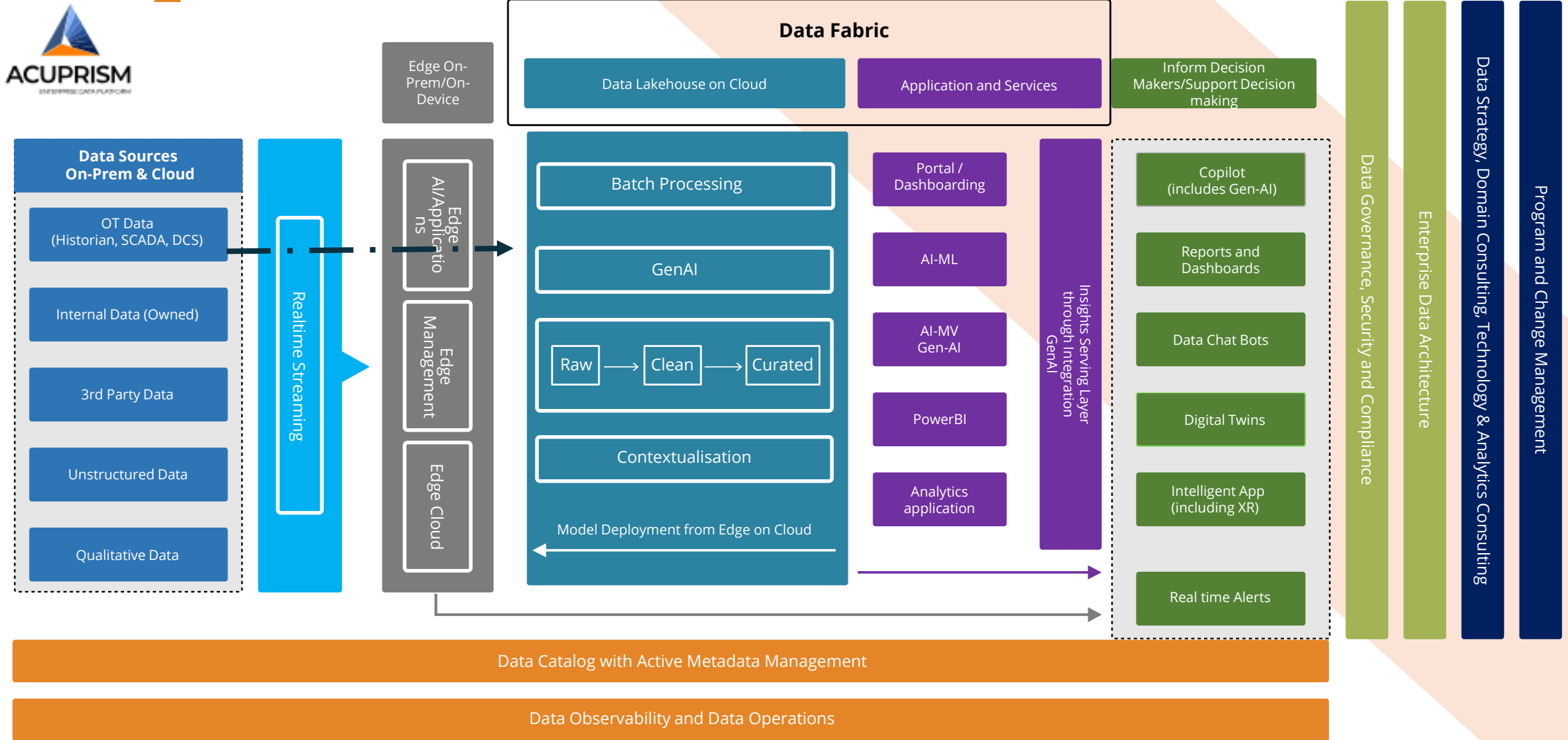


Link to EDGE version so data can be stored in Edge and/or main data platform



Acuvate's Industrial Intelligence Data Platform – Master

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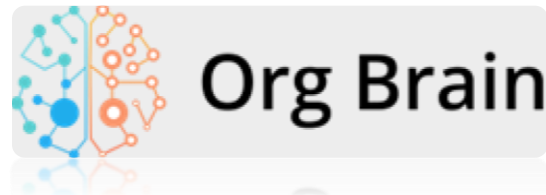


- Databricks based with (OIL&Gas) Energy extensions supporting PI data
- MS Fabric for smaller sites
- Runs on Cloud (MS Azure)

- Includes KAFKA for streaming.
- Fully preconfigured so fast installation & efficient ongoing oper. support
- Installed in customer MS Azure subscription

