Malaysia Digital Scale-Up Grant 2026 Domain Focus

Domain Focus	Operational Efficiency & Production Optimization	Quality Control & Process Assurance	Real-Time Production Intelligence	Predictive Maintenance & Equipment Health	Resource Efficiency & Circular Manufacturing
Description	Data-driven production system which maximize output while streamlining processes in order to produce more, better, faster, and at a lower cost.	Control system to consistently achieve highest possible product quality while ensuring compliance with industry standards.	System for continuous and instantaneous collection, analysis, and visualization of data from shop floor to gain immediate insights and enable proactive decision-making.	Prediction system that anticipates potential equipment failures before they occur to allow for planned and optimized maintenance.	Autonomous system to track and optimize the consumption of resources (electricity, water, gas) and waste generation, integrating circular economy principles directly into the shop floor.
Pain Points to be Solved	Low production efficiency and high idle time lead to high production cost. • Low output due to inefficient production planning, unknown machine status, long production queue, high machines / workers idle time • Inefficient production flow • High energy consumption per unit produced • High waste	Overall low production quality leads to high rejection and return rates. • High rework • High rejects • Long QC time • High QC labour cost • Compliance risks	Idling machines and underutilized labour increase operational costs and reduce company profits. • High number of stops with unknown reasons • Low production output • High labour cost • High resources usage (energy, water) • High defect rates	Frequent machine failures increase maintenance and downtime costs and reduce production efficiency. • Frequent machine failure • High maintenance cost • Long machine downtime due to spare parts waiting time • Unplanned machine failures affecting productions	High utility overheads (electricity, water, gas) and ESG compliance risk. • High, unpredictable electricity bills • Lack of visibility into which machines waste the most power • Inability to accurately calculate carbon footprint • High wastewater treatment costs • Inability to monetize production scrap
Desired Outcome for Manufacturers	Increase production output, reduce overall cost to produce	Better quality products with low reject rates and lower QC cost, minimize incompliancy risks	Immediate response to critical issues, higher output, better quality, reduce human errors, lower energy usage	Lower maintenance cost, predictable repair schedule, less cost to operate, higher output	Optimized utility costs, automated ESG compliance reporting, elimination of invisible resource leaks, secondary revenue streams from recovered materials

Domain Focus	Supplier & Material Intelligence	Inbound Material Flow & Raw Inventory Readiness	Finished Goods Inventory & Distribution Performance	Market Demand Intelligence & Production Alignment	Customer & Product Usage Performance Intelligence
Description	Intelligent system that analyses historical raw material consumption, scrap rates, and final product yield directly from the shop floor to objectively grade supplier quality and optimize future internal purchasing decisions.	Automation system to move materials physically and digitally from the receiving dock to storage and production line, ensuring the shop floor is never short of materials and minimizing production delays.	Digital traceability system to track finished products from shop floor to warehouse. Optimized warehousing system for finished products storage, delivery preparation, dispatch, distribution, and digital tracking to customers or distributors.	Demand & Supply management system that aligns sales demand, customer orders, production planning, and stock availability to reduce overstock and prevent shortages.	Product management system that captures customer complaints, returns, warranty claims, field performance, service findings, and product usage data to trace external issues back to product, batch, material, process, or production condition for continuous improvement.
Pain Points to be Solved	Poor supplier and material decisions create hidden cost, defects, and procurement risk • High shop-floor defect rates caused by inconsistent raw materials • Subjective purchasing decisions based only on price • Disconnect between procurement and manufacturing floor	Late or poorly coordinated incoming materials disrupt production • Missing / expired raw materials or finished goods • Over / insufficiently procured • Receiving teams face delivery bottlenecks • Unable to estimate production needs	Inefficient packaging, dispatch and delivery increase cost • Shipping the wrong items or incorrect quantities • High shipping costs due to inefficient manual packing • Manual tracking of delivery priority • Long loading / unloading time • Low OTD (On-Time Delivery)	Weak demand planning causes overstock, shortages, and margin loss • Overproduce or underproduce leads to high inventory level • Last minute rush orders • Slow product pricing decisions	Customer issues are not addressed fast enough and are not fully used to improve products and processes • Slow complaints, returns, and warranty cases handling • Service delays affect customer confidence • Repeated defects due to shop floor issues • High warranty costs
Desired Outcomes for Manufacturers	Data-driven procurement, maximized shop-floor material yield, improved product consistency, stronger export-quality readiness	Fewer production delays, better receiving efficiency	100% order accuracy, maximizing utilization of warehouse footprint, zero returns, lower delivery cost, faster dispatch	Better sales-production alignment, improved inventory balance, increased profitability	Fewer repeat issues, lower warranty cost, improved customer satisfaction

