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## NAVIGATING MALAYSIA'S JOURNEY INTO THE AI ERA
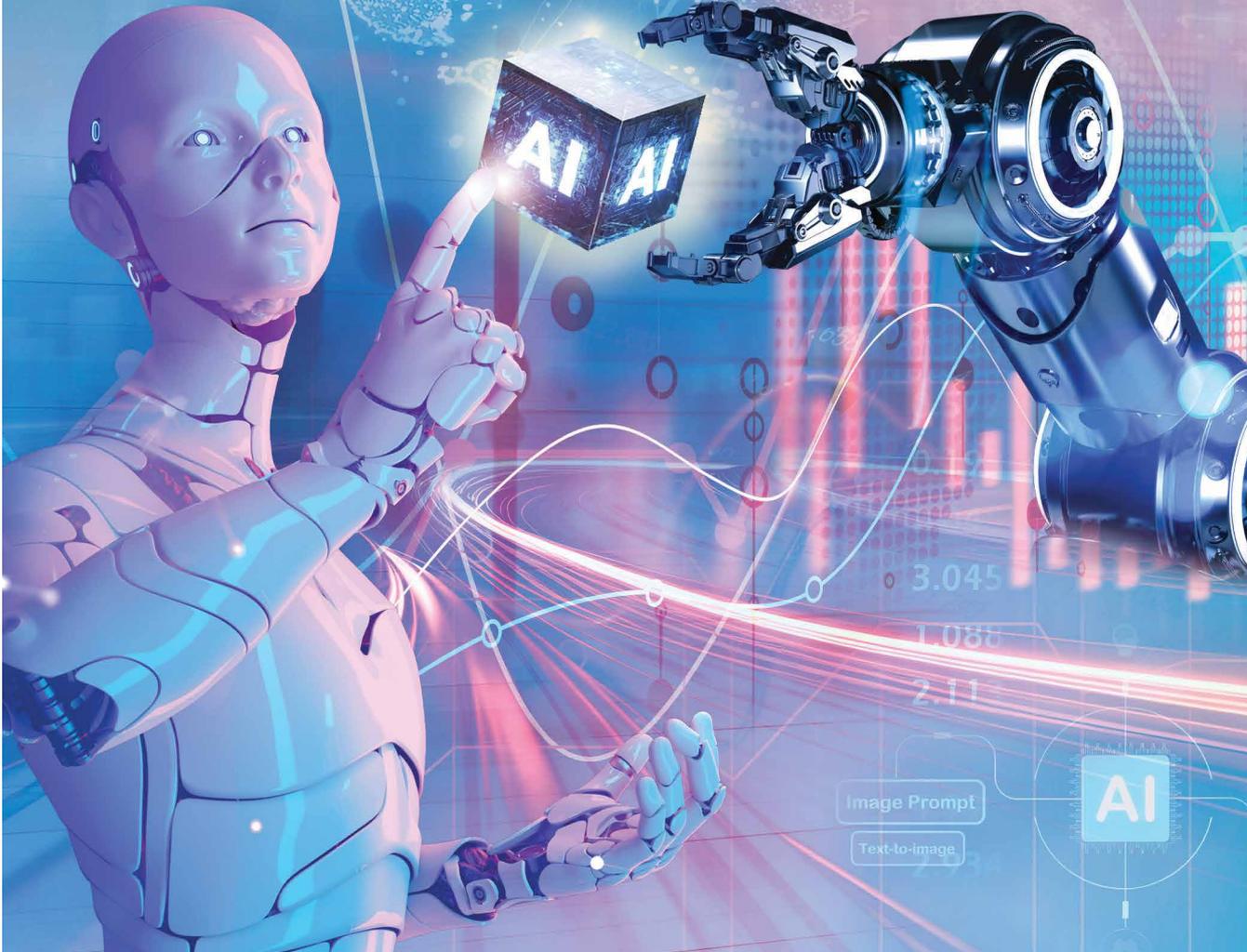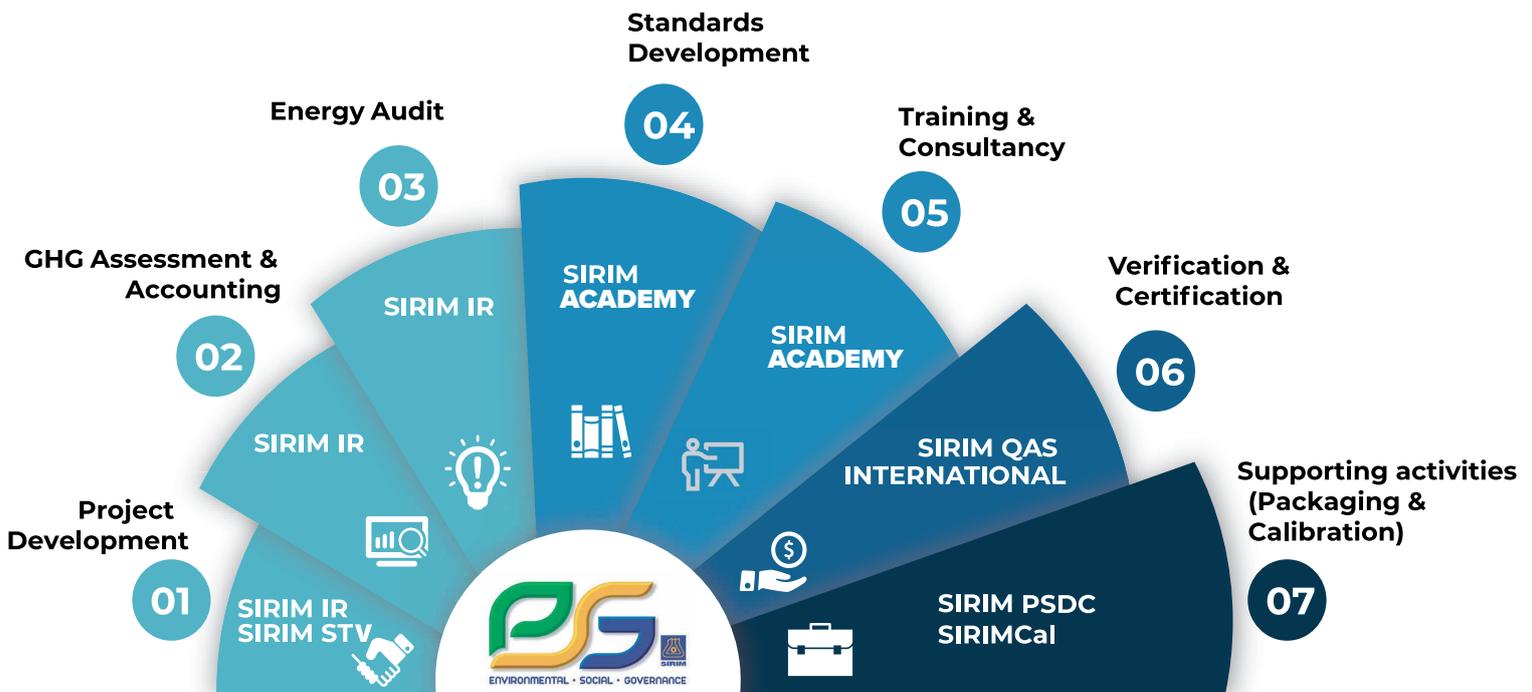
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# DRIVING MALAYSIA'S FUTURE FORWARD WITH AI

Artificial intelligence (AI) has been revolutionising the way the world works. Strategically located in the heart of the ASEAN region, Malaysia is positioned to play a crucial role in driving the global AI revolution, particularly in the digital transformation of Southeast Asia.

