

DIGITAL PRODUCTIVITY ROADMAP

Professional Services Productivity Nexus (PSPN)

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FOREWORD DIRECTOR GENERAL



Datuk Zahid Ismail
Director General
Malaysia Productivity Corporation

The Digital Productivity Roadmap for Professional Engineering services is a strategic initiative to accelerate digital adoption, enhance efficiency, and drive innovation across the sector. As the demands in the industry evolve, digital transformation is no longer a luxury but a necessity. This roadmap provides a structured framework for Professional service providers to leverage digital technologies—such as artificial intelligence, big data, and automation—to improve service delivery, optimize operations, and enhance patient outcomes.

Malaysia’s Professional Engineering services has long been a pillar of excellence, attracting both local and international patients. However, to sustain this competitive edge, embracing digital productivity is crucial. By integrating digital solutions, service providers can streamline workflows, reduce administrative burdens, and deliver more personalized and efficient patient care. AI, modern simulation software, digital twin and predictive analytics will be key enablers in ensuring greater accessibility, affordability, and quality of engineering services in Malaysia.

MPC remains committed to supporting the professional services provider in this digital transformation journey. Through collaboration with stakeholders, policy advocacy, and capability-building programs, we will drive the adoption of digital best practices to enhance productivity and competitiveness. I encourage all industry players to embrace this roadmap and collectively work towards a future where Malaysia’s engineering services stands as a global leader in digital innovation and operation excellence.

FOREWORD CHAMPION



Ir. Ts. Choo Kok Beng
Champion
Professional Services Nexus

The Digital Productivity Roadmap for Professional Engineering Services marks a significant step in harnessing technology to enhance efficiency and overall industry resilience. As digital transformation continues to reshape global landscapes, Service provider in engineering services in Malaysia must embrace cutting-edge solutions to remain competitive. This roadmap provides a structured approach to integrating digital tools such as artificial intelligence, data analytics, and automation to streamline operations, reduce costs, and improve service delivery.

With a rapidly aging population and rising demands in modern technology application, digital adoption is no longer optional but a necessity. By leveraging digital technologies, service provider in professional engineering services can enhance the output through predictive analytics, AI-driven design, modern simulation tool and seamless cloud-based data management. Moreover, AI driven system and remote monitoring solutions are revolutionizing service engagement, ensuring that the quality of service is accessible beyond traditional practice settings.

Collaboration between industry players, technology providers, and regulatory bodies is crucial to realizing the full potential of digital productivity. This roadmap serves as a call to action for professional engineering service leaders to invest in digital capabilities and foster a culture of continuous innovation. By embracing this transformation, we can build a more efficient, human-centric, and future-ready professional services that upholds Malaysia's reputation as a regional champion in professional engineering services.

Industry Overview and Digitalisation Challenges

The Professional Engineering Services, with numerous establishments and a strong workforce, drives GDP through professional services to public and private utilities, building, machines, equipment, processes or any work which requires engineering principles and data . Its stakeholders includes property developers, utility service providers, manufacturers, machineries supplier, R&D centers, data centers and technology providers. Engineering services includes Engineering design for machines, materials, instrument, structures, processes and system as well as consulting activities for machineries, industrial processes and plant, project involving civil engineering, hydraulic engineering, traffic engineering, water engineering project, electrical and electronics, mining, chemical engineering, Mechanical engineering, industrial, system and safety engineering or elaboration of projects using air-conditioning, refrigeration, sanitary and pollution control, acoustical engineering and other field as approved by the Board of Engineer Malaysia (BEM)

INDUSTRY OVERVIEW



No. of establishment: 8113



No. of workforce: 64,689



Gross output value: RM13.9 Billion
CAGR (2022/2017) : 7.7%



Value added: RM8.2 Billion
CAGR (2022/2017): 7.8%

CHALLENGES IN DIGITALISATION

1. Interoperability and data integration of different engineering software and data format impose challenges in modern data management
2. Preference to traditional method by staff and clients retard the adoption of new digital tools in engineering
3. High initial investment and cost to implement new digital technologies such as Building Information System (BIM) software, advanced simulation tools, cloud-based platform, AI-driven analytics and cyber-security.