Intelligence Levels & Mitigation Models

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Explanation	Provides clear visibility of current issues, performance gaps, and areas needing immediate attention. The focus is to help teams understand what is happening now and respond quickly.	Strengthens control over recurring issues through alerts, checks, follow-up actions, and standard controls. The focus is to prevent repeated problems from disrupting operations.	Uses historical patterns and business data to anticipate likely problems, risks, demand changes, or performance opportunities. The focus is to support better planning and earlier decisions.	Provides intelligent recommendations or automatic adjustments within approved business rules. The focus is to optimize decisions for cost, quality, delivery, productivity, and profitability.
Model	**Mitigation**	**Prevention**	**Predictive**	**Autonomous**
Manufacturing Operations	Helps manufacturers quickly identify and respond to current factory problems such as production delays, quality defects, machine downtime, material shortages, or inventory issues. The focus is to reduce losses, contain problems early, and restore operations faster, at the same time, track daily resource consumption to reduce overheads.	Applies control measures to reduce repeated production, quality, inventory, maintenance issues and costly resource leaks. This includes alerts, checklists, approval steps, escalation workflows, and corrective action tracking so that the same shop floor problems do not keep recurring.	Identifies patterns that may lead to future production delays, quality issues, inventory shortages, or equipment failures. This helps manufacturers plan earlier, reduce surprises, forecast future utility costs & waste levels, and make better decisions before problems occur.	Recommends or automatically adjusts production schedules, optimize energy use, inspection priorities, inventory replenishment, machine settings, and maintenance actions within approved rules to improve productivity, quality, cost, and efficiency.
Manufacturing Value Chain Performance	Helps manufacturers quickly respond to current issues before and after production, such as inventory levels, late materials, supplier quality problems, receiving delays, delivery issues, complaints, or returns. The focus is to protect production, revenue, cost, and customer satisfaction.	Applies controls to reduce repeated supplier, delivery, sales order, warranty claims, and customer support problems. This includes supplier follow-up, delivery readiness checks, receiving planning, customer order risk alerts, complaint escalation, and corrective action tracking.	Anticipates future business flow risks such as late incoming materials, supplier reliability issues, demand changes, delivery delays, margin pressure, customer order risks, and recurring product complaints. This helps manufacturers plan earlier, avoid costly disruption, and estimate future costs.	Recommends or automatically adjusts supplier selection, order quantity, material buffers, receiving priority, delivery routing, order allocation, pricing guidance, trigger part shipments, customer support priority within approved business rules and better products to improve cost, delivery, revenue, and customer satisfaction.

1) Operational Efficiency & Production Optimization

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Spreadsheet Gauntt chart • Spreadsheet BOM calculation and planning • Online form-based machine status and output • Simple online production planning tools	• Automated Production Planner • Basic SCADA system • Recipe Management module • IIoT & shop floor connectivity • Workforce Management module	• Advanced Planning and Scheduling (APS) • ERP with Production Optimization module	• AI-Powered Manufacturing Optimization Platform • Intelligent MES
Example of use case	**Mitigation Model** a) Digital format of reporting and visualization for easier understanding b) Enable mitigation of future issues with track records c) Digital tracking of raw material retrieving & measuring from manual paper trail	**Preventive Model** a) To speed up production planning process b) Turn manual raw material calculation into digital for faster and better management of raw material c) To have better planning of workforce on shop floor d) To enable monitoring of machines and faster respond to critical situations	**Predictive Model** a) Integrated to other systems to enable fully automated production planner with minimal human intervention which enable production supervisors to focus on quality, output and immediate respond to issues. b) Enable better communication between production and management team with automated alerts and visual reports to make better & faster business decisions.	**Autonomous Model** a) Manufacturing machines are embedded with ML (Machines Learning) which is connected to AI to enable autonomous adjustment for optimal machines performance and maximum production output, thus relieving supervisors from monitoring task and focusing on critical issues. b) Enable management team to have instantaneous data for speedy response to clients and order fulfilment.

