PROPOSAL
INDUSTRIAL AI INTERVENTIONS

For

Avery Dennison

Submitted on	12th June 2023
Submitted By	Algo8 AI
Contact Email	nikhil@algo8.ai
Contact Phone	+1 346-307-2854

Table of Contents

1. EXECUTIVE SUMMARY

12th June 2023

Mr. Mahesh Pathak – VP Digital Business Transformation

Subject: Proposal for Avery Dennison's Noida Plant Digitalization using AI Applications

Dear Mr. Pathak

Algo8 AI is pleased to support Avery Dennison in fulfilling your vision of digitalization using AI applications of the Noida Plant. Based on the discussions we had over past few weeks, Algo8 AI has understood your needs and has created this technical and commercial proposal which outlines the solutions we will provide at a competitive commercial model for you to gain the tangible benefits and quick and large ROI.

As you know, Algo8 AI is an Industrial AI company helping Energy & Manufacturing customers to get more out of their facility, plant, assets and processes by processing their vast and myriad type of data using our PlantBrain platform & differentiated AI + domain-based applications. We help our customers to:

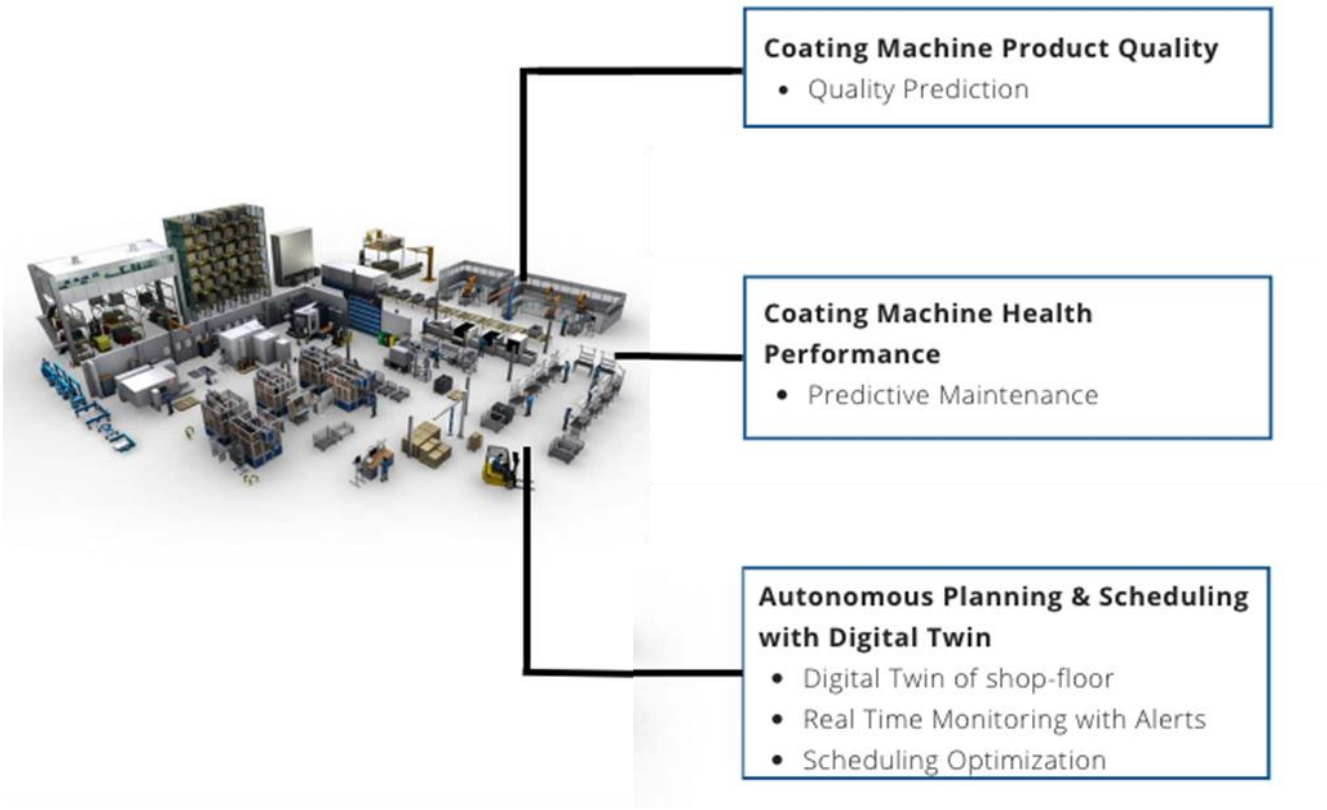
- Maximize net revenue with the best possible margins
- Minimize their carbon footprint through lower energy costs, reduced waste and smarter use of raw materials
- Optimize output with equivalent input at a lower cost
- Increase uptime
- Enhance safety and Augment workers

We are excited to partner with Avery Dennison and leverage our expertise in artificial intelligence (AI) to drive operational efficiency and assist you in achieving operational goals like:

- Improved product quality through proactive identification and mitigation of quality issues.
- Minimized equipment downtime through predictive maintenance
- Enhanced operational efficiency and productivity through autonomous planning & scheduling optimization and digital twin of the shop floor

In this proposal, we have identified three key AI applications that will be developed for Avery Dennison through our AI Platform PlantBrain:

- Coating Machine Quality Prediction
- Coating Machine Predictive Maintenance
- Autonomous Planning & Scheduling with Digital Twin of the Shopfloor



As a company deeply invested in developing cutting-edge AI solutions for industrial applications, we believe that our AI platform and expertise aligns perfectly with the goals and vision of Avery Dennison. Please accept this technical and commercial proposal including its contractual terms for your review and consideration. This offer is valid for acceptance until 30th June 2023 and it's subject to the negotiation of mutually acceptable agreements. We would be happy to speak with you about it at your convenience. We are looking forward to collaborating with Avery Dennison on its Industry 4.0 & digital transformation journey.