In 2023, Malaysia was ranked 23rd out of 193 countries across the globe in the Oxford Insights Government AI Readiness Index, a testament of our strong digital infrastructure and capacity that provides a solid foundation for the growth and implementation of AI technologies. Furthermore, with a market value anticipated to reach RM1.5 billion this year, AI in the country is poised to be a key driver of our socioeconomic future.

For Malaysia to successfully transition into a digitally-driven, high-income nation, substantial investments in digital infrastructure and next-generation technologies are essential. Collaboration plays a central role in this journey.

At the forefront of industrial and technological progress in the country, we at SIRIM are doing our best to foster an environment that is conducive to the proliferation of AI innovation and expertise. By building partnerships with both the private and public sectors, we aim to create a dynamic and competitive AI landscape.

Digital technology should benefit everyone. At SIRIM, we are committed to ensuring that no one is left behind in this digital evolution.

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# highlights

Volume 3 2024

Strategically located in the heart of ASEAN, Malaysia is well-poised to play a pivotal role in the acceleration of artificial intelligence (AI) in the region. With a fast-growing technology ecosystem and a strong commitment to harnessing AI's potential, the country aspires to drive AI adoption across industries.

*To build a high-value ecosystem, it is crucial that Malaysia takes the driver's seat in the AI revolution. We already have the right competencies in place and are well-positioned to attract high-growth industries. These strengths include competent engineering and technical capabilities, strong business acumen and an attractive investment climate—key ingredients for fostering innovation and securing a leading role in the global AI landscape.*

# DRIVING THE ACCELERATION OF AI IN ASEAN

by
Dato' Indera Ir. Dr. Ahmad Sabirin Arshad
President and Group Chief Executive Officer, SIRIM



The rapid evolution of artificial intelligence (AI) cannot be ignored. As ASEAN emerges as a global economic growth engine, Malaysia's position at its centre offers immense potential. Newly launched initiatives like AI Governance and Ethics (AIGE) and *AI Untuk Rakyat* signal the nation's readiness to embrace this transformative technology. This also marks an essential step toward achieving developed nation status by 2030, building on the industrialisation momentum of the 1980s and 1990s.

**AIGE** is a framework designed to ensure the safe and responsible use of AI technology via compliance with seven principles of responsible AI. It is structured around three key stakeholders: the end users (the public), policymakers and developers and technology providers.

*AI Untuk Rakyat* is a self-paced online programme designed to raise public awareness about AI, and targets anybody interested in learning more about AI, including students, parents, professionals or senior citizens. It is divided into two main modules: AI Aware and AI Appreciate.

As a key player in Malaysia's industrial and technological advancement, SIRIM is actively exploring AI's transformative impact on industries, aiming to ensure that Malaysia leads in shaping the AI ecosystem.

Dato' Indera Ir. Dr. Ahmad Sabirin Arshad, President and Group Chief Executive Officer of SIRIM, likens AI to an engine that propels advancements.

"To build a high-value ecosystem, it is crucial that Malaysia takes the driver's seat in the AI revolution. We already have the right competencies in place and are well-positioned to attract high-growth industries. These strengths include competent engineering and technical capabilities, strong business acumen and an attractive investment climate—key ingredients for fostering innovation and securing a leading role in the global AI landscape," he continued.

**acceleration of AI in ASEAN**

With the Prime Minister championing AI as a national priority, initiatives from the Ministry of Digital Economy through the Malaysia Digital Economy Corporation (MDEC) and investment-driven strategies by the Ministry of Investment, Trade and Industry (MITI), the country holds the potential to be at the forefront of AI innovation.

Data centres are an integral component in this scenario. "Traditionally the backbone of digital services, data centres are now being transformed through AI integration. This is a game-changer for nations and represents a new economic frontier for Malaysia, following the semiconductor industry," said Dr. Ahmad Sabirin.

Johor alone hosts 15 data centres, with many more planned nationwide. SIRIM aims to actively contribute to these developments, ensuring Malaysia reaps the benefits by enabling technologies, leveraging locally developed AI software and hardware, and generating valuable data insights created by Malaysians.

"AI is the enabler, but its impact on industries is immense. It is vital for Malaysia to attract and develop AI capabilities to support our aspiration of becoming a high-income nation," he emphasised.

One of SIRIM's soon-to-be-launched key initiatives, developed in collaboration with MITI, focuses on utilising AI to create smart factories. Smart factories are not just about adding robotics; they focus on the conversion of data and information.

"AI is fundamentally about training models, and the more extensive the data, the easier it becomes to develop better, more predictive systems. Presently, our data is like spaghetti—or in local terms, *rojak*—scattered everywhere. It needs to be structured to be useful," elaborated Dr. Ahmad Sabirin.

"Whether we like it or not, AI plays a crucial role in enabling more informed decision-making. Some people fear being displaced by AI, but they should be cognisant that it remains a tool. It is always in a master-slave relationship where we, as humans, are the masters, and AI serves as the slave," he continued.

### NECESSARY STEPS

AI in Malaysia is still in its early stages, primarily because industries remain hesitant to adopt it. Many are content with their current operations, as cheap labour still makes automation seem unnecessary. However, with other countries in the region offering even lower labour costs, Malaysia will face increasing pressure to automate.

**Current Trends in AI**

**Generative AI** - used to create content and ideas, like text, images, videos and audio. Generative AI is commonly leveraged to optimise and enhance various work processes. This facilitates the automation of complex tasks, generation of creative solutions and streamlining of workflows to improve business efficiency.

**Technological AI** - focuses on software-driven interventions. Technology AI interventions play a pivotal role in helping companies achieve full automation across their operations by integrating advanced technologies and AI into their ecosystems.

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**ESSENTIAL ELEMENTS TO GROW THE AI ECOSYSTEM**

↗ Proficient expertise
↗ Strategic growth potential
↗ Favourable investment environment

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**MALAYSIA'S AI FUTURE**

Driven by national priorities set forth by the Prime Minister, MDEC's digital initiatives and MITI's investment strategies, the nation is positioned to lead in AI innovation



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In manufacturing, AI enables real-time data collection from production lines, allowing systems to predict whether to accelerate or slow production based on demand. This optimises efficiency, reduces carbon footprints by adjusting schedules and purchasing decisions, and sets the foundation for autonomous systems capable of smarter resource management.