2) Quality Control & Process Assurance

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Mechanical button with counter • Digital form for defect data input • Spreadsheet with charts	• Basic Quality Management system • Defect Tracking app	• In-Line/End-Line Quality Control System • SPC (Statistical Process Control) Software • Online Quality Assurance platform • Advanced Quality Analytics Module	• AI Optical Inspection (AOI) System (Vision Inspection) • IoT-Based QA Monitoring
Example of use case	**Mitigation Model** a) Digital records for manual human inspection for the purpose of QC reporting b) QC report with charts to control defect rates	**Preventive Model** a) Systematically record defects and provide almost real-time reporting to counter act b) Provide information for pro-active measures to mitigate future defects by identifying the cause	**Predictive Model** a) Real-time QC checks of any defects detected for instantaneous response b) Prediction of defects with historical data analysis c) Complete QC reporting for compliancy and analytics	**Autonomous Model** a) Fully automated IoT vision inspection b) Integrated to production system to stop further defects by alerting AI-Enabled production control

3) Real-Time Production Intelligence

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• App-Assisted Data Logging and Reporting	• Basic SCADA Monitoring Display • IIoT connected Data Collection Module • Digital Andon System	• Performance & OEE Module • Live OEE Dashboards • Edge Analytics	• AI-Powered Manufacturing Analytics Platform • Intelligent MES • Digital Twin for Production Optimization • AI-Powered Anomaly Detection
Example of use case	**Mitigation Model** a) Capturing production statuses using app for monitoring and reporting b) Backend reporting and basic dashboard for visualization with delayed business decisions	**Preventive Model** a) Shop floor connectivity with real-time monitoring for reactive actions b) Control room dashboard to centrally monitor and respond to issues c) Faster decisions for critical issues	**Predictive Model** a) Live performance dashboard monitoring with predictive alerts b) Connected to CMMS (Computerized Maintenance Management Systems) for maintenance schedule c) Automated notification to production team with up-to-minute information, and send notifications to other departments on deliverables	**Autonomous Model** a) Integration with QC and warehouse for highly efficient input / output items movement to reduce delay in loading b) Autonomously optimize production process to achieve maximum output when anomaly is detected

4) Predictive Maintenance & Equipment Health

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Manual Maintenance Logging • Form-based Maintenance Recording • App-assisted maintenance activities	• Entry-Level Computerized Maintenance Management Systems (CMMS) • Basic ERP Maintenance Module	• IoT connected CMMS • SCADA with Advance Monitoring module	• AI-Driven Predictive Maintenance system • Digital Twin with Predictive Capabilities • AI-enabled Asset Performance Management (APM) Suite
Example of use case	**Mitigation Model** a) Maintenance and repairs incidents tracking b) Maintenance cost planning	**Preventive Model** a) Maintenance team is able to proactively plan for machine stop time b) Incidents case logging and repairs for traceability c) Enable Maintenance Knowledge Base building d) Clearer maintenance cost planning for budgeting e) Asset Management	**Predictive Model** a) Auto data collection and alerts from IoT (sensors) b) Data analysis of machine conditions to have better planning on repairs and replacements c) Systemize budget request reports	**Autonomous Model** a) Integrated with production process intelligence to plan downtime for maintenance b) Multi-lines / multi-sites capability for autonomous production planning and re-routing c) Automated alerts to machine supplier for offsite troubleshooting and onsite support

5) Resource Efficiency & Circular Manufacturing

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Digital Sub-Metering Dashboard • Manual Submission Carbon Emission Tracker • Smart Water & Gas Metering • Digital Scrap Weighing • Wastewater Quality Tracking App	• Smart Meter Dashboard • Discharge Compliance Alarms • Scrap Threshold Warning	• Resource Usage Forecaster • Waste-to-Wealth Analyzer	• Autonomous Energy Balancer • Autonomous HVAC Optimization • Smart Chemical Dosing
Example of use case	**Mitigation Model** a) Track electricity usage per section for monitoring purpose b) Calculate Scope 1 & 2 carbon emissions for first level compliancy c) Digitally track water or industrial gas usage per production shift d) Compare energy used between the day shift and night shift to spot human waste e) Log the daily weight of metal shavings or plastic scrap generated f) Digitally records of pH levels of factory wastewater for simpler reporting	**Preventive Model** a) Consolidated dashboard of electricity, water, gas, compressed air and wastewater parameters b) SMS alerts when factory power draw approaches TNB Maximum Demand penalty limit c) Alerts to shutdown idle machines to save power d) Alert if the factory is drawing electricity, water or gas during non-production time e) Instant SMS alert if wastewater toxicity exceeds legal DOE limits f) Warn if production scrap weight exceeds level	**Predictive Model** a) Forecast TNB utility bill based on current production schedules b) Analyse resources usage based on product batch c) Predict resources (gas) depletion time based on production schedule d) Analyse the financial value of collected scrap	**Autonomous Model** a) AI automatically throttles down non-critical factory equipment during peak tariff hours b) System automatically adjusts factory cooling based on real-time weather and machine heat output c) Wastewater treatment plant autonomously injects the exact amount of neutralizing chemicals needed based on live AI sensors