Regards,

Nikhil Chauhan

Chief Growth Officer & President Americas, Algo8 AI

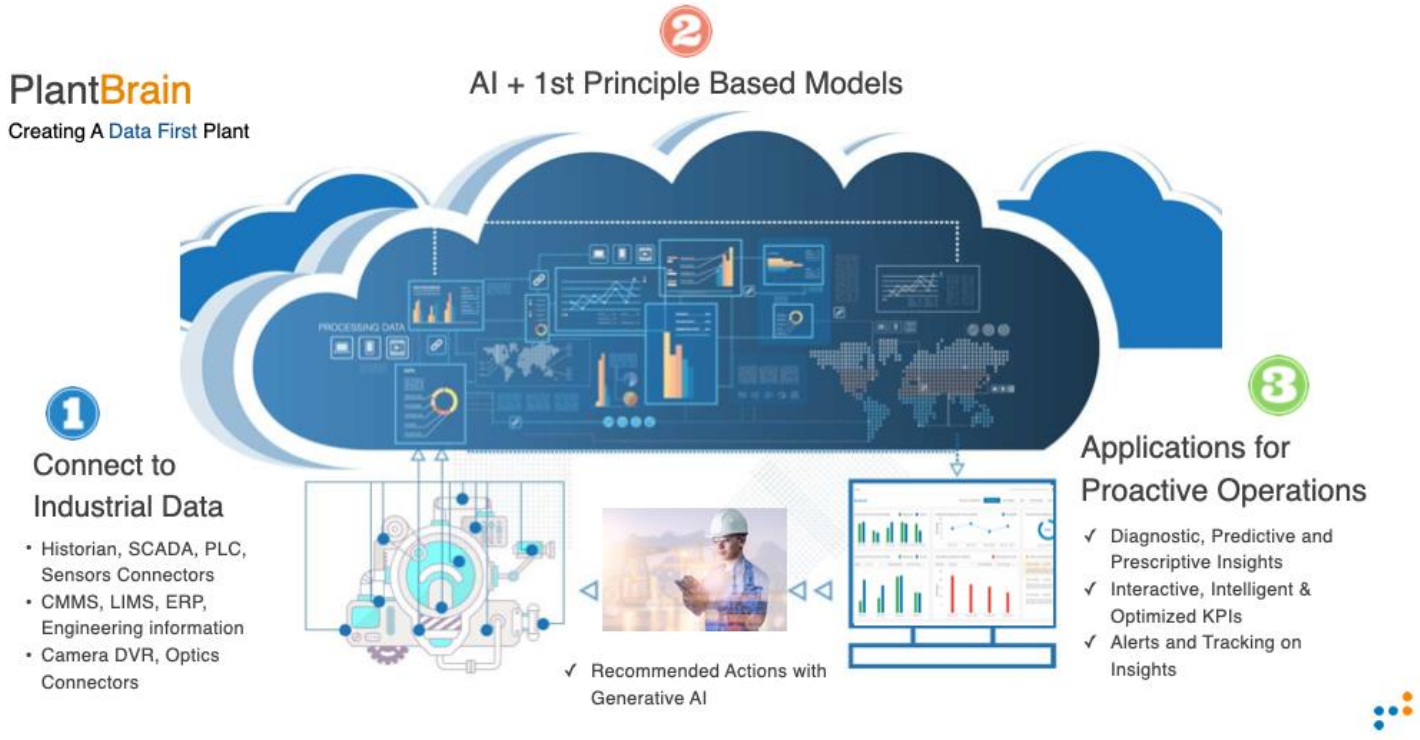
2. ABOUT ALGO8

Algo8 is an Industrial AI company unlocking millions for enterprises through productivity, reliability & sustainability enhancements. We have 25+ deployments of our AI applications in energy and advanced manufacturing facilities, with a cumulative business impact of over $100 Million per year.

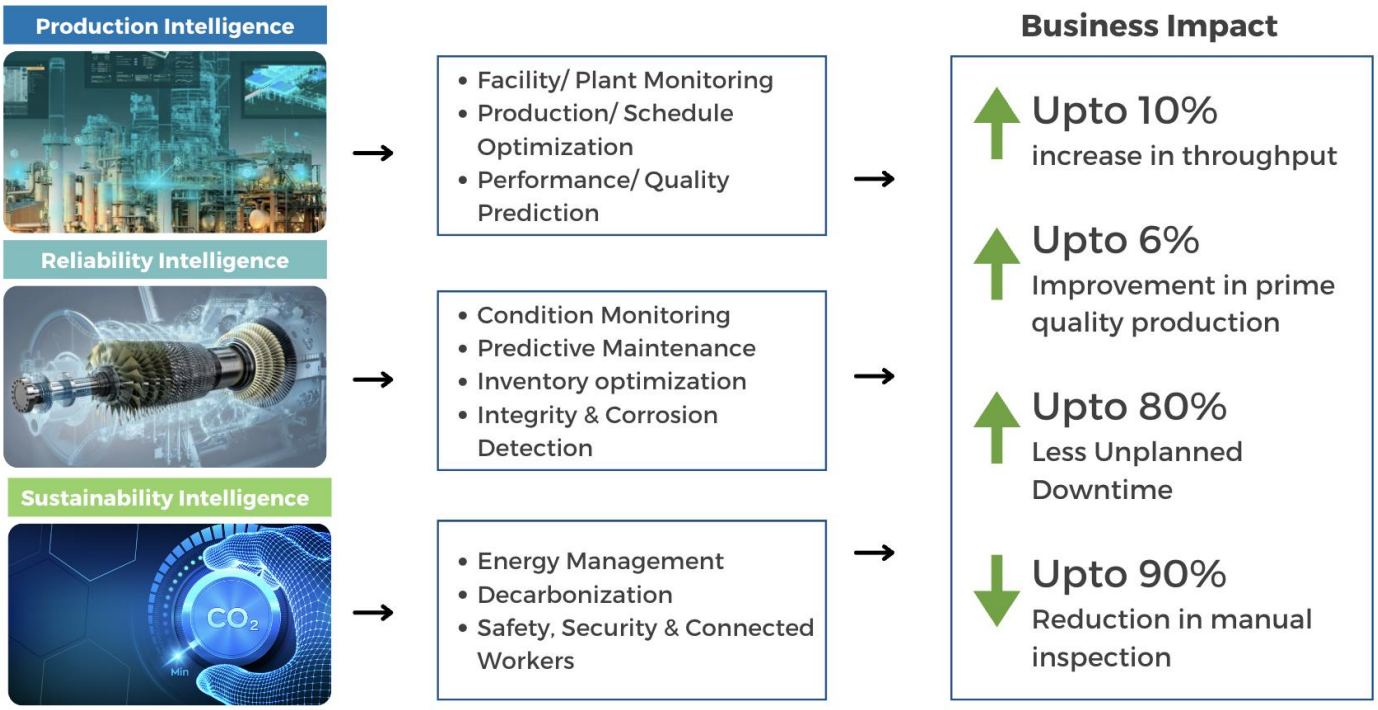
Our Platform: PlantBrain

Our platform “PlantBrain" leverages AI/ML to learn deeply and uniquely from the data of each schedule, process, asset, conversations and optics, creating algorithmic twins of your operations. PlantBrain platform is designed to provide a comprehensive suite of capabilities that can help industrial operators improve their processes, increase reliability, optimize their workforce, and reduce the risk of downtime and other issues. By leveraging advanced analytics, machine learning algorithms, and other tools, PlantBrain enables operators to make data-driven decisions that can drive significant improvements in efficiency, reliability, profitability, and safety. Whether used in manufacturing, oil refineries, petrochemical plants, or other industrial facilities, PlantBrain can help operators stay ahead of the curve and maximize their operational performance.