Trend impacting engineering professional services in malaysia

Digital Transformation, Industry 4.0 Integration and transition into Industry 5.0

- The adoption of digital technologies such as Building Information Modeling (BIM), Artificial Intelligence (AI), Internet of Things (IoT), cloud computing, and big data analytics is revolutionizing how engineering projects are planned, designed, executed, and managed.
- This trend demands engineers with skills in digital design, data analysis, simulation, and the management of digital platforms.
- The adoption on IR 4.0 element is the preparation towards future IR 5.0

Focus on Sustainability and Green Engineering

- Growing environmental awareness and the push for sustainable development are increasing the demand for engineers who can incorporate green building practices, renewable energy solutions, waste reduction strategies, and environmental impact assessments into their projects.
- Expertise in sustainable materials, energy-efficient design, and the principles of a circular economy are becoming increasingly important.

Smart Infrastructure and Urbanization

- Malaysia's ongoing urbanization and infrastructure development projects necessitate engineers skilled in creating smart cities with integrated systems for transportation, energy, water management, and public services, often leveraging IoT and data analytics.
- This includes the design and implementation of intelligent transportation systems, smart grids, and resilient infrastructure.

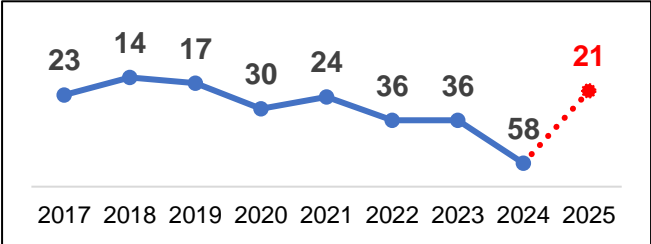
Boosting Enterprise Productivity Through Digital Roadmap

Malaysia's digital adoption has seen a worrying decline, as shown in the **Use of Digital Tools and Technologies, Digital Transformation in Companies, and Digital/Technology Skills** rankings. The **sharp drop in 2024** suggests businesses are struggling to adopt digital tools, scale transformation efforts, and build necessary skills. This downward trend highlights a growing gap in digital readiness, limiting enterprise competitiveness in an increasingly digital economy.

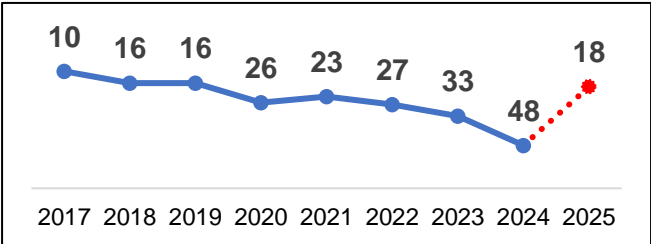
Key challenges include **high costs, lack of expertise, and inconsistent digital skills development**, which hinder businesses from fully embracing digitalisation. Without intervention, Malaysia risks falling behind global competitors. A structured approach is needed to support industries in adopting technology and strengthening their digital capabilities.

To tackle this, **MPC is launching the 'Boosting Productivity of Enterprises via Digital Roadmap' initiative**. This roadmap will provide guidance, industry-driven insights, and structured support to help businesses integrate digital solutions. By addressing gaps in **tools, transformation strategies, and workforce skills**, MPC aims to **revive digital adoption, enhance productivity, and drive Malaysia's enterprises toward global competitiveness**.

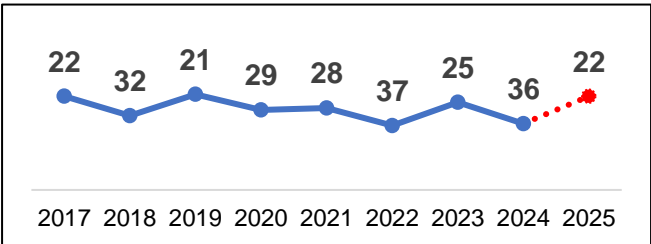
i) Use of Digital Tools and Technology



ii) Digital Transformation in Companies



iii) Digital/Technological Skills



Building a Strong Digitalization Ecosystem for Enterprise Transformation.

The figure illustrates a structured approach to strengthening the digitalisation ecosystem by aligning technology supply with industry demand.