"Embracing AI in manufacturing allows the system to gather data from every production line, predicting future demands and optimising production to minimise carbon footprints. Productivity and efficiency are significantly enhanced, while errors common with traditional workmanship or human intervention are minimised. Unlike humans, AI delivers accurate outputs when provided with the right information," explained Dr. Ahmad Sabirin.

Advancing AI and related technologies requires increased awareness to gain acceptance from the public and industries, ultimately securing their buy-in. As such, SIRIM is focused on humanising AI and communicating its benefits clearly so that people understand AI is not here to replace them but to enhance their capabilities. By positioning AI as a tool for personal and professional growth, SIRIM aims to reach everyone—from industry leaders to individuals on the street.



The short-term goal is to enable 3,000 companies to adopt AI-driven technologies and transform into smart factories within the next two to three years. This initiative will significantly impact Malaysia's gross domestic product (GDP), increasing profits and boosting tax revenue for the government. SIRIM will work closely with these companies to ensure that they are ready for this transformation, driving both technological advancement and economic growth.

In the medium term, the focus is on extending Malaysia's technological advancements to benefit the entire ASEAN region. By fostering prosperity among neighbouring countries, Malaysia aims to reduce wealth disparities and promote equitable growth.

"For the long term, the goal is to impact not just Earth but the entire universe. As we look to the future, AI will play a crucial role in enabling humanity to explore and survive on other planets, like the moon and Mars. With countries like China, India and the US already planning space colonisation, including the moon and Mars, it is essential that we take care of our own planet and align our efforts to ensure sustainability and growth in space exploration," expounded Dr. Ahmad Sabirin.

Collaboration between markets, economies, governments and institutions is crucial for transitioning from being a follower to leading in areas like quantum computing. "No one does this alone anymore; everyone partners with someone," emphasised Dr. Ahmad Sabirin. This collective approach is essential for staying ahead and driving innovation.

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## DRIVING ECONOMIC GROWTH

Malaysia aims to transform

# 3,000 COMPANIES

into AI-powered smart factories by 2030, boosting GDP, profits and tax revenue, with SIRIM ensuring readiness for technological and economic progress

*For the long term, the goal is to impact not just Earth but the entire universe. As we look to the future, AI will play a crucial role in enabling humanity to explore and survive on other planets, like the moon and Mars. With countries like China, India and the US already planning space colonisation, including the moon and Mars, it is essential that we take care of our own planet and align our efforts to ensure sustainability and growth in space exploration.*

## A HELPING HAND

To support the effective adoption of AI, SIRIM begins by assessing whether companies have the necessary technological capabilities and automation systems in place. If these foundations exist, the adoption process can be completed within six months. Otherwise, the process may take longer, requiring a more extensive setup.

"We also ensure that the companies have the appropriate software and hardware for seamless AI integration, recognising that AI is not universally applicable and has specific requirements. Educating industries on selecting the right solutions is critical; much like choosing suitable software applications, they must identify AI tools that deliver the best value and results for their unique needs," shared Dr. Ahmad Sabirin.

### ASSESSMENT STAGE

to determine whether companies have the necessary technological capabilities and infrastructure, including the right automation systems, hardware and software, in place

**YES** — AI adoption process is completed in 6 months

**NO** — AI adoption process may take longer
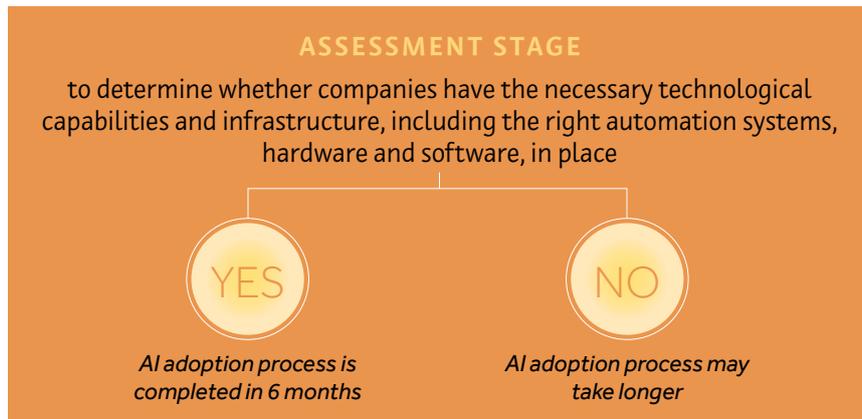
One of the challenges is in attracting the right investors. "Investors tend to be cautious about adoption and prefer to see the bandwagon ahead of them. Many want to observe others adopting and benefiting first. But if you watch for too long, you risk being left behind. In business, taking risks is essential. Otherwise, we cannot become movers," he added.

He emphasised that relying too heavily on other countries for inspiration becomes futile at some point, as their approaches often fail to align with Malaysia's unique culture and demands.

To overcome this challenge, Dr. Ahmad Sabirin believes that engaging through the sharing of success stories can be effective. For example, pilot studies that demonstrate capabilities and provide proof of concept. He is optimistic that this effort can be achieved quickly, especially with the government's intervention in including AI adoption as part of the economic plan.

"SIRIM has already identified partners and industry recipients for the project. The first step is a readiness assessment. This process takes about two months. Following the assessment, we can recommend suitable technological interventions. The programme's effectiveness is then measured by comparing the pre and post-intervention stages," he explained.

Fifty companies have been selected for the first batch of the programme, with another 3,400 being identified to participate in the coming years.

"At SIRIM, we look forward to supporting industry players in adopting AI swiftly and effectively. Beyond ensuring smooth integration, we aim to encourage earlier adoption. True change can only happen when people and organisations are genuinely ready to embrace it," concluded Dr. Ahmad Sabirin.

### LOFTY GOALS

↗ **Short term:** Help 3,000 companies transform into smart factories
↗ **Mid term:** Benefit the ASEAN region
↗ **Long term:** Ensure a sustainable impact in the world and beyond

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*Scan to watch the exclusive interview*

Neural networks are a foundational component of artificial intelligence (AI) that is redefining industries at an accelerating pace. It is time for these industries to understand and harness the possibilities so they can be proactive in shaping a sustainable future.

## Layers of Intricacies

Neural networks consist of three main types of layers:

↗ **Input Layer** Receives the raw data (features) from the environment or dataset

↗ **Hidden Layers** Process the data using weights, biases and activation functions, enabling the network to recognise intricate patterns

↗ **Output Layer** Generates the final result based on the processed data

*Simply put, a neural network is a key component of ML, where data is fed as input and the system produces an output. The more input it receives, the more the network 'learns', improving its accuracy over time.*

intricacies of
**neural networks**

# NAVIGATING THE INTRICACIES OF NEURAL NETWORKS

by
Dr. Mohd Shahrul Azmi Mohd Yusoff
Principal Engineer, SIRIM Industrial Research

Industries today are under immense pressure to deliver quick results. The advancement of Industry 4.0 technologies in recent decades, especially in artificial intelligence (AI) and machine learning (ML), is facilitating this. At the core of this progress are neural networks.