PlantBrain: Key Components

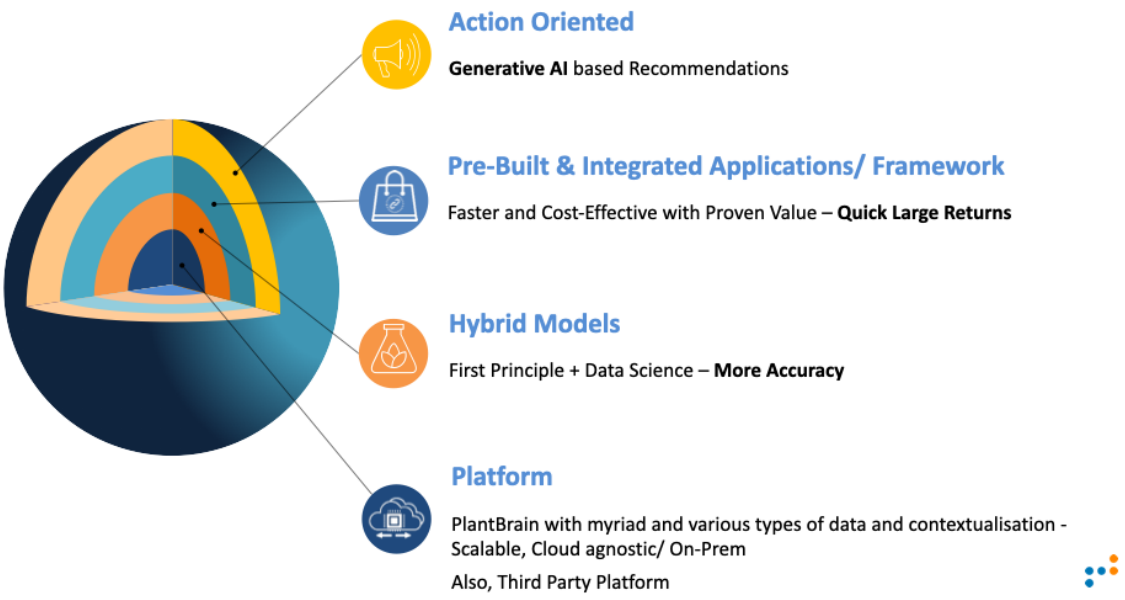


Portfolio and Benefits



All applications & prescriptive actions augmented with Generative AI

Our Differentiators



3. SCOPE OF WORK

Algo8 will work on three applications which will be developed using our AI platform PlantBrain to help Avery Dennison achieve significant business breakthroughs, driving efficiency, productivity, uptime, and profitability in their operations.

- **Application 1: Coating Machine Quality Prediction**
    - By analyzing real-time operational data using anomaly detection and predictive models, our application will enable Avery Dennison to proactively identify potential quality issues arising in Coating Machine, determine cause of the issues and take corrective actions before they impact production.
- **Application 2: Coating Machine Predictive Maintenance**
    - Algo8 will implement a predictive maintenance application for coating machines. By applying machine learning algorithms to sensor data, equipment logs, and historical maintenance records, the application will accurately detect abnormal behavior of the machine and forecast its failures in a proactive and efficient manner. It will also provide the apparent cause of the failure so that corrective action can be taken and manage or avoid machine failure.
- **Application 3: Autonomous Planning & Scheduling with Digital Twin of Shopfloor**
    - Algo8 will develop an autonomous planning & scheduling optimization application for all products manufactured at Noida Plant of Avery Dennison, utilizing a digital twin of the shopfloor. By creating a Digital replica of the production environment, our application can create the production plan based on demand, evaluate resource allocation strategies, and optimize production schedules to maximize throughput and minimize bottlenecks. The digital twin will replicate the real-time conditions with a 2D Digital View of the plant with critical parameters and KPIs including of material, machine and process on the twin as well as on the dashboards. It will also have real-time alerts of offline parameters, materials, inventory and machines so that corrective action can be taken to improve the plant performance.

4. DIGITAL ROADMAP

Algo8 will focus on a phased approach for Avery Dennison’s digital roadmap, delivering incremental business and economic value at every phase of the journey. Our proposed solutions are in three phases:

Phase 1 focuses on developing the three aforementioned AI applications for the Noida plant. These applications are the first step towards generating significant improvements to your operations, driving efficiency, productivity, uptime, and profitability.

Phase 2 will involve the development of an AI-based Energy Management Application for the entire plant in Noida. This solution will optimize energy consumption and onsite energy generation, enhance sustainability practices, and further improve overall operational performance.

In **Phase 3**, our vision is to scale the applications developed in Phase 1 and Phase 2 to all plants of Avery Dennison in India. This expansion will enable the establishment of a digital plant ecosystem, leveraging integrated solutions across the industrial value chain and capitalize on economies of scale. The Phase 3 will also be extended to the plants that are outside India as a scale-up opportunity and will be part of **Phase 3+**.

1

PHASE 1

High Impact AI Applications

- Coating Machine Quality Prediction
- Coating Machine Predictive Maintenance
- Autonomous Scheduling Optimization with Digital Twin of Shopfloor

2

PHASE 2

Energy Management System

Leveraging data-driven insights to improve energy efficiency, reduce costs, and promote sustainable practices

3

PHASE 3

Plant 4.0

Scale up of Phase 1 and Phase 2 applications across all plants to enable the establishment of a digital plant ecosystem

We will follow a **4D approach** to ensure a systematic and effective implementation of the proposed AI Applications for Avery Dennison. The approach aims **to address the unique challenges and complexities associated with capturing plant data**, creating a digital twin, and implementing the identified applications:

M1 Discovery: This stage will be conducted for all 3 AI applications together for Phase 1. This is vital to identify any data gaps or limitations that may impact the implementation of a specific application.