ACUVATE'S VISION FOR GENERATIVE AI PLATFORM

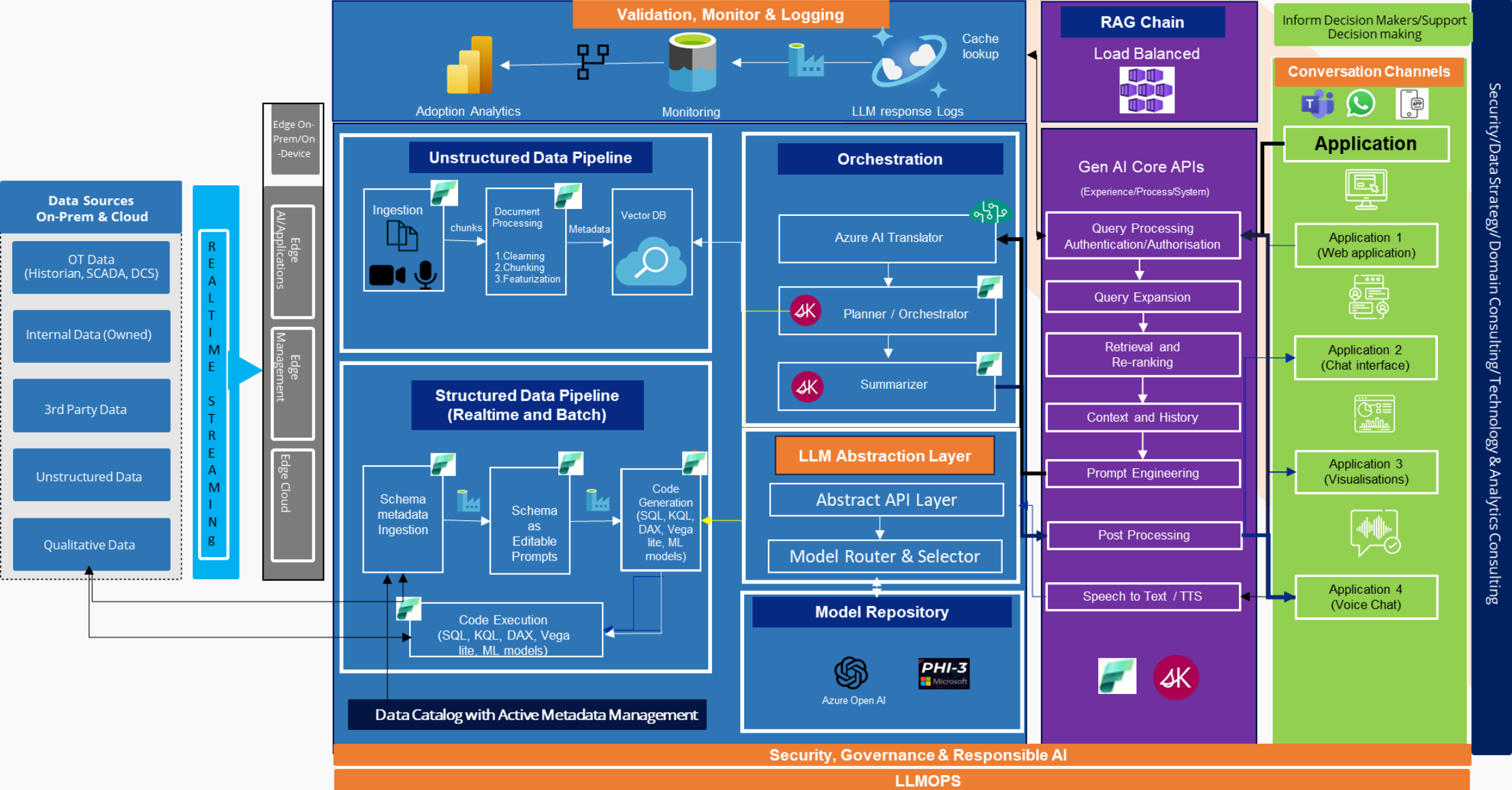
"Our Vision is to empower Enterprises harness the power of Generative AI by adopting the cutting-edge technology services available in the market using an enterprise ready platform approach. The platform should accelerate the time to market enabling businesses to swiftly roll out innovative use cases and achieve their strategic goals with efficiency and confidence."



In order to achieve this vision, Acuvate has developed a framework – "**Org Brain**".

Org Brain, simply put, is an accelerator framework designed to enable organizations to swiftly build and deploy Centralized GenAI platform. It consists of pre-built components & methodologies that are enterprise ready and have been built by implementing using the available technologies and best practices. Org Brain eliminates the need to start from scratch, significantly reducing development time and effort by at least 40%.

ACUVATE'S CENTRALIZED GENAI PLATFORM ARCHITECTURE



HOW YOU CAN GET BENEFITS FROM ACUVATE GENAI PLATFORM & ORG BRAIN ACCELERATOR?



Centralized Governance: Enables centralized governance, ensuring compliance and security measures are uniformly enforced.



Up-to-Date Innovation: Maintains a modern technology stack, incorporating the latest advancements to enhance usability across various applications.



Cost Efficiency: Drives cost savings through reduced development expenses by leveraging innovative technologies, staying current with tech trends, and minimizing maintenance costs.



Data Security: Enhances data security protocols, minimizing the risk of unauthorized access and inadvertent data exposure, thereby significantly reducing the likelihood of security breaches within Unilever.



Continuous Improvement: Fosters iterative enhancements based on feedback from implemented GenAI applications, ensuring ongoing relevance and operational efficiency.



API Integration: Business teams can seamlessly integrate platform APIs into their applications, leveraging capabilities such as RAG for more accurate information retrieval.



Data Type Agnosticism: Supports a variety of data types, enabling business users to access real-time analytics, forecasting data, and AI-driven insights effortlessly.



Cloud Agnosticism: Provides flexibility to migrate between different cloud platforms easily, offering centralized management for streamlined transition.