Step 1 - The process begins with identifying the requirement profile of enterprises which is part of the 1.1million of overall number establishment in Malaysia, ensuring a clear understanding of industry needs

Step 2 - To address these needs, the availability and affordability of solution providers are assessed and strengthened through key enablers such as MDEC and KD

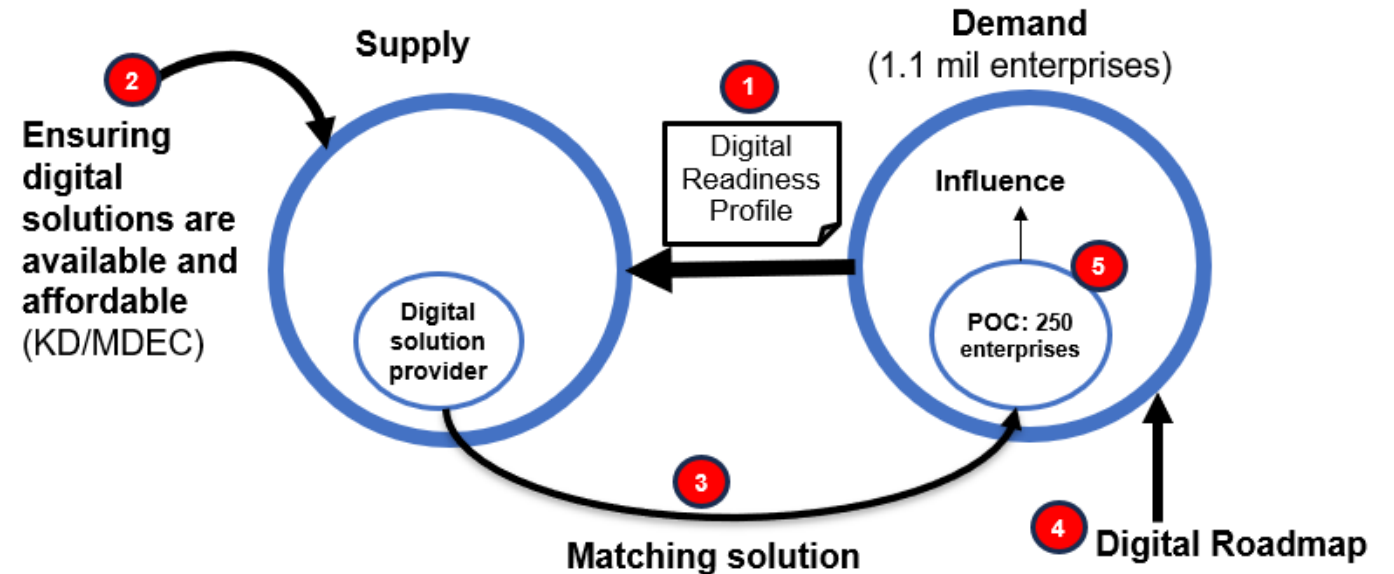
Step 3 - Digital solution providers then provide matching digital solutions tailored to industry demands, facilitating effective adoption.

Step 4 - To drive large-scale implementation, a Digitalization Roadmap is published to provide strategic guidance and best practices

Step 5 - A proof of concept (POC) involving 250 enterprises is conducted to demonstrate impact and influence broader industry adoption

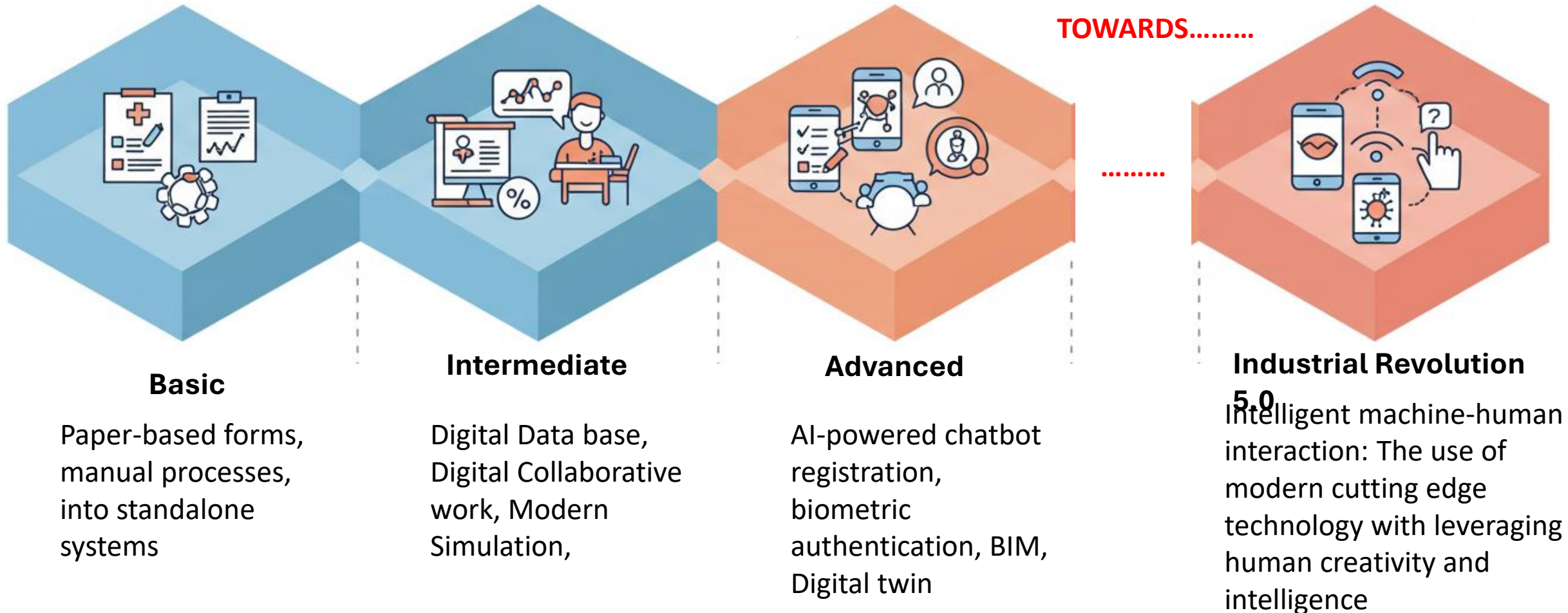
This initiative fostering a robust ecosystem that accelerates digital transformation across enterprises.