M2 Design, M3 Develop and M4 Deploy will be carried out separately for all three applications

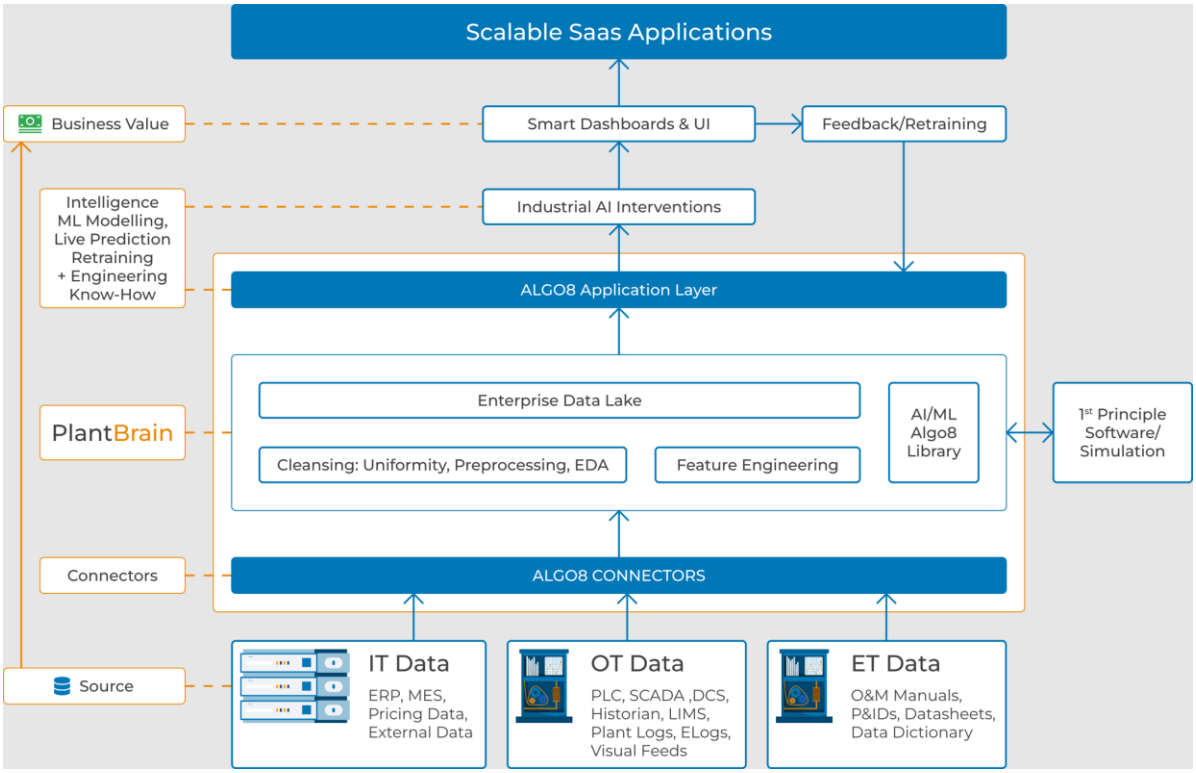
Stage	Activity	Description	Deliverables
M0: Kickoff	PO Signup	Kickoff meeting and mobilization	N/A
M1: Discover	Process Discovery	Map as-is production process for the plant	Discovery Report
	Data Discovery: IT/OT Environment Discovery	Identify available OT, IT, and engineering data sources Capturing the current system environment to design the data architecture Collection of relevant historical data and documents for conducting a feasibility analysis	
	User Story Finalization	Detailed feature list of the final solution	
M2: Design	UI/UX & Solution Architecture Creation	Design technical architecture for digital solution (UI/ UX, data integration, AI systems required for data capture, & overall architecture)	UI/UX design of all relevant digital interfaces Data integration plan and solution architecture

M3: Develop	Application Development Dashboard Development	Solution Design Data Pipeline Design Preliminary Data Analysis Testing & acceptance criteria KPI identification & UI/report design Developing ETL jobs EDW management AI/ ML Models Training and Testing KPI Development Internal Testing	Exploratory and Descriptive Analysis of Historical Data AI/ML models with historical validation Final dashboards
M4: Deploy	The application will be deployed in live environment	UAT and Fine Tuning	Unit and integration test report

5. OUR APPROACH

PlantBrain enables organizations to unlock the full potential of their data and streamline their operations by providing a comprehensive set of tools and functionalities for data ingestion, management, cleaning, preprocessing, exploratory data analysis, AI modeling, visualization and insights generation.

The below schematic represents how PlantBrain is used to develop scalable SaaS AI Applications which provide faster ROI for the end user:



How PlantBrain Works

- Rapid integration on Industrial Data
    - The Industrial AI platform PlantBrain, begins by ingesting data from various sources, including Historian, SCADA, PLC, Sensors Connectors, CMMS, LIMS, ERP, Engineering information, Camera DVR, Optics Connectors, and other structured or unstructured data repositories.
    - This data ingestion process involves connecting to the data sources, retrieving the relevant data, and transferring it to the platform for further processing.
- Construction of Contextualized Industrial Data Lakehouse

    - PlantBrain manages and organizes it in a structured manner. This includes storing the data in a centralized repository, such as a contextualized industrial data lakehouse, ensuring efficient data storage and retrieval.
    - Data management also involves implementing security measures to protect sensitive data, ensuring data integrity and compliance with data governance policies.
- Embedded Business Requirements and Engineering Expertise:
    - AI applications are embedded with the specific business requirements and goals of the organization.
    - Incorporate engineering first principles and expertise into the design and configuration of the applications
- Data Cleaning and Preprocessing:
    - Identifying and handling missing data, dealing with outliers or noise, and addressing data inconsistencies or errors.
    - Data preprocessing techniques like data normalization, feature scaling, or dimensionality reduction, may be applied to optimize the data for analysis and modeling.
- Exploratory Data Analysis (EDA):
    - PlantBrain performs exploratory analysis to gain insights into the data. This involves statistical analysis, data visualization, and data profiling to understand the characteristics, distributions, correlations, and patterns within the data.
    - EDA helps identify trends, anomalies, or potential relationships between variables, guiding subsequent analysis and modeling processes.
- AI Modeling:
    - PlantBrain employs AI modeling techniques to extract valuable insights and build predictive or prescriptive models. This step includes various processes, such as feature engineering, algorithm selection, model training, and model evaluation.
    - Feature engineering involves selecting or creating relevant features from the data to feed into the AI models, enhancing their predictive capabilities.
    - Algorithm selection involves choosing the appropriate machine learning or deep learning algorithms that align with the specific problem and data characteristics.
    - Model training utilizes historical data to train the AI models, optimizing their performance and accuracy.
    - Model evaluation assesses the models' performance using evaluation metrics and validation techniques to ensure their reliability and effectiveness in generating insights.
- Diagnostic, Predictive, and Prescriptive Insights:
    - PlantBrain generates insights from the trained AI models, enabling diagnostic, predictive, and prescriptive capabilities.
    - Diagnostic insights provide an understanding of the current state of the operations, identifying patterns, anomalies, or deviations from normal behavior.