Multi-Lingual and Multi-Channel Capabilities: Facilitates the rollout of GenAI applications across different languages and interfaces, ensuring accessibility and usability across diverse user groups within Unilever.



Cloud Platform Agnostic: Offers a centralized location for managing GenAI models, facilitating smooth movement from one cloud platform to another as per business needs and preferences.

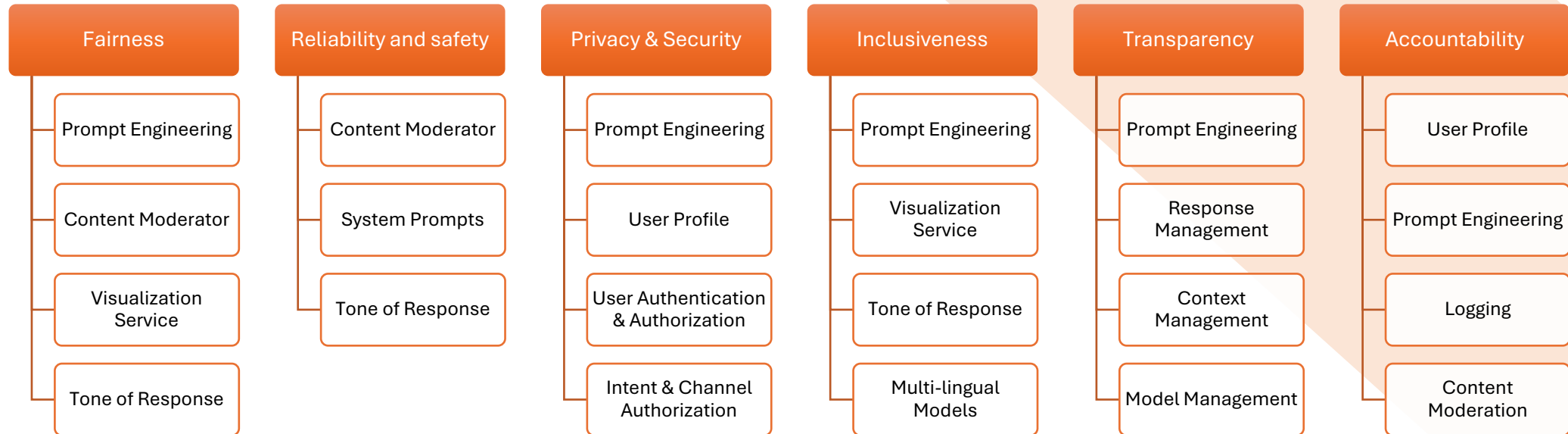


Seamless Integration: Effortlessly integrates with various types of GenAI models tailored to specific use cases and compatible with different cloud partners.

Acuvate Generative AI Platform

Secure, Govern, and Optimize Your AI Operations

The Acuvate Response AI Framework is designed to ensure that AI systems, particularly those using Generative AI, operate within a robust governance framework. This framework is built around six key pillars: Fairness, Reliability and Safety, Privacy & Security, Inclusiveness, Transparency, and Accountability.