Consisting of interconnected nodes or neurons that mimic the complex functions of the human brain, neural networks are able to process and learn from data, enabling tasks such as pattern recognition and decision-making in ML.

"Simply put, a neural network is a key component of ML, where data is fed as input and the system produces an output. The more input it receives, the more the network 'learns', improving its accuracy over time," explained Dr. Mohd Shahrul Azmi Mohd Yusoff, Principal Engineer at SIRIM Industrial Research (SIRIM IR).

According to him, neural networks pave the way beyond traditional methods, providing predictive insights that enhance decision-making across the industries.



A key strength of neural networks is their ability to improve accuracy as the sample size increases, allowing them to make more precise predictions. Unlike humans, neural networks don't tire or forget, and are not influenced by personal biases.

"AI-powered tools streamline complex processes by reducing the need for constant human oversight. Machines can replicate and enhance the testing procedures, delivering results that are both faster and more accurate," shared Dr. Mohd Shahrul.

Neural networks hold great potential in simplifying predictive maintenance by speeding up what is typically a lengthy and complex process. With the integration of neural networks, the entire process becomes more efficient, as the system can automate tasks, eliminate human error and consistently produce reliable results.

One of the most promising applications lies in real-time analysis of structural integrity for engineering projects. SIRIM IR employs neural networks to automate defect detection and streamline quality assurance processes.

"By analysing data collected from equipment, neural networks can identify potential failures before they occur. This not only reduces costly downtime but also optimises operational efficiency without compromising productivity," Dr. Mohd Shahrul continued.

In the field of environmental monitoring, neural networks are equally impactful. By integrating advanced sensors with AI-powered analytics, SIRIM IR enables real-time tracking of air and water quality. These insights help industries address compliance requirements and adopt more sustainable practices.

The impact of these advancements extends to other sectors as well. In healthcare, for example, neural networks are being explored to enhance diagnostic accuracy and predict patient outcomes.

Through a strong emphasis on research and development, SIRIM IR is also developing neural network models that are adaptable to rapidly changing industrial environments. These systems are designed to learn continuously, making them more effective in addressing evolving challenges.

"Research and development isn't just about creating technology; it is about solving real-world problems. Our work ensures industries stay competitive while prioritising safety and sustainability," declared Dr. Mohd Shahrul.
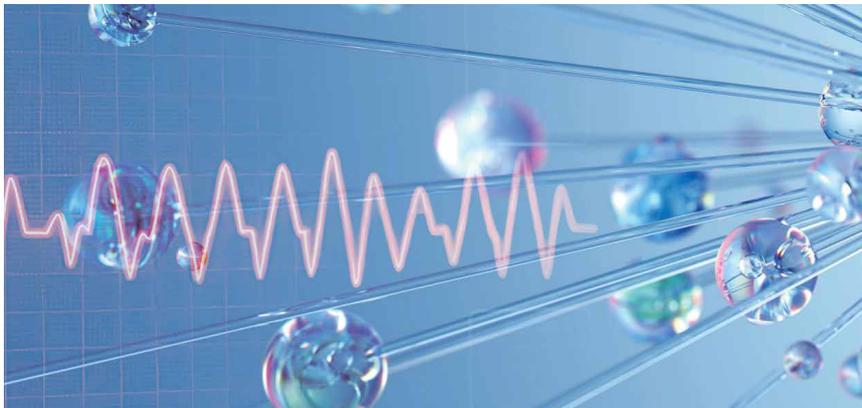


### PURSUIT OF PRECISION

Training is an important component when it comes to establishing neural networks. This is often a long and tedious process where the networks are fed with every imaginable consequence and variables. As they learn more, their predictions will increase in accuracy.

"This is what we are attempting with the acoustic pulse reflectometry (APR), whereby the acoustic pulse is used to detect failure in pipes. Training the machine to understand the reflection signature takes many hours. Today, after two years, we are able to achieve a 98% - 99% level of prediction accuracy," shared Dr. Mohd Shahrul.

According to him, SIRIM IR has also developed an advanced image processing solution that demonstrates the neural network's ability to handle complex data. The system is capable of receiving and processing photos, efficiently extracting data from analog formats and converting them into usable information in digital format, making previously hard-to-access information more readily available.

*AI-powered tools streamline complex processes by reducing the need for constant human oversight. Machines can replicate and enhance the testing procedures, delivering results that are both faster and more accurate.*



**Neural networks** are used in

↗ Manufacturing
↗ Maintenance, repair and overhaul (MRO)
↗ Agriculture
↗ Healthcare and more

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*Research and development isn't just about creating technology; it is about solving real-world problems. Our work ensures industries stay competitive while prioritising safety and sustainability.*

## Identifying Challenges

↗ Significant training needed
↗ Vast amounts of data required
↗ Ethical implications
↗ Lack of empathy

*In order to obtain the volume of data needed for training neural networks, you need to have a solution that is actively being utilised by a large and diverse population. The greater the number of people interacting with the system, the more data is generated, which in turn helps improve the accuracy and effectiveness of the solution.*

**In the next**

# 5 years

solutions will heavily rely on
**Data Training and Blockchain**

*Innovation is not about rushing to the finish line; it is about building a solid foundation for the future. With cutting-edge research, simplified communication and ethical practices, SIRIM IR is redefining progress, ensuring that innovation serves humanity's core needs, not just its desires. The journey has only just begun.*

*Scan to watch the exclusive interview*

"We introduced a range of variables, including other languages, like Chinese, and numerical data. Thanks to its training, it now operates with an accuracy rate of up to 99%. Once this level of precision is consistently achieved, the technology will be ready for commercialisation, offering a powerful tool for industries seeking to digitise large volumes of diverse data," he explained.

Nevertheless, the journey towards higher accuracy rates is not without its obstacles. For one, neural networks, while powerful, come with a significant learning curve. Training these systems requires substantial time, effort and resources before they can reach an acceptable level of accuracy and deliver the desired results. In today's fast-paced world, the prevailing "results now" mentality doesn't always align with the reality of AI development, where achieving optimal performance takes time and careful fine-tuning.

Additionally, neural networks need vast amounts of data to effectively handle the many variables and scenarios they may encounter. The more diverse the data, the better the system becomes at recognising patterns and making accurate predictions.

"In order to obtain the volume of data needed for training neural networks, you need to have a solution that is actively being utilised by a large and diverse population. The greater the number of people interacting with the system, the more data is generated, which in turn helps improve the accuracy and effectiveness of the solution," elaborated Dr. Mohd Shahrul.

Besides that, there are ethical considerations surrounding AI. For example, if AI generates results or solutions, who owns the intellectual property? If a task is completed more quickly and efficiently using AI, should businesses charge the same rate as they would for traditional methods? These are questions that demand thoughtful consideration as AI continues to evolve.