Action: Improving the ecosystem to encourage adoption, transformation, and skill enhancement for technology utilization.



Digital Transformation Journey

Professional Engineering Services



Digital Adoption In Professional Engineering Service Industry

This table outlines the progressive stages of digital adoption across various functions in Professional Engineering services, categorizing them into **Basic, Intermediate, and Advanced** levels to illustrate the industry's transformation journey toward enhanced efficiency, automation, and AI-driven insights.

Category	Functions in Services	Basic	Intermediate	Advanced
Front Office (Customer-Facing)	<ul style="list-style-type: none"> • Sales & Business Development- • Customer Service • Marketing & Promotions 	<ul style="list-style-type: none"> • Minimal use of digital tools • Limited online presence • Basic email & manual transactions 	<ul style="list-style-type: none"> • Digital CRM & customer service tools • Online booking & support- Digital marketing & advertising 	<ul style="list-style-type: none"> • AI-powered customer engagement • Omnichannel integration • Predictive analytics for customer behavior
		<p><u>Suggested Tools</u> Gmail, Social media (TikTok, Facebook, Instagram, etc), Google Drive, Microsoft Outlook, OneDrive- Trello, Slack</p>	<p><u>Suggested Tools</u> - Google Workspace, Google Ads, HubSpot CRM - Microsoft Dynamics 365, Mailchimp, Calendly - AppSheet (for workflow automation & digitization)</p>	<p><u>Suggested Tools</u> - Google Looker, Google Analytics, Microsoft Power BI - ChatGPT, Drift, Pipedrive CRM - AppSheet (for advanced automation & AI-powered workflows) - Gemini (for AI-driven chatbots & customer insights) Deepseek</p>

For more info on the digitalisation tools, go here <https://www.mpc.gov.my/digitalplatformnetwork> Or scan the QR code



Digital Adoption In Professional Engineering Services Industry

This table outlines the progressive stages of digital adoption across various functions in professional engineering services firm and company, categorizing them into **Basic, Intermediate, and Advanced** levels to illustrate the industry's transformation journey toward enhanced efficiency, automation, and AI-driven insights.

Category	Functions in Services	Basic	Intermediate	Advanced
Middle Office (Business administration Operational Support)	<ul style="list-style-type: none"> HR & Talent Management Finance & Accounting Service Innovation Regulatory Compliance Patient Records & Billing Management 	<ul style="list-style-type: none"> Manual record-keeping & payroll Siloed operations Limited regulatory compliance automation Mainstream media 	<ul style="list-style-type: none"> Cloud-based HRM & payroll automation Data analytics for performance management Basic AI in financial forecasting Social media 	<ul style="list-style-type: none"> AI-driven HR & recruitment automation Automated compliance monitoring Predictive analytics for business insights
		<p>Suggested Tools</p> <ul style="list-style-type: none"> - Microsoft Excel, Google Sheets- QuickBooks, Wave Accounting (for finance)- Trello, Notion (for basic operations management), LinkedIn 	<p>Suggested Tools</p> <ul style="list-style-type: none"> - Cloud-Based HR & Payroll: BambooHR, Zoho People, Deel - Data Analytics: Google Data Studio, Microsoft Power BI - Financial AI: Xero, FreshBooks - LinkedIn, 	<p>Suggested Tools</p> <ul style="list-style-type: none"> - AI in HR & Compliance: Workday, SAP SuccessFactors - Predictive Analytics: Google Looker, Tableau, IBM Watson - AI Automation: Gemini, ChatGPT, AppSheet