    - Predictive insights forecast future outcomes or trends based on historical data, enabling proactive decision-making and early identification of potential issues.
    - Prescriptive insights offer recommendations or optimization strategies to improve operations, guiding decision-making processes to achieve desired outcomes.
- Interactive, Intelligent & Optimized KPIs, Alerts, and Tracking:
    - PlantBrain provides interactive and intelligent visualizations of Key Performance Indicators (KPIs), allowing stakeholders to monitor and track operational performance in real-time.
    - The platform also incorporates alert mechanisms to notify stakeholders about critical events, anomalies, or deviations from desired performance.
    - Additionally, the platform offers tracking capabilities to monitor the progress of insights, actions taken, and the impact on operational performance.

6. INFRASTRUCTURE AND SECURITY

Algo8's infrastructure and security measures will enable confidentiality, integrity, and availability of the PlantBrain Platform and its AI applications to Avery Dennison. This protects sensitive data, prevents unauthorized access, and mitigates potential security risks, aligning with industry best practices and ensuring compliance with data security regulations.

The development of the applications will happen in Algo8's IT environment. This will not be any added cost to the client.

Deployment of the plantBrain platform and applications will be done in the client's IT environment. This could be on cloud or on-premise. Below is a list of specific infrastructure and security requirements that can be further customized based on the needs and preferences of Avery Dennison, ensuring a tailored and robust security framework for the AI applications:

- Network Level:
    - VPN: A Virtual Private Network (VPN) will be implemented to establish secure communication between PlantBrain and the network infrastructure of Avery Dennison. This ensures that data transmitted between the platform and the network remains encrypted and protected from unauthorized access.
    - Firewall Configuration: White-labeling IPs so that only approved traffic can access the servers over the network.
- Infrastructure Level:
    - Container Security: Secure Container Images, container level network policies, secret management, container isolation.

    - Token-based Authentication: PlantBrain will utilize token-based authentication mechanisms to ensure secure access and user authentication. This adds an extra layer of security by requiring authorized tokens for user authentication and access control.
    - Log Management: Helps in identifying and investigating suspicious activities.
- Application-Level Security:
    - Data at Rest: The data stored within PlantBrain and the three applications will be protected through robust data encryption techniques. This ensures that data remains secure even when it is stored within the platform's infrastructure.
    - Access Control: Strict access controls will be implemented to govern user access to the applications and the platform. Role-based access control (RBAC) mechanisms can be employed to grant specific privileges and permissions to different user roles, ensuring that sensitive data and functionalities are accessed only by authorized personnel.
    - Encryption in Transit: All data communication between PlantBrain, the applications, and external systems will be encrypted using secure protocols. This safeguards data during transmission, preventing unauthorized interception or tampering.
    - API Security: APIs (Application Programming Interfaces) will be secured through proper authentication and authorization mechanisms, ensuring that only authorized systems or applications can access and interact with PlantBrain and its applications.

    - Antivirus and Anti-malware: As required

- Computing Resource requirement (expected from client):
    - Virtual Machines: 3 Machines
    - Configuration
    - CPU: 64 cores
    - RAM: 128 GB
    - Storage: 1 TB SSD
    - OS: Ubuntu 20+
- Cloud Services required:
    - VMs
    - MySQL DB service
    - Storage Service
    - Log management
    - Infrastructure and security related services

The above requirements are tentative, based on the preliminary plant visit. This will be confirmed after the discovery phase and as per deployment strategy.

7. PROPOSED APPLICATIONS

7.1 Coating Machine Quality Prediction

Objective

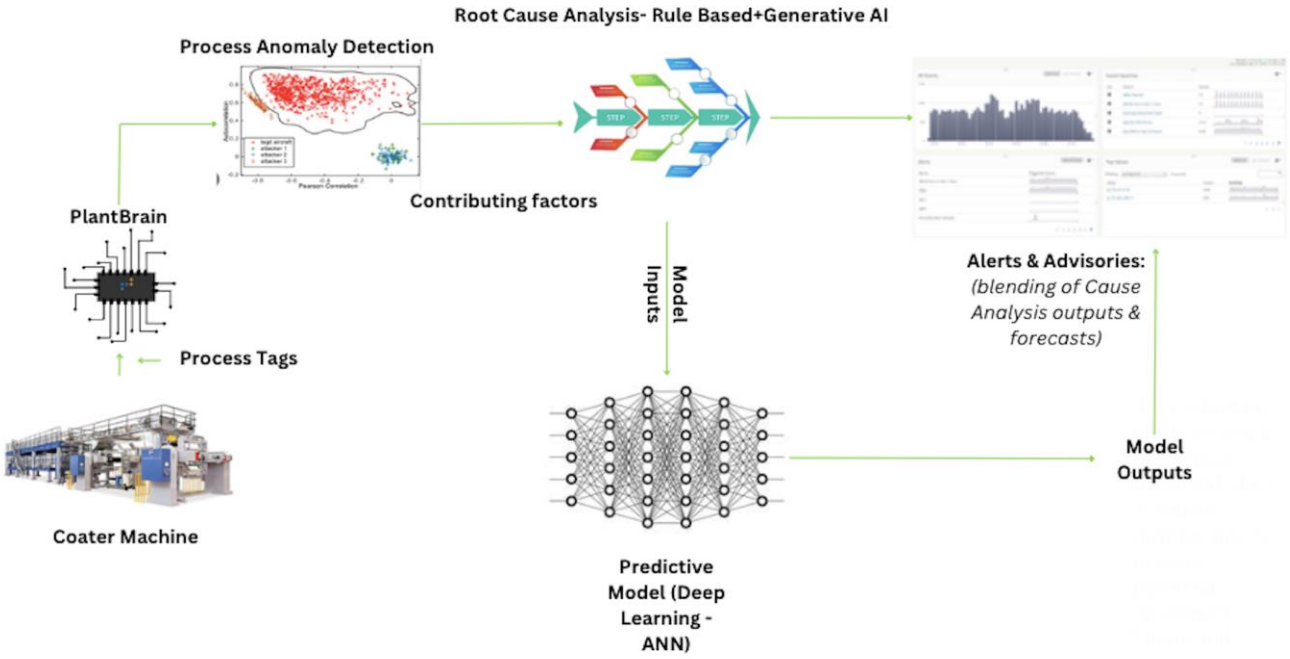
Proactively predict quality breakdowns, enable real-time quality monitoring, and provide insights to prevent quality issues before they occur. By leveraging AI and data analytics, the application aims to improve product quality while reducing and minimizing scrap generation.

Solution

PlantBrain incorporates anomaly detection techniques which will identify and flag potential quality deviations or anomalies in the coating process. Historical data is used to train the AI model for anomaly detection, and it learns the normal patterns and behaviors of the coating process, considering various factors such as coating machine parameters, sensor readings, environmental conditions, material characteristics, and other production variables.

The trained model is then used to analyze the real-time data collected during the coating process. It compares the observed data with the learned normal patterns and identifies any significant deviations or anomalies that may indicate potential quality issues.