Furthermore, the lack of empathy of neural networks can be a drawback as it may prevent the system from considering the human aspects of decision-making, such as compassion or understanding of complex, emotional contexts.

### A VISION FOR THE FUTURE

Despite the challenges that come with rapid technological advancements, SIRIM IR is committed to an ambitious future. Dr. Mohd Shahrul is optimistic that focusing on adopting data-driven technologies is the way to create innovative solutions that align with Environmental, Social and Governance (ESG) principles. These technologies are seen as vital for driving sustainable progress and improving transparency within the industries they serve.

As he puts it, "In the next five years, solutions will heavily rely on data training and technologies like blockchain."

In a world demanding instant results, SIRIM IR remains committed to balancing technological advancement and responsibility. Envisioning for SIRIM to lead globally and set new industry standards as the core driver of innovation, SIRIM IR aims to integrate these innovations to optimise performance and promote sustainable, ethical practices.

"Innovation is not about rushing to the finish line; it is about building a solid foundation for the future. With cutting-edge research, simplified communication and ethical practices, SIRIM IR is redefining progress, ensuring that innovation serves humanity's core needs, not just its desires. The journey has only just begun," noted Dr. Mohd Shahrul.

# INNOVATING WITH AI FOR BUSINESS GROWTH

by
Ir. Ts. Luqmaan Ahmad Zaidi
Senior Engineer, Smart Manufacturing Centre, SIRIM Industrial Research

The digital economy is evolving at an unprecedented pace, and within this landscape, SIRIM Industrial Research (SIRIM IR) stands as a beacon of innovation and progress. As a national research and technology organisation, SIRIM IR is instrumental in addressing industry challenges, driving digital transformation and fostering sustainable economic development. Central to this transformation is artificial intelligence (AI), a technology that is reshaping business models and unlocking new potential across various sectors.

In manufacturing, AI systems optimise production lines, predicting potential failures before they occur and managing inventory in real-time. These advancements enable predictive maintenance and just-in-time production, which help minimise overheads while improving product quality.

According to Ir. Ts. Luqmaan Ahmad Zaidi, Senior Engineer at the Smart Manufacturing Centre of SIRIM IR, "AI-driven automation is perhaps one of the most significant advancements in modern business practices. On a modern factory shop floor, smart automation using AI enables predictive maintenance by analysing real-time data from Internet-of-Things (IoT)-connected machinery to forecast potential breakdowns. AI-powered systems optimise production schedules, dynamically adapting to changing conditions and minimising downtime. Additionally, intelligent quality control systems utilise computer vision to detect defects in products with unparalleled speed and accuracy, ensuring consistent output and reduced waste. With robotic process automation (RPA), AI is revolutionising industries by streamlining routine processes such as customer service management, invoice processing and financial transactions.

### Key Benefits of AI in Automation

↗ Cost reduction and enhanced efficiency
↗ Improved speed and accuracy in routine tasks
↗ Predictive maintenance in manufacturing

"This technology significantly reduces human error and provides a higher degree of precision, making production lines smarter and more agile, which leads to a decrease in operational costs as well as enhancing efficiency and accuracy."

AI excels at processing vast datasets, generating insights that were once unimaginable. By utilising machine learning (ML), deep learning (DL) and natural language processing (NLP), AI can sift through both structured and unstructured data, recognising patterns and predicting outcomes. This has wide-ranging applications across sectors.

Artificial Intelligence's (AI) impact on the global economy is vast and transformative. From automating routine tasks to revolutionising business models, AI is unlocking new potentials across industries. However, integrating AI also presents unique challenges that businesses must navigate carefully.

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**AI for business growth**

*This technology significantly reduces human error and provides a higher degree of precision, making production lines smarter and more agile, which leads to a decrease in operational costs as well as enhancing efficiency and accuracy.*

## Advantages of AI in Data Analytics

↗ Real-time insights from vast datasets
↗ Enhanced decision-making with predictive capabilities
↗ Optimised customer experiences and treatments

*AI-as-a-Service (AIaaS) is opening new doors for smaller businesses by offering access to advanced AI tools without the need for substantial upfront investments or specialised expertise. This enables even resource-constrained companies to leverage cutting-edge tools and drive innovation.*

## AI is transforming SMART CITIES

by addressing urban challenges, enhancing public safety and optimising energy use, paving the way for safer, more sustainable urban living

"By leveraging AI's ability to forecast and predict trends, businesses can make more informed decisions and create personalised experiences for customers. For instance, in finance, AI helps institutions assess risks, detect fraud and improve customer interactions, while in healthcare, it analyses patient data to predict disease outbreaks, optimise treatments and identify conditions at earlier stages, ultimately improving patient outcomes," stated Luqmaan.

These predictive analytics have proven valuable not just in healthcare and finance, but also in retail, agriculture and logistics, where anticipating market trends, consumer behaviour and inventory demands can significantly enhance business strategies.

Beyond improving operational efficiency, AI is reshaping business models across industries. Smaller businesses, empowered by AI-driven platforms, can now better compete with larger enterprises, making advanced technologies more accessible.

For example, AI-powered recommendation engines, like those used by Amazon and Netflix, have revolutionised personalised user experiences. By analysing customer behaviour and preferences, these systems increase engagement and drive sales.

"AI-as-a-Service (AIaaS) is opening new doors for smaller businesses by offering access to advanced AI tools without the need for substantial upfront investments or specialised expertise. This enables even resource-constrained companies to leverage cutting-edge tools and drive innovation," added Luqmaan.

This trend of democratising AI technology is levelling the playing field, allowing businesses of all sizes to capitalise on its benefits.

## AI's Impact on Business Models

↗ AI-driven platforms enable smaller businesses to compete
↗ Personalised recommendations enhance engagement
↗ AI-as-a-Service reduces infrastructure and talent barriers

AI is not merely a business tool but a key driver of economic growth. It is projected to contribute trillions to the global gross domestic product (GDP), boosting productivity across industries. Countries that invest heavily in AI are positioning themselves as leaders in the digital economy, creating new markets and opportunities.

"In addition to its economic impact, AI is also powering innovations in smart cities, autonomous vehicles and infrastructure. Governments are utilising AI to tackle urban challenges, enhance public safety and optimise energy efficiency. These AI-driven solutions in smart cities are not just about convenience; they are reshaping the future of urban living by making our cities safer and more sustainable," commented Luqmaan.

## Enhancing Economic Growth

↗ Trillions in global GDP contribution projected
↗ Innovation in smart cities and infrastructure
↗ Improved public safety and energy optimisation

To fully leverage AI's potential, businesses must adopt a strategic approach to its integration. It is not just about using AI tools, but aligning them with the organisation's broader goals. Successful AI integration requires careful planning and clear objectives.

"A well-defined AI strategy must be in place. It should outline specific objectives, measurable performance metrics and the necessary resources to avoid the pitfalls of misalignment and inefficiency.