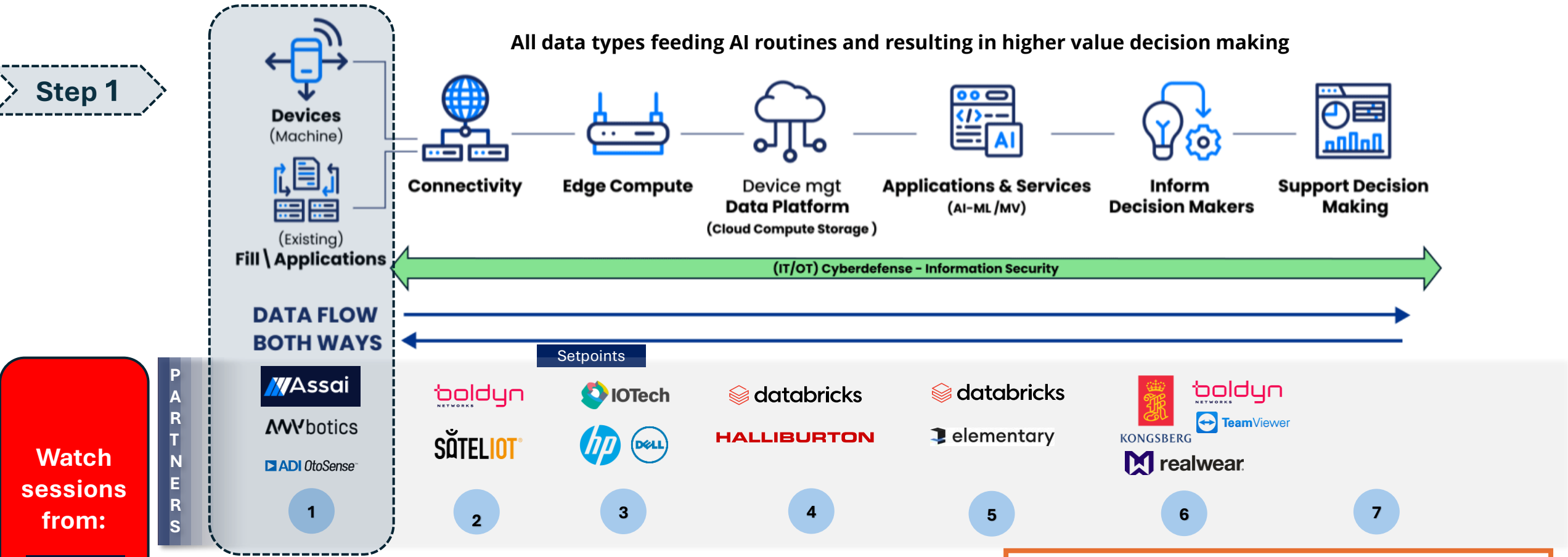


By embedding these **Response AI Framework** into the **Acuvate Org Brain – Generative AI Platform**, ensures that your AI systems are governed properly and remain secure, ethical, and compliant. This framework protects against bias, enhances reliability, safeguards privacy, promotes inclusiveness, ensures transparency, and maintains accountability—helping organizations mitigate risks and confidently adopt AI.

Acuvate's Standard Digital Framework + (Current) Partners



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



Watch sessions from:

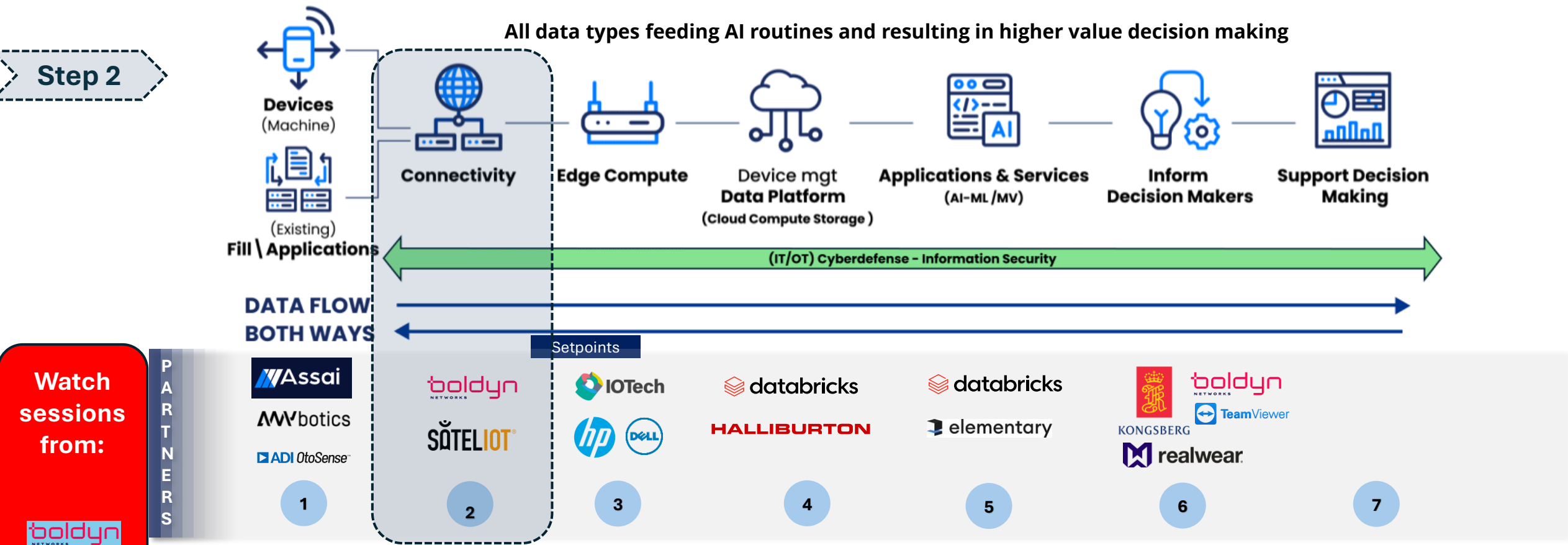
Assai
(Ramil)
Anybotics
(Mukesh)

- Identify data sources: Internal / External – Event / Timeseries / ERP / Asset data / Weather – Unstructured data – Camera images (HSSE / Spillage / Leakage)
- PI timeseries data is very important.
- If / What sensors are needed to collect the data; Broad spectrum of sensors
- What protocol is needed to collect the data: OPC-UA / LoRaWAN / NB-IOT / etc.
- Environment: Support for both OT / IT
- ANYbotics: (Intrinsic safe walking robots) / Onshore – Offshore platforms.
- ASSAI: Engineering Document Management and Control.

- 5G (4K) cameras for Realtime streaming: No fiber cables needed
- Shipping: Integration with companies with specialised sensors
- All PI historian data in single Acuvate Enterprise Data Platform
- OT: From Proprietary to Industry standards (O-PAS)
- (Together with Edge) Realtime decision making supported
- Timeseries data used for Predictive Maintenance

Acuvate's Standard Digital Framework + (Current) Partners

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



Watch sessions from:



(Chris)

- To connect data sources (sensors) to Acuvate Edge Platform or Acuvate Enterprise Data Platform.
- Protocols can be message type dependent like 5G for large data streams like 4K camera images or NB-IOT / LoRaWAN for small messages like temperature, pressure, etc.
- Increased used of Satellite IOT (like our partner Sateliot) for short message and payment per message. Using satellite means no need for connectivity infrastructure on the ground.
- Increased demand for 5G: Where available use public 5G and where not use private 5G (Boldyn to design, implement and support private 5G).