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Category	Functions in Services	Basic	Intermediate	Advanced
Middle Office (Engineering Operational Support)	<ul style="list-style-type: none"> • Design • Simulation • Project management • Engineering Analysis • Research • Project / Business • Presentation 	<ul style="list-style-type: none"> • Manual sketch and calculation • Siloed operations • Limited regulatory compliance automation • Traditional presentation slides • Manual site work 	<ul style="list-style-type: none"> • Cloud-based project management • Computer Engineering Design drafting and simulation • Data analytics for project management, engineering analysis and design • Basic AI in engineering analysis 	<ul style="list-style-type: none"> • AI-driven Design • Collaborative design and simulation • Virtual reality / Augmented reality (VR/AR) simulation • Automated compliance monitoring • Predictive analytics for business insights
		<p>Suggested Tools</p> <ul style="list-style-type: none"> - Microsoft Excel, Google Sheets- QuickBooks, Trello, Notion (for basic operations management), Canva, Digital tools on site 	<p>Suggested Tools</p> <ul style="list-style-type: none"> - Design and Simulation tool: CAD/CAM softwares - Cloud-Based Project management:: Google workspace, Monday.com, Microsoft project / Teams - Data Analytics: Google Data Studio, Microsoft Power BI - Generative AI for research and analysis: CHATGPT, DEEPSEEK, GEMINI, 	<p>Suggested Tools</p> <ul style="list-style-type: none"> - AI in design compliance: Generative AI tool, - Predictive Analytics: Google Looker, Tableau, IBM Watson - AI Automation: Gemini, ChatGPT, AppSheet - Collaborative design and simulation: Building Information Modelling (BIM) - VR/AR - Digital Twin modelling and simulation

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Back Office (Administration, IT and other supporting department)	<ul style="list-style-type: none"> IT & Cybersecurity Procurement Infrastructure Management Business Continuity Sustainability 	<ul style="list-style-type: none"> Basic IT support Minimal cybersecurity measures No automation in procurement 	<ul style="list-style-type: none"> System integration for IT management Partial process automation Periodic cybersecurity risk assessments 	<ul style="list-style-type: none"> AI-driven cybersecurity Full automation of internal processes Blockchain for secure transactions
		<p>Available Tools</p> <ul style="list-style-type: none"> - Microsoft Defender, Avast for Business (basic cybersecurity)- Google Drive, Microsoft OneDrive (basic cloud storage)- Excel, Google Sheets (manual procurement tracking) 	<p>Available Tools</p> <ul style="list-style-type: none"> - System Integration: Microsoft Intune, Google Workspace Admin, ServiceNow - Cybersecurity: CrowdStrike, Palo Alto Networks, IBM Security - Process Automation: AppSheet, Power Automate, UiPath (basic automation) 	<p>Available Tools</p> <ul style="list-style-type: none"> - AI & Cybersecurity: Darktrace, Microsoft Sentinel, Google Chronicle- Process Automation: RPA with UiPath, Automation Anywhere- Blockchain: IBM Blockchain, Hyperledger for secure transactions

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DIGITAL TRANSFORMATION SUCCESS STORY: IOT ADOPTION IN BUSINESS OPERATION

This page highlights real-world examples of **successful digital adoption** across industries, showcasing how automation and technology integration drive **operational improvements, cost savings, and enhanced customer satisfaction**.



SZ SHAFAZAFIRA Enterprise Successfully improving business productivity through application of IOT to monitor workers, product temperature, humidity and output.



SERANDU AQUAPONICS SYSTEMS Sdn Bhd Successfully improving business productivity through application of IOT to monitor water quality (temperature, PH, Salinity and Oxygen level) in the water pond.

HOW TO START?

Start by scan the QR code and signing the pledge
DIGITAL PLEDGE



For more info

<https://www.mpc.gov.my/digitalplatformnetwork>

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