6) Supplier & Material Intelligence

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Digital IQC (Incoming Quality Control) App • Defect-to-Vendor Mapping Tool • Supplier Material Performance Dashboard • Supplier Delivery & Quality Scorecard	• Supplier Performance Analytics Engine • Raw Material Monitoring Module • ERP-to-MES Material Tracker	• Supplier Reliability Analyser • Material Cost Impact Analysis Plug-in • Material Yield Comparison Tool	• Intelligent Material Purchasing Engine • Autonomous Sourcing Engine • AI Material Risk & Yield Optimizer
Example of use case	**Mitigation Model** a) Digitally records via app of incoming raw material quality b) Rank suppliers based on late deliveries and material defects c) Link a shop-floor defect back to a specific supplier batch	**Preventive Model** a) Monitor supplier quality, delivery reliability, and repeated supplier problems b) Highlight materials that need extra checking before production use c) Alert procurement team when raw materials drop below safe levels d) Flag financially unstable or risky suppliers before ordering e) Track which raw materials are currently assigned to which machine	**Predictive Model** a) Predict which suppliers or materials may cause future quality problems b) Identify suppliers that may become unreliable based on past performance c) Predicts upcoming supplier delays using historical data	**Autonomous Model** a) Automatically determine purchasing quantity & sourcing party to avoid shortages and excess stock

7) Inbound Material Flow & Raw Inventory Readiness

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Barcode Inventory Stocktake • Delivery Reliability Scorecard • Digital Dock Scheduling Portal • Receiving Yard & Dock Status Board	• Line Shortage Monitor • Digital FIFO Control Module • RFID Pallet Tracking System	• Receiving Workload Forecast • Forklift Path Optimizer • Just-In-Time Estimator • Vendor Managed Inventory (VMI) System	• Dynamic Receiving Prioritization Controller • Smart Material Priority Planner • Autonomous Just-In-Time Delivery • AI-Driven Procurement & Logistics Planner
Example of use case	**Mitigation Model** a) Use barcode scanner to keep an accurate, live count of all raw materials b) On-screen view to identify late, incomplete, damaged, or wrong incoming materials c) Receiving area status board to monitor traffic and clear dock congestion d) Online booking app of unloading bays instead of using whiteboards	**Preventive Model** a) Display low material stock warnings on screens next to production lines b) Live heatmap of pallets to view available pallets c) Sequential listing of raw materials by date	**Predictive Model** a) Forecast busy receiving periods and plan manpower earlier b) Visual-assisted item placement to reduce placement error c) Calculate approximate time to move materials to a machine so that operators never wait d) Supply Chain connectivity (Incoming) with early warnings for production planning	**Autonomous Model** a) Dynamically adjust material arrival buffers based on supplier delivery behavior b) Automatically prioritizes truck unloading based on live factory floor material needs, bypassing standard queues c) Robots deliver materials to the assembly line exactly when needed d) AI-Driven integrated system with sales, procurement and logistics to automate purchases and deliveries

8) Finished Goods Fulfilment & Distribution Performance

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Urgent Order Fulfilment Tracker • Delivery Performance Scorecard • End-of-Line Serialisation System • Digital Packing Checklist • e-Proof of Delivery App	• Entry-Level WMS with Inventory Tracker • Logistics Performance Monitoring System • Dispatch Readiness & Compliance Gate • Truck GPS Monitor • IoT enabled Tracking System (RFID)	• Advanced WMS Optimization Modules • Basic Supply Chain Planning (SCP) Modules • Truck Loading Optimizer	• AI Dispatch & Route Optimizer • Autonomous Robotic Warehousing • Auto-Customs Doc Generator • Robotic Palletizer
Example of use case	**Mitigation Model** a) Dashboard to sort urgent orders and expediate deliveries b) Display delayed orders due to stock, packaging, documents, transport, or customer issues g) Unique QR code on every finished product to identify item's location for faster retrieval c) Tablet-based checklists d) Client signs digitally on a driver's smartphone upon goods received	**Preventive Model** a) Tracking of raw materials and finished goods with expiry date and apply FIFO method to better control of inventory b) Logistics teams / partners performance monitoring c) Digital checklists ensure all documents and labels are complete before any truck can leave d) GPS tracking system on truck to monitor driver and delivery e) Better planning of items placement to maximize storage area f) Wireless tracking for fast and accurate inventory accounting	**Predictive Model** a) Warehouse visualization of potential issues (to minimize risk of mixing goods, eg temperature sensitive, inter-contamination, etc) b) Integrated Supply Chain Management that can predict stock flow for better demand planning c) Optimize goods loading to maximize truck space to reduce shipping trips	**Autonomous Model** a) Autonomous dispatch planner based on urgency, cost, capacity, and customer priority b) Automatically groups orders, selects carriers, builds routes, and adjusts for delays c) Autonomous warehouse planning and placement d) System auto-generates export paperwork e) Autonomous robotic box stacker and wrapper