Consider 5G as well for OT type traffic (guaranteed bandwidth)

IOT-Satellite for sensor to data center conn: Delay 10-15 min

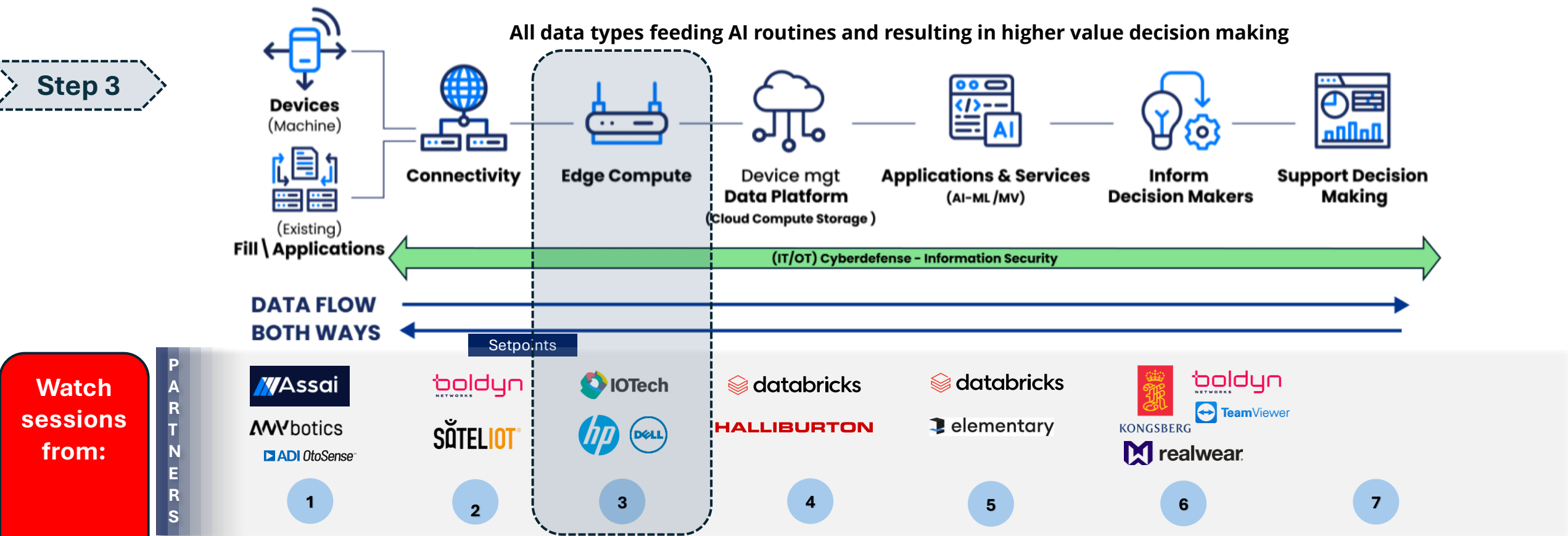
5G, Edge and Robotics on offshore platform (done in Malaysia)

(Advisory) Setpoint support needed

For messages consider NB-IOT and LoRaWAN (both are standards)

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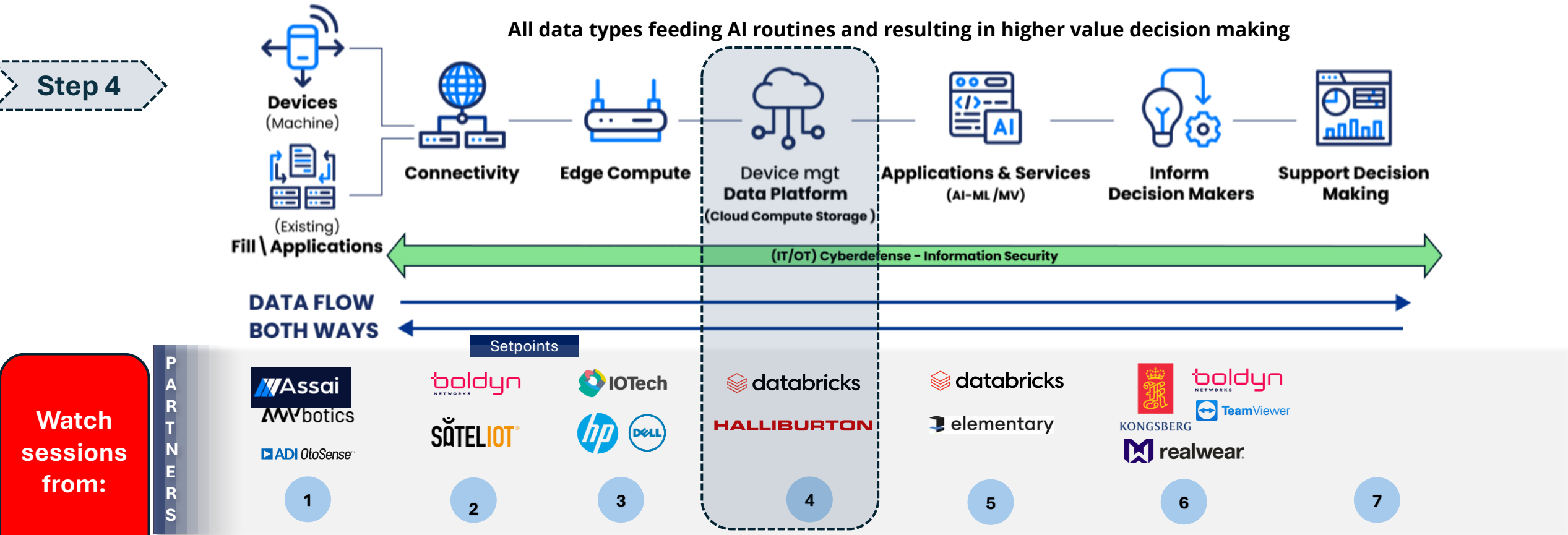