"Before investing in AI talent and fostering a culture of innovation, it is vital to ensure that the strategy aligns with your broader business goals. Additionally, ongoing evaluation and refinement of AI initiatives are key to continuous improvement and maximising impact," Luqmaan advised.

AI's potential goes beyond operations. In marketing, AI can refine product development and pricing strategies, while logistics teams can improve customer service. For businesses to succeed with AI, investing in talent, fostering innovation and staying adaptable are key.

### Success in Action

Smart Manufacturing Centre is currently involved in two key technological developments incorporating AI. These are the Signal Analysis and Classification of Acoustic Pulse Reflectometry for Specific Pipeline Blockage Identification and AI-Based Automated Data Extraction API for Dynamic Paper-Based Document (aIDEA), which is designed to automate the data extraction process.

"The former is currently at the proof-of-concept (POC) stage, and we are training the AI model to help us classify and identify unique acoustic signals by feeding it with massive acoustic image datasets so that the device can later be used to identify specific blockages.

"aIDEA, on the other hand, comprises an object or character recognition system. It is an AI-enabled OCR application that enables you to conduct training on any type of document to automatically extract the data. Automation of the data shall enable further data processing such as digitisation, matching and verification to be conducted in an effective and productive manner. Developed with smaller-scale industry players in mind, it aims to facilitate their digitisation efforts. This is actually already in the commercialisation stage," explained Luqmaan.
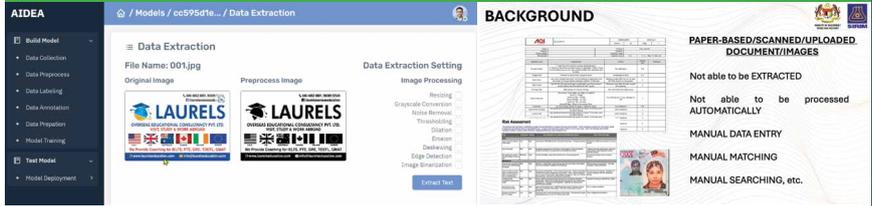


### *EMPOWERING THE ECOSYSTEM*

Malaysia's capabilities in AI are rapidly advancing, and it is well on its way to being on par with other global AI leaders. Among others, the country is making significant strides in establishing awareness and a supportive framework for AI development and adoption. For example, agencies under the Ministry of Investment, Trade and Industry (MITI) and Ministry of Science, Technology and Innovation (MOSTI) are playing a key role by providing grants and other resources to startups and businesses exploring AI technologies.

To successfully integrate AI, it is essential to prioritise upskilling employees. This involves building strong partnerships with academia to create a

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*Before investing in AI talent and fostering a culture of innovation, it is vital to ensure that the strategy aligns with your broader business goals. Additionally, ongoing evaluation and refinement of AI initiatives are key to continuous improvement and maximising impact.*

*AI training and certification programmes play a pivotal role in this process. By offering specialised training for professionals, students and industry players, we will be able to create awareness, enhance expertise and foster the development of world-class AI researchers, scientists and engineers.*

**MITI Industry4WRD** is centred on the digital transformation of Malaysia's manufacturing sector and related services towards embracing Industry 4.0. Introduced in 2018, it envisions elevating Malaysia to be a:

↗ strategic partner for smart manufacturing and related services in the Asia Pacific
↗ primary destination for investments in high-technology industries
↗ total solutions provider of cutting-edge technology for the region's manufacturing sector

**MITI Industry4WRD Readiness Assessment** is a comprehensive programme to assist a company in assessing its capabilities and readiness to adopt Industry 4.0 technologies and processes. Utilising a set of predetermined indicators, the assessment facilitates the understanding of its current standing, allowing the company to:

↗ determine its readiness to adopt Industry 4.0 technologies
↗ identify gaps and areas of improvement as well as opportunities
↗ develop strategies and plans to move towards Industry 4.0

*We need to prepare the workforce for change. With thoughtful planning and a strong focus on upskilling employees, businesses can harness AI's transformative power and drive sustainable success.*

*Scan to watch the exclusive interview*

robust pipeline of talent. As such, institutes of higher learning are actively cultivating a skilled workforce, with AI-related topics becoming increasingly popular among both undergraduate and postgraduate students. This growing interest and expansion of AI education signals a bright future for Malaysia's AI sector, as a diverse range of industries and talents embrace the potential of AI.

"AI training and certification programmes play a pivotal role in this process. By offering specialised training for professionals, students and industry players, we will be able to create awareness, enhance expertise and foster the development of world-class AI researchers, scientists and engineers," shared Luqmaan.

For small and medium enterprises (SMEs), it is equally important to nurture an innovation-friendly ecosystem that supports AI startups. Establishing incubation and exploration programmes can provide the resources and mentorship needed to help these startups thrive, encouraging experimentation and accelerating AI adoption across industries.

As one of MITI's Industry4WRD readiness assessors, Luqmaan is well-aware of AI's role as a cornerstone of technological advancement. In the context of industry readiness assessments, AI plays a critical role, particularly in areas like smart automation.

"Upon assessing the companies, we identify gaps and opportunities for improvement. Based on our findings, we provide recommendations to help companies enhance their operations. We also offer tailored interventions if needed. These often include AI-driven solutions, such as smart automation," he explained.

In addition to these efforts, he highlighted the importance of AI ethics and governance. As part of the National Blockchain and Artificial Intelligence Committee (NBAIC), SIRIM is currently working on implementing AI analytics and governance strategies.

"This is still a work in progress, but it is a key priority to ensure that AI systems can be benchmarked against proper standards of accountability and ethical responsibility," he continued.

The current popularity of chatbots has brought AI's potential closer to the everyday consumer, making more people aware of its capabilities. However, alongside these advancements, there has also been a proliferation of challenges, including unethical practices such as deepfakes and misinformation, underscoring the need for careful oversight.

"As AI continues to reshape industries and drive growth, businesses must adopt a strategic approach to its integration. While AI presents significant opportunities in areas like automation, data analysis and business model innovation, it also introduces complexities such as data management concerns, talent shortages and ethical dilemmas that require thoughtful consideration and navigation," said Luqmaan.

Reiterating the importance of aligning AI with organisational goals, he shared that successful AI integration encompasses more than the adoption of new technologies.

"We need to prepare the workforce for change. With thoughtful planning and a strong focus on upskilling employees, businesses can harness AI's transformative power and drive sustainable success," he concluded.

# NURTURING TOMORROW'S AI WORKFORCE TO PROPEL NATIONAL PROGRESS

by
Zulkefli Mohd Dahlan
Consultant, Technology Section, SIRIM Academy

Malaysia is advancing steadily in the field of artificial intelligence (AI), and there is significant potential for growth. In 2021, the government unveiled the National AI Roadmap aimed at embedding AI across diverse industries. To facilitate the progression of the roadmap, it is imperative that the nation's workforce is ready.

SIRIM Academy Sdn Bhd (SIRIM Academy) plays a pivotal role as a bridge that fosters collaboration between academia and industry. By facilitating this connection, it is instrumental in upskilling the workforce, ensuring that individuals are equipped with the latest knowledge and skills needed to meet the evolving demands of the industry.