9) Market Demand Intelligence & Production Alignment

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Sales Order Risk Reporting • Slow-Moving Product Checker • Sales-to-Production Status Module • Demand & Order Visibility Dashboard	• Fulfilment Monitoring Module • Sales & Operations Approval Workflow • Supply & Demand Command Center	• ERP Demand Forecast Module • Overstock & Shortage Prediction Tool • Price Sensitivity Insight	• Dynamic Stock Allocation Engine • Autonomous Factory Orchestrator • Intelligent Demand-to-Production Planner • AI Production Priority Recommendation Module
Example of use case	**Mitigation Model** a) Quickly identify customer orders at risk of delay, shortage, or margin loss b) Identify slow-moving products that are tying up cash and warehouse space c) Reports to see cancelled orders or missed targets to find alternative leads d) Live status of client orders currently running on the factory floor e) View sales demand, customer orders, stock availability, and production status together	**Preventive Model** a) Compare sales orders, stock availability, and production capacity b) Approval of force sales and production to lock forecasts, preventing disruptive last-minute orders c) Monitoring system connecting raw material, production and sales to display sales and demand to maximize profit margin	**Predictive Model** a) Forecasting demand based on historical sales trend and festive seasons b) Analyze products and recommend combination (bundle) to improve sales value and margin c) Analyses historical trends to predict sudden demand spikes, helping factories build safety stock early	**Autonomous Model** a) Automatic price adjustments to protect profit margin with approval workflow b) Automatically rewrites the daily factory schedule based on live sales c) Fully integrated AI-driven system with sales and manufacturing floor to optimize demand and supply d) Recommend what to produce, how much to produce, and when to produce

10) Customer & Product Usage Performance Intelligence

Level of Intelligence	Level 1 Data Generation & Visualization	Level 2 Digitally Connected System & Monitoring	Level 3 Data Analysis & Advanced Forecasting	Level 4 AI-Driven Optimization & Autonomous Control
Example of Tech Solutions	• Product Usage Feedback Plug-in • Customer Complaint & Return Dashboard • Critical Customer Issue & Recall Board • Return Reason Reporting	• Customer Complaint Management System • Warranty Issue Monitoring Plug-in • Standardized Warranty Triage Workflow	• Product Failure Trend Analyzer • Remote Health Monitoring • Product Improvement Insight • Customer Retention Scoring Module • Root Cause Analysis Module	• Autonomous Support Resolution & RMA System • AI Product Designer
Example of use case	**Mitigation Model** a) Capture customer satisfaction KPI (CSAT, NPS, CES) b) Integrated web portal / app for fast customer complaints and responds c) View urgent complaints in real-time to quickly resolve issues d) Reporting to show top reasons for product return	**Preventive Model** a) Monitor repeated complaints by product, customer, batch, or region b) Ensure corrective actions from complaints are followed up properly c) Link customer issues back to product, batch, material, or process d) Digital diagnostic checklists to ensure consistent returns and prevent fraudulent warranty claims	**Predictive Model** a) Predict batch flaws, enabling targeted recalls b) Data usage feedback from embedded sensors in products c) Combine sales patterns, customer feedbacks, warranty and return rate, defect issues to identify product improvements and new products design d) Rank customer satisfaction rate and forecast repeated sales potential e) Analytic system of root causes and plan corrective actions for repeated problems	**Autonomous Model** a) Automatically reads claims, verifies warranties, and ships replacements without human agent intervention b) AI-Driven product design automation based on data from sales, customer feedbacks, production capability, warranty and returns and defects.