When an anomaly is detected, the solution triggers alerts and notifications to the relevant stakeholders. The alerts provide information about the detected anomaly and its contributing factors. The solution also predicts the threshold level anomaly quite early so that operator has enough time to take corrective action. Our PlantBrain Co-pilot will also provide the probable cause and actionable recommendation using rule-based and Generative AI. This allows stakeholders to take immediate action and initiate appropriate interventions to prevent quality breakdowns or mitigate their impact.



Approach: PlantBrain Process Quality Module

- Data Collection and Preprocessing:
  - Gather real-time data from coating machine parameters, sensors, quality inspections, environmental factors, historical production data, material data, maintenance and production schedules.
  - Preprocess the data by cleaning, normalizing, and transforming it to ensure consistency and compatibility for analysis.
- Feature Engineering:
  - Identify relevant features from the collected data that can contribute to quality prediction.
  - Perform feature engineering techniques, such as feature selection, dimensionality reduction, and creating new derived features, to enhance the predictive capabilities of the models.
- Model Customization:
  - Utilize AI techniques to customize predictive models for quality breakdowns and performance optimization.
  - Train the models using historical data, incorporating features related to coating machine parameters, sensor readings, environmental conditions, material characteristics, and production variables.
- Real-Time Quality Monitoring:

    - Implement a real-time monitoring system that continuously collects data from coating machine sensors and quality inspections.
    - Compare the observed quality metrics in real-time with the predicted values from the developed models to identify potential quality deviations or anomalies.
- Root Cause Analysis (RCA)
    - Using cause and effect analysis framework and domain expertise, develop rule-based RCA
    - Using historical data of quality and associated parameters, train the large language model for Generative AI based recommendations
- Continuous Learning and Improvement:
    - Continuously monitor and update the predictive models as new data becomes available.
    - Incorporate feedback from stakeholders and integrate their domain expertise to refine the models and improve their accuracy over time.

Deliverables

PlantBrain Process Quality - module

- Key features
    - Dashboard
    - Real-time quality metrics
    - Anomalies Detection
    - Quality Prediction Model
    - Historical performance tracking
    - Root Cause Analysis
    - Recommendations
    - Alert and Notification System

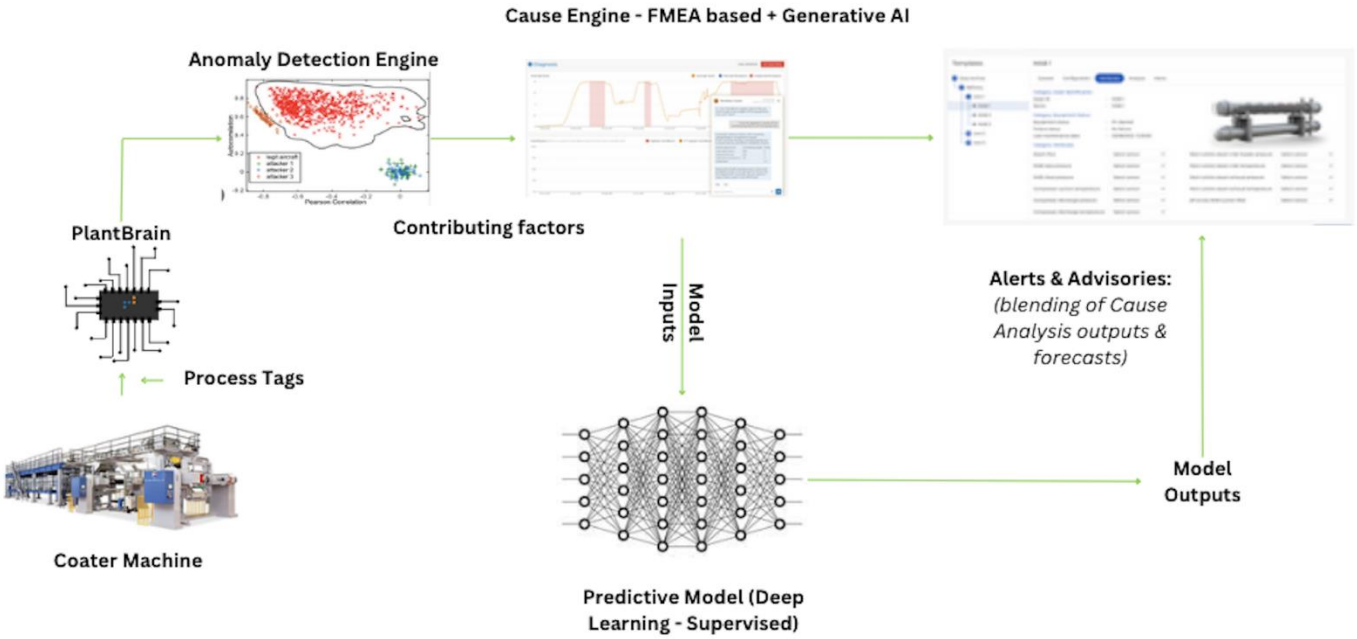
7.2 Coating Machine Predictive Maintenance

Objective

The objective is to detect anomalies and predict equipment breakdowns and potential faults in the coater machine. The objective is also to enable proactive actions to address issues before they escalate into critical failures and minimizing or avoiding downtime.

Solution

PlantBrain will ingest real-time sensor data from the coater machine, such as temperature, pressure, vibration, process/ operations data, and other relevant parameters. Our models based on AI and First principles analyze the sensor data and identify patterns or deviations that indicate anomalies and their contributing factors. Maintenance alerts are triggered when necessary, allowing maintenance teams to take proactive actions to address the identified issues. The system also predicts the remaining time to fail of the machine so that operator can take corrective action quite early. Our PlantBrain Co-pilot provides the apparent cause of anomalies using machine failure modes analysis and Generative AI and gives the actionable recommendations so that operator take corrective action and manage or avoid machine failure.



Solution Approach

- Data Collection and Preprocessing:
  - Collect real-time sensor data from the coating machine, including temperature, pressure, vibration, energy consumption, and other relevant parameters.
  - Preprocess the sensor data by cleaning, filtering, and normalizing it to ensure consistency and compatibility for analysis.
- Historical Data Analysis:
  - Analyze historical equipment breakdown data and maintenance records to identify patterns and correlations between sensor readings and equipment failures.
  - Extract features from the historical data that can serve as indicators or predictors of impending equipment breakdowns.
- Model Development:
  - Utilize AI and machine learning techniques to develop predictive maintenance models.