The current focus in the country is on technical skills in data analytics.

"Data analytics forms the fundamental backbone of AI. It is the data that trains and develops AI systems, making it an essential building block for advancing in this field," said Zulkefli Mohd Dahlan, Consultant, Technology Section, SIRIM Academy.

As Malaysia makes steady strides in the adoption of artificial intelligence (AI), it is crucial to support this advancement by cultivating a skilled and diverse talent pool. The successful integration of AI into the nation's landscape requires building a strong foundation of expertise to effectively develop, implement and manage these systems.

*Data analytics forms the fundamental backbone of AI. It is the data that trains and develops AI systems, making it an essential building block for advancing in this field.*



According to him, while Malaysia has established a solid technological foundation and is witnessing a growing number of AI initiatives, it has yet to position itself at the forefront of the global AI ecosystem.

"It is important to stay abreast of AI advancements to safeguard Malaysia's competitiveness. We need to significantly ramp up training and education in areas like machine learning (ML), deep learning (DL) and data science to compete with other leading AI nations. If we lag behind in AI, we risk missing out on opportunities to drive innovation and efficiency in key sectors such as healthcare, agriculture and manufacturing," he added.

## ESTABLISHING EDUCATIONAL EXCELLENCE

Malaysia's potential to embrace AI is huge, especially with the country's growing talent pool in robotics.

**AI workforce**
to propel national progress

"We possess the skills and talent in robotics, and by integrating AI, we can significantly enhance the intelligence of our robotic systems. Malaysia has already made strides in developing our own robots, with current efforts being primarily concentrated on industrial applications. There is so much potential for further growth and innovation in other sectors," shared Zulkefli.

Proper devices, stable connectivity and access to essential tools are crucial for fostering AI awareness. However, limited understanding of AI and its career potential remains a significant barrier.

"To overcome this, we must actively promote AI literacy. One way to do this is to invest in education, introducing AI to school children beginning from primary schools," Zulkefli highlighted.

Addressing the lack of AI awareness requires a concerted effort from all stakeholders. While government initiatives such as *AI Untuk Rakyat* are steps in the right direction, industry players can also be proactive.

"As an industry, we should actively promote AI wherever we go. In fact, some sectors are already integrating AI awareness into their corporate social responsibility (CSR) efforts," stressed Zulkefli.

Upskilling in AI is essential to seize opportunities for specialisation and career advancement in this rapidly evolving field. Pursuing certifications and advanced degrees in AI-related areas can significantly enhance expertise. Currently, at least four public universities in Malaysia offer undergraduate degree programmes in AI, while more offer AI-focused postgraduate education, including master's and doctoral programmes, to equip students with advanced skills in this critical domain.

SIRIM Academy plays a key role in empowering technical and vocational education and training (TVET) institutions to adopt emerging technologies. It provides them with the necessary consultation and expertise to develop new modules and offerings tailored to industry needs via the integration of Industry 4.0 technology pillars into their programmes.

For example, collaborations with organisations like Majlis Amanah Rakyat (MARA) have facilitated the transformation of skills institutes, aligning them with the latest technological advancements. MARA offers certificates in computer technology, and SIRIM Academy enhances these programmes by upgrading them to diploma level.

"These diplomas go beyond the basics, providing specialisations in areas like cloud computing, cybersecurity and data analytics to meet the demands of Industry 4.0. Meanwhile, in terms of industry collaboration, academia can actively engage in internships and project partnerships with companies, particularly startups," suggested Zulkefli.

To date, there are over 125 AI startup companies in Malaysia that have achieved Malaysian Digital Status (MD status), making them key players in the industry. Academia can collaborate with these companies by offering internships for students and lecturers, allowing them to gain hands-on experience. By working on projects with the startups, students can master AI development before entering the workforce, ensuring they are well-prepared for future employment in the field.

## NURTURING A RESPONSIBLE ECOSYSTEM

Among others, SIRIM Academy is presently placing a strong emphasis on the ethics of AI, driven by a commitment to fostering high-quality innovations and adhering to compliance standards.

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*It is important to stay abreast of AI advancements to safeguard Malaysia's competitiveness. We need to significantly ramp up training and education in areas like machine learning (ML), deep learning (DL) and data science to compete with other leading AI nations. If we lag behind in AI, we risk missing out on opportunities to drive innovation and efficiency in key sectors such as healthcare, agriculture and manufacturing.*

### Standards for Success

SIRIM is in the process of adopting the ISO 40001:2023 AI Management System standard. Once finalised, one of its subsidiaries, i.e. SIRIM QAS International Sdn Bhd, will offer certification for the standard.

*We possess the skills and talent in robotics, and by integrating AI, we can significantly enhance the intelligence of our robotic systems. Malaysia has already made strides in developing our own robots, with current efforts being primarily concentrated on industrial applications. There is so much potential for further growth and innovation in other sectors.*

"This is a cornerstone in building AI systems. By focusing on responsible AI, we aim to create solutions that contribute to a fair and transparent future," said Zulkefli.

He noted that while some generic data can be shared publicly, it is essential to implement controls to protect sensitive or proprietary information.

"There are currently no specific regulations for AI startups in Malaysia. However, there are guidelines that help govern the use and handling of AI-related data. We must ensure that not all private and confidential data is disclosed," he explained.



The **AI Governance and Ethics (AIGE)** Guidelines was launched recently, marking a significant step in regulating AI practices in Malaysia. These guidelines cover seven key components, including privacy, fairness, transparency and bias, among others.

All AI-related companies are expected to comply with these guidelines, which provide a framework for responsible AI development in the country.

"We provide AI ethics and compliance training in collaboration with organisations like the Institute of Electrical and Electronics Engineers (IEEE) and Verdas AI from Germany. One of our key offerings is the IEEE CertifAIEd AI Assessor training programme.

"Our programmes are specifically designed for working professionals, particularly those in AI development companies. We also offer training for government and enforcement agencies to adopt AI effectively, including the need for qualified assessors," said Zulkefli.

The National AI Roadmap outlines a target of having 200 certified assessors by 2025. Currently, there are only around 25 assessors in place. This highlights the importance of expanding the pool of qualified professionals to support the responsible development and deployment of AI across sectors.

"There is significant interest in the IEEE CertifAIEd AI Assessor training programme, but the cost, which exceeds RM10,000 per person, has been a barrier for many. To address this, SIRIM Academy is collaborating with Verdas AI to create a high-quality AI assessor training programme at a more reasonable cost," shared Zulkefli.

Starting this December, the virtual training will be open specifically for the Malaysian market, ensuring it is accessible to local professionals.

"I believe Malaysia can effectively develop its AI talent pool and position itself as a responsible, innovative player in the global AI ecosystem. This means providing quality data, and fostering collaboration and knowledge sharing to accelerate AI development. Equally important is building public trust by promoting transparency and embedding ethical considerations into the AI system," he remarked.