- Increased Edge usage because of 5G (low latency + high throughput) and (near) and camera usage realtime decision making possible.
- Edge normally close to data sources → Hardware ready for harsh environments
- IOTech Edge Central as the base for the Acuvate Edge Platform: Also ready for running AI-ML or AI-MV flavours → Trained on Cloud

- HP and Dell as standard hardware providers: Customer decides
- Consider NVIDIA GPU (eg Jetson) when running AI on Edge
- Camera analytics (AI-MV) on Edge eg for HSSE or Operations (Spillage) / Zone protection / etc.
- Making sure that all Edge data is also copied to ADP
- Exploit Open Source (EdgeFoundry) to offer max. connectivity

Acuvate's Standard Digital Framework + (Current) Partners

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



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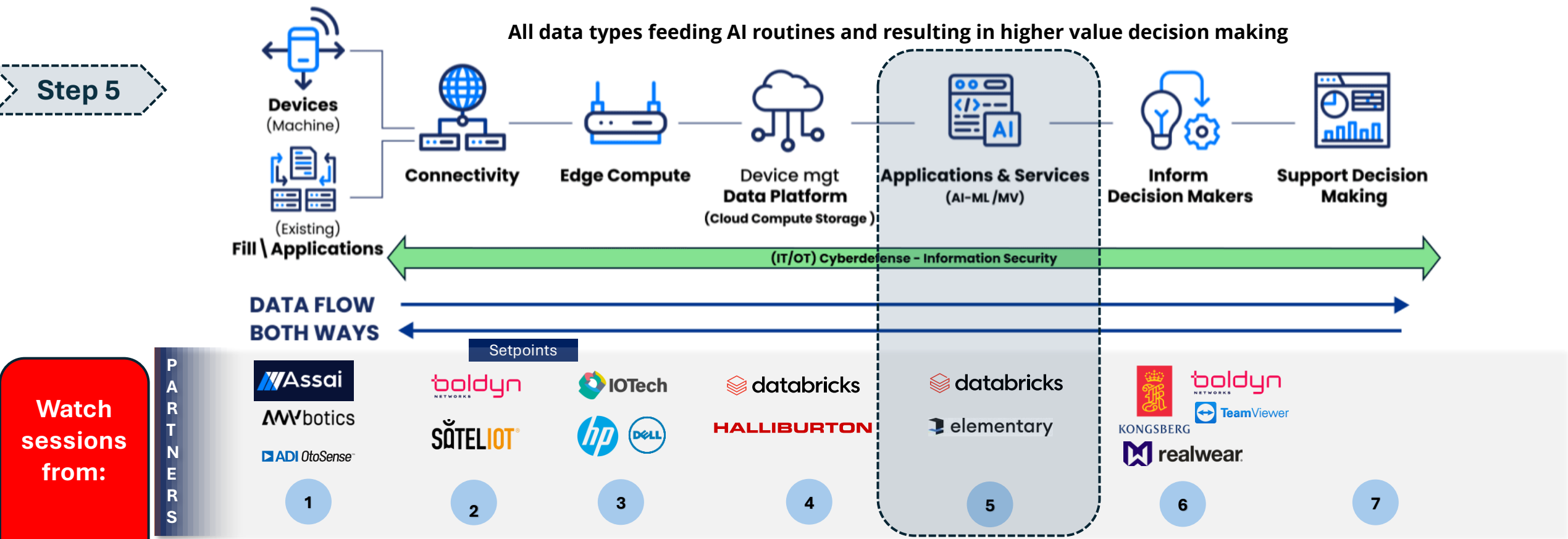
databricks (Reishin)

- Acuvate Enterprise Data Platform based on Databricks Lakehouse, Shell RTDIP (<https://www.databricks.com/blog/developing-time-series-lakehouse-shell>), KAFKA, PI high speed interface (SSIP), data model, supporting all necessary (industrial) data types.
- Complete prebuilt release available for all major cloud platforms.
- Various features such as data contextualisation & Aligned data sources for User Interface.
- Feeds Analytics steps including AI Machine Learning, AI Machine Vision and Gen-AI developments and training.
- Halliburton integration under review.