    - Train the models using the historical data, incorporating features derived from sensor readings and equipment failure information.
- Real-Time Monitoring:
    - Implement a real-time monitoring system that continuously collects sensor data from the coating machine.
    - Feed the real-time sensor data into the trained predictive maintenance models to analyze the current state of the equipment and identify any anomalies or potential faults.
- Anomaly Detection and Fault Prediction:
    - Compare the real-time sensor readings with the learned patterns and thresholds established by the models to detect anomalies.
    - Use the predictive maintenance models to forecast the remaining time to failure, providing an estimate of when the equipment may experience a breakdown or failure.
- Cause Analysis
    - Using FMEA framework, OEM documents and domain expertise, develop machine FMEA for component level fault identification
    - Using historical data of failure/ anomalies and associated parameters, train the large language model for Generative AI-based recommendations
- Maintenance Alerts and Action:
    - Trigger maintenance alerts and notifications to relevant stakeholders when anomalies or potential faults are detected.
    - Provide information on the identified issues and recommended actions to be taken.
- Continuous Model Improvement:
    - Continuously collect new sensor data and maintenance records to update and refine the predictive maintenance models.
    - Retrain the models periodically to incorporate the latest data and improve their accuracy in predicting equipment breakdowns.
    - Collect feedback from maintenance teams and stakeholders to assess the system's performance and identify areas for improvement.

Deliverables

PlantBrain Predictive Maintenance - module

- Key features
    - Dashboard
    - Real-time Machine Health
    - Anomalies Detection
    - Remaining Time Prediction Model
    - Historical performance tracking
    - Root Cause Analysis
    - Recommendations

- Alert and Notification System

7.3 Autonomous Planning & Scheduling with Digital Twin of Shopfloor

Objective

- To reduce inventory on hand
- To monitor and improve material, machine, and process in real-time with alerts, KPIs and Digital Twin
- To optimize production flow - logistics, packaging and stock planning
- To align the floor to meet production goals

Solution

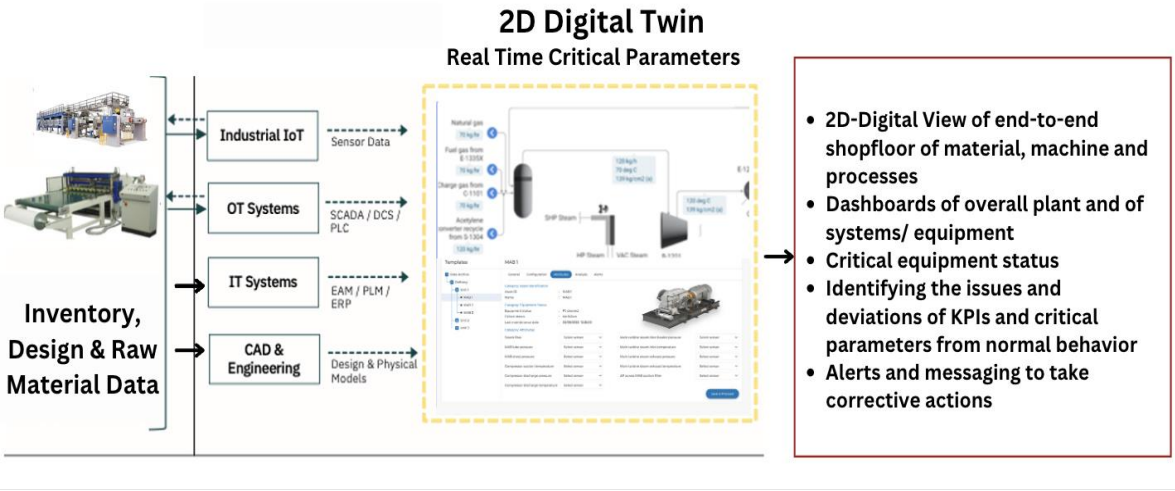
1: Creating a Digital Twin of Plant: The digital twin will act as a digital replica of the physical plant, enabling real-time monitoring of raw material inventory, intermediate products inventory, final products inventory, critical parameters of shopfloor, and machine KPIs on a 2D Digital View as well as on dashboards of overall plant and systems/ equipment. 2D Digital View and dashboards will also have alerts capability and quick identification and exploration of potential issues or deviations from the defined operating envelope range. By accessing critical real-time data and KPIs of the material, machine and process, the digital twin becomes a valuable tool for monitoring and improving the shopfloor performance.

The non-exhaustive list, from where PlantBrain will integrate data from includes:

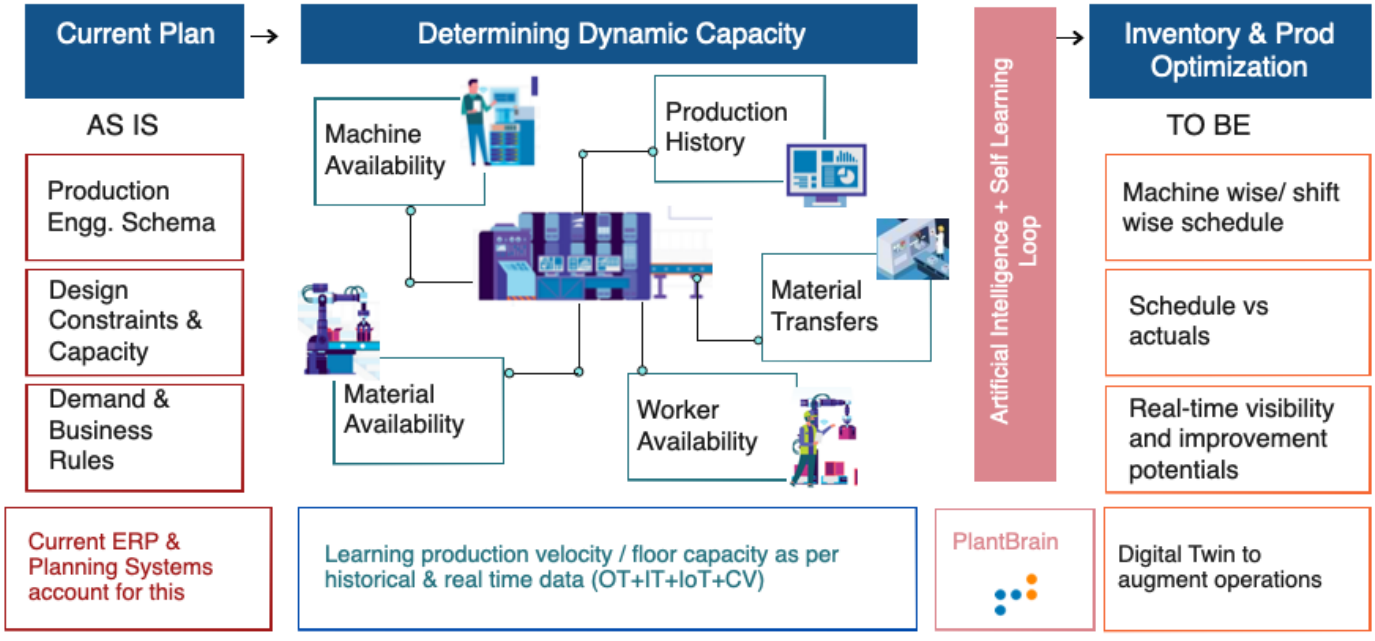
- Process Parameters relevant and specific to Avery Dennison's plant operations
- Equipment Status: Operating status, running time, downtime, energy consumption, and maintenance history of key equipment
- Sensor Data: Real-time data for critical variables such as material inventory levels, production rates, quality metrics, and environmental conditions

The non-exhaustive list of KPIs which can be tracked include:

- Overall Equipment Effectiveness (OEE)
- Production
- Inventory
- Energy Consumption
- Downtime Analysis
- Quality Metrics



2: Autonomous Planning & Scheduling: The platform will employ advanced algorithms and machine learning techniques to provide intelligent recommendations for production planning and scheduling, as well as inventory optimization. The solution will optimize production and cost efficiency, minimize the impact of unexpected events, and enable real-time monitoring and alerts.



Approach: PlantBrain Planning & Scheduling Module with Digital Twin

- Real-Time Shopfloor Performance Monitoring
  - 2D-Digital View of end-to-end shopfloor of material, machine and processes

    - Dashboards of overall plant and of systems/ equipment
    - Critical equipment status
- Shopfloor Performance Improvement
    - Identifying the issues and deviations of KPIs and critical parameters from normal behavior
    - Alerts and messaging to take corrective actions
- Current Process Analysis: Thoroughly analyze the existing logistic planning, packaging planning, and stock planning processes, including:
    - Equipment mapping for all SKUs
    - The mapping of equipment along with processing steps
    - The bifurcation in terms of setup time, processing time, and cleaning time for each of the steps
    - Evaluate usage of Excel for communication and assess its effectiveness in facilitating efficient planning.
    - WIP Inventory Assessment: Examine the current state of work-in-progress (WIP) inventory and its impact on production flow. Analyze the reasons behind high WIP levels and develop strategies to optimize WIP inventory management.
- Integrating Business constraints for planning and scheduling:
    - Availability of all resources (man/machine/material) after netting off the declared holidays and planned shutdowns
    - Operating shift of plants within the site
    - Bill of Material comprising of all the Raw Materials, Packing Materials etc.
- Establishing the existing planning rules
    - Machine-wise and Shift-wise Scheduling: Evaluate the current machine-wise and shift-wise scheduling processes for all units/machines
- Establishing the sources of data for planning details, production inputs, raw material, inventory etc.
    - Provision to track actual vs. planned production
    - Provision to run analytics on historical data to establish a course correction input into the rule's engine
- Incorporate production history data, cycle time, and breakdown information to enable intelligent decision-making.

Deliverables

- Digital Twin: Real-Time Monitoring with KPIs and alerts
    - 2D- Digital View of the shop floor with critical parameters and KPIs of material, machine and process
    - Access to real-time data and KPIs to provide Immediate visibility into the performance and status of material, machine and shop floor processes

    - Live Dashboard with continuous analysis of plan vs actuals
    - Shortfall and wastage estimation
    - Interactive Dashboard for Number of Units Clear to Build based on current and promised inventory levels
    - Automated alerts to address issues promptly and take corrective actions using a data science approach
- PlantBrain: Planning and Scheduling module
    - Factory-level Scheduler Development: Build a factory-level scheduler utilizing a production decision tree (DT) approach with a machine wise shift wise plan

8. PROJECT TIMELINE

Time in Months→	0	1	2	3	4	5	6	7	8	9
Project Phases ↓										
Project Kick Off										
Discovery										
Coating Machine Quality Prediction										
Design										
Develop										
Deploy + UAT										
Coating Machine Predictive Maintenance										
Design										
Develop										
Deploy + UAT										
Autonomous Planning & Scheduling with Digital Twin										
Design										
Develop										
Deploy + UAT										

Note: Durations are best-guess estimates and are subject to change until a contract is executed

9. KEY ASSUMPTIONS AND DEPENDENCIES

Key assumption and dependencies for successful project execution include:

- Algo8 will rely on AVERY DENNISON to provide accurate, complete, and reliable plant operations data, IT data, engineering data and other relevant data for the development of AI applications. A list of non-exhaustive data that might be required include:
    - Availability and quality of real-time data from ERP, MES, SCADA, and machine sensors
    - Quality Inspection Data
    - Environmental Data
    - Historical Production Data
    - Raw Material Data
    - Inventory Data
    - Maintenance and Equipment Data
    - Products Quality and Machine Maintenance History Data
    - Production Schedule and Order Data
- For Any AI/ML related modelling, 6-month historical data is expected.
- The required data, data dictionary, business rules & relevant documents will be provided by the client during the first 2 weeks of the project.
- Any third-party software licenses to be provided by client.
- Process details and technical support from client's teams to achieve complete understanding of setups.
- One manufacturing process expert need to provide an estimated 5 hours/week during the discovery phase.
- Provide the required IT support to access the historical data in flat files or any agreed mechanism.
- Remote access to Algo8 team - up to 4 simultaneous users.
- Algo8's IT infrastructure can be hosted on the AVERY DENNISON preferred cloud provider and (or) in specific geographically located regions. If AVERY DENNISON prefers to host the applications in their IT environment, then AVERY DENNISON will bear the cost of IT infrastructure requirements and Algo8 can provide a revised commercial proposal upon request to do so.
- Any data cleansing of plant and lab data will be performed within our Big Data and AI platform, PlantBrain.
- Algo8 will work with AVERY DENNISON IT/OT teams to enable a solution architecture complying with AVERY DENNISON's IT security and data policies.
- Algo8 will take the lead in designing the dashboards and UI and will seek AVERY DENNISON's input, feedback and approval regularly, especially during the Design phase of the project.

- AVERY DENNISON will designate a staff member to function as the Single Point of Contact (SPOC) / Project Manager to work with our Project Manager to help organize meetings with AVERY DENNISON and AVERY DENNISON management/ technical teams and resolve issues along the project.

10. COMMERCIAL PROPOSAL

Commercial Proposal is attached separately.

For Algo8 AI	**For Avery Dennison**
Name:	Name:
Designation:	Designation:
Date:	Date:

OUR CUSTOMERS

$100 M+ **Cumulative Business Impact** In Over 30+ energy plants and manufacturing shop-floors

5x - 10x **Upto 10x Return on Investment** with quick deployment times

USA Office: 9337 Katy Fwy, #7210, Houston TX 77024

Canada Office: 77 King St W, Toronto, M5K 1A2

India Office: 817B, Advant Navis Business Park, Sec 142, Noida

www.algo8.ai
info@algo8.ai