- Runs on customer cloud (MS) subscription → Also gives clarity about data ownership; We provide ongoing operational support
- Proven: Handles all your historical timeseries data (supporting >billions of records)
- Two flavours: Databricks / MS Fabric for smaller implementations
- Raw / Cleaned / Curated data;
- No longer separation between Industrial & Business data

Acuvate's Standard Digital Framework + (Current) Partners

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



Watch sessions from:

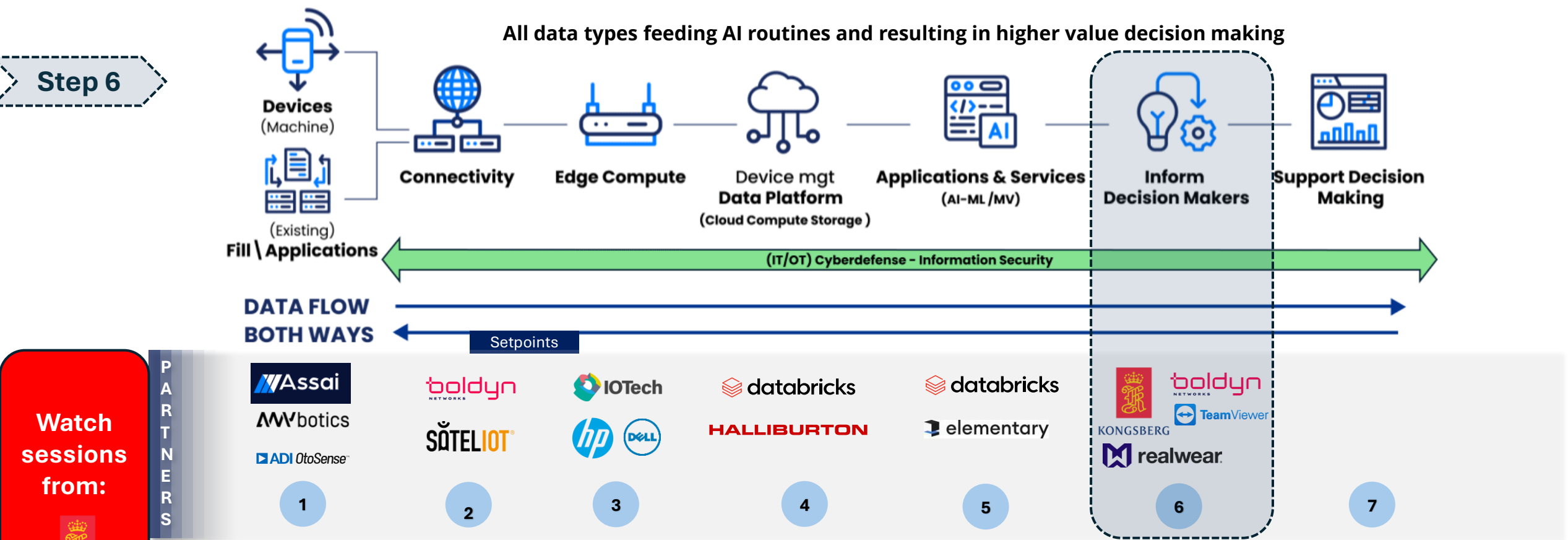
databricks (Reishin)

- Analytics layer: Here value has to be retrieved from the Data Platform and other data sources.
- Of course AI plays an important role, but as well lower tech analytics technologies is still being used.
- Acuvate has developed as well the Acuvate Enterprise Gen-AI Platform assisting companies in making safe and secure usage of this technology.
- Like with the Acuvate Enterprise Data Platform we use several Databricks components such as the Unity (Open Source) catalog and of course various (Open Source) LLMs.

- Increasing Gen-AI usage also replacing AI-MV
- Indeed multiple (domain) LLMs can be used, but linked to business problems to be solved
- Look at Databricks and std reporting capabilities such as Project Genie (Gen-AI), MS PowerBI, etc.
- For Edge: Develop + train here: But operational running on Edge.

Acuvate's Standard Digital Framework + (Current) Partners

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



Watch sessions from:



KONGSBERG

(Neeraj)



(Chris)



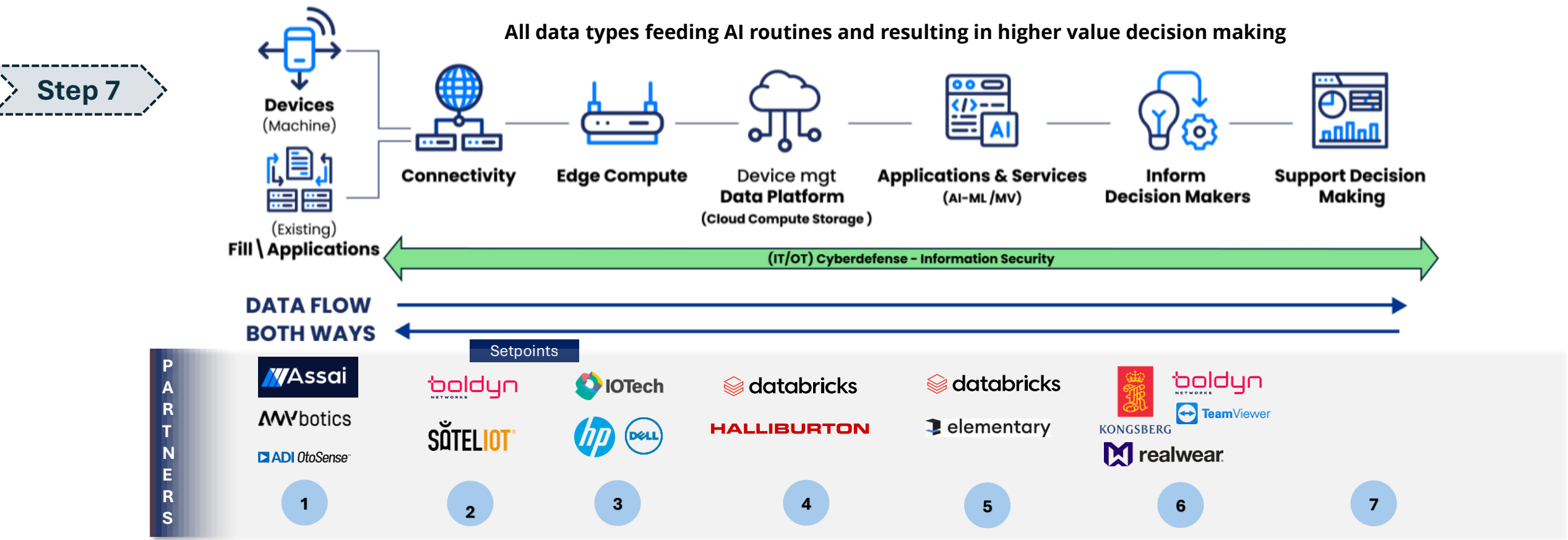
(Jacqueline)

- Smooth integration into the end to end business workflow has to happen here such that analytics results are understood.
- Boldyn is relevant here as well since there will be a need for Private 5G Networking at multiple locations; Realwear happily makes usage of 5G as well.
- Digital Twin: KDI Kognitwin solution supported and we provide the integration and data access services. A large amount of data is important for quality of AI work.

- Digital Twin usage as prime interface increasing
- MS Copilot integration
- Added features based on Low / No code dev.
- Gen-AI and Digital Twin integration: Richer explanations based on Gen-AI

Acuvate's Standard Digital Framework + (Current) Partners

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



- Based on results made visible in Step 6 the decision make has the final call in Step 7.
- Increasingly we move towards autonomous operations: This means that an AI Machine Learning and/or Machine Vision and/or Gen-AI process, based on all data analyzed, will make the call.

Autonomous: Decision and initiation of decision making at step 6
→ Therefore no Step 7 in this case

Could mean an (advisory) setpoint back to OT

Could result in change in Pressure / Temperature

Digital Transformation: **Acuvate** to take this end to end

Collect data and documents:

- (Pull) Type of data driven by what a **(Digital Twin) user** wants to see at any time.
- (Push) When there are issues alert the **(Digital Twin user)** with relevant data.
- Sensors to be selected & connected to chosen network protocol.
- Apply Edge when time critical.

Store the data:

- All historical and (near) real-time data streaming in.
- Other data accepted by API, etc.

Manipulate the data:

- Data contextualization such as aligning Timeseries (PI) + P&ID (Piping & Instrumentation) + Asset (SAP / Maximo / etc.) data

Analyze the data:

- From simple to complex AI based analytics to get value out of the data.
- AI – Machine Learning; Machine – Vision; Gen-AI: All needed modeling.

Visualize the data:

- We install, integrate and configure your User Interface software
- Your User Interface can be enriched with Gen-AI.

Provide ongoing operational support:

- Making sure it keeps running



Define the business problem you want to solve:

- Define low hanging fruit → Indeed we MUST aim for immed value.
- Therefore define such that any Digital Transformation does show immed value.
- Define role of Digital Twin (if needed) + what data sources are required.

Take a “Minimum Viable Product (MVP)” approach and scale out later:

- Immed deliver an operational service, but small scale.
- Thereafter scale out in steps.

Be practical, where available, use your existing components and add, where needed, Acuvate & partner building blocks.

Acuvate will as well provide ongoing operational support:

- Based on agreed SLA (Service Level Agreements).



Partner sessions (presentations and separate demos)

09:35	Break and Partner Demos	
10:05	ANYbotics: Various examples where robotics can make a difference	Mukesh Mukundan (ANYbotics)
10:50	ASSAI: Energy Document Management & Control	Ramil Ahmadov (ASSAI)
11:15	IOTech: How and Where Edge Will Make a Difference for both OT and IT (both important for Energy)	Brad Corrion (IOTech)
11:40	Lunch and Partner Demos	
12:40	Databricks Solutions for the Energy Market also supporting streaming of industrial data types	Reishin Toolsi (Databricks)
13:05	RealWear: Optimizing Specialist Efficiency by Taking Work to the Specialist	Jacqueline Finck (RealWear)
13:30	Kognitwin: A Digital Industrial Work Surface at Scale	Neeraj Zambare (KDI)
13:55	Boldyn Networks: How Private 5G can make a difference	Chris Zack (Boldyn Networks)
14:20	An overview of Acuvate Energy Business solutions	Johan Krebbers (CTO Acuvate)
14:40	Break and Partner Demos	
15:10	Acuvate Gen-AI Demos: Transforming Oil & Gas Operations	Hemanth Kumar (SVP Sales USA, Canada & ME)
15:50	Drinks and Demos	
17:00	Closure	

- **ANYbotics**
 - Mukesh Mukundan
- **Assai**
 - Ramil Ahmadov
- **IOTech**
 - Brad Corrion
- **Databricks**
 - Reishin Toolsi
- **RealWear**
 - Jacqueline Finck
- **KDI**
 - Neeraj Zambare
- **Boldyn Networks**
 - Chris Zack

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: advisors@acuvate.com



THANK YOU

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