**>125**
AI startups with MD status

**25**
Certified AI assessors presently

**200**
Certified AI assessors required by 2025

*We provide AI ethics and compliance training in collaboration with organisations like the Institute of Electrical and Electronics Engineers (IEEE) and Verdas AI from Germany. One of our key offerings is the IEEE CertifAIEd AI Assessor training programme.*

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*Scan to watch the exclusive interview*

Metrology, the science of measurement, plays an essential role in everyday life. It is foundational to ensuring accuracy, consistency and quality across industries ranging from manufacturing to healthcare and beyond. The advent of artificial intelligence (AI) promises to unlock unprecedented potentials in this area, pushing the boundaries of traditional measurement systems.

*AI can be a powerful tool in assisting metrologists to not only observe and analyse detailed datasets, but also to draw insightful conclusions, evaluate and identify components during calibration, and ultimately provide higher-quality data, elevating the precision and efficiency of their work.*

# EVOLVING IN THE DIGITAL AGE

by
Dr. Muhammad Azwan Ibrahim
Senior Metrologist, National Metrology Institute of Malaysia

Metrology has always been crucial in ensuring the accuracy and consistency of measurements across industries, but as technology evolves, so too must metrology. While the field faces a host of new demands due to advancements brought about by Industry 4.0, artificial intelligence's (AI) ability to process vast amounts of data, optimise measurement processes and predict outcomes presents exciting opportunities for growth and innovation.

## Defining Metrology

Metrology is the science of measurement that encompasses three areas:

↗ **Scientific metrology** — the fundamental component of metrology involving the establishment, development and realisation of measurement units, systems, methods and standards as well as the transfer of traceability from standards to users

↗ **Legal metrology** — the application of scientific metrology to enforce legal requirements to measurements and measuring instruments in various fields and contexts

↗ **Industrial metrology** — Ensures that the machines and tools across manufacturing processes are working properly to maintain the quality of the end-products

Cognisant of this, the National Metrology Institute of Malaysia (NMIM) has begun to delve into the realm of AI. "AI can be a powerful tool in assisting metrologists to not only observe and analyse detailed datasets, but also to draw insightful conclusions, evaluate and identify components during calibration, and ultimately provide higher-quality data, elevating the precision and efficiency of their work," said Dr. Muhammad Azwan Ibrahim, Senior Metrologist at NMIM.

Nevertheless, the integration of AI in metrology is still in its infancy. A critical first step in harnessing AI's full potential is the adoption of digitalisation. In metrology, the sheer volume of data generated is vast, and it is important to process and analyse this data effectively to train AI systems.

"To effectively train AI systems, it is essential to verify and filter the data to ensure it is both accurate and of high quality. This is particularly crucial in the field of metrology. Before data can be utilised to train AI models for measuring instruments, it must be traceable to the International System of Units (SI) to guarantee its reliability and precision," explained Dr. Muhammad Azwan.

evolving in the
**digital age**

This is where the digitalisation of data comes in.

To facilitate this, a standardised digital communication platform is required, necessitating the establishment of quality infrastructure. Various components are currently being developed to support and enable this initiative. These include the Digital Calibration Certificate (DCC) and Digital Certificate of Conformity (d-COC) to ensure reliability in a digital context.

"We are in the midst of coming up with DCCs, d-COCs and Smart Standards, all of which are pivotal steps toward our ultimate goal of achieving full automation powered by AI. This will pave the way for a future where inspection, auditing and calibration processes are seamlessly conducted by AI," continued Dr. Muhammad Azwan.

On a global scale, efforts are underway to develop a standardised format, such as Extensible Markup Language (XML). The goal is to create a universally accepted standard that would enable seamless integration and interoperability across different systems and industries.

"Standardisation would help to eliminate any barriers, ensuring that everyone and every machine can use the same format to read and interpret the certificates. This will facilitate effective communication across borders," said Dr. Muhammad Azwan.

### GLOBAL COLLABORATIONS FOR SEAMLESS STANDARDISATION

As digitalisation reshapes industries globally, the need for international cooperation in metrology becomes even more pressing. Without a unified approach to measurement standards, countries could find themselves facing difficulties in cross-border trade, with products unable to meet the required specifications in different markets. For metrology to function effectively in a digital world, consistent standards must be adopted across borders.

Dr. Muhammad Azwan points out the challenges faced by industries that rely on international trade. "If we don't have harmonised standards for measurement, we risk creating barriers to trade. These discrepancies could lead to significant delays and even disputes, which would ultimately hinder progress in vital sectors like pharmaceuticals, food safety and automotive manufacturing."

In metrology, achieving meaningful progress requires a collective and widespread effort. Digitalisation, for instance, is a key area where numerous international metrology organisations are actively engaged, working at various levels ranging from ASEAN and regional to global platforms.

These efforts are crucial to ensure that advancements in metrology are consistent, interoperable and universally accessible. Such collaboration across borders fosters the exchange of knowledge, aligns standards and promotes the adoption of cutting-edge technologies, helping to drive the modernisation and efficiency of measurement systems worldwide.
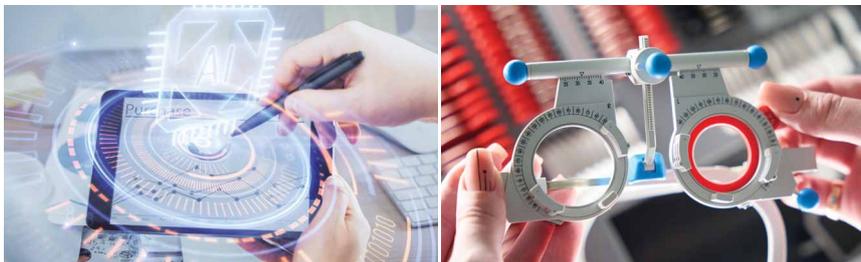
*To effectively train AI systems, it is essential to verify and filter the data to ensure it is both accurate and of high quality. This is particularly crucial in the field of metrology. Before data can be utilised to train AI models for measuring instruments, it must be traceable to the International System of Units (SI) to guarantee its reliability and precision.*

### Digitalisation at Industrial Level

Many industries have already integrated their own versions of DCCs and AI technologies that are tailored to their specific needs within their organisations. However, this has led to a situation where each organisation uses its own unique format or language for DCCs, creating a lack of uniformity. This can lead to inefficiencies and challenges in cross-industry collaborations.

*Standardisation would help to eliminate any barriers, ensuring that everyone and every machine can use the same format to read and interpret the certificates. This will facilitate effective communication across borders.*

*Our goal is to raise awareness and foster the exchange of knowledge and technology, particularly by facilitating the transfer of expertise and innovations from our Western counterparts. This collaborative effort aims to accelerate the adoption of digital solutions and enhance the capabilities of the metrology community in our region.*



*Metrology needs to adapt to this new digital world. Digitalisation requires us to rethink how we measure. We are moving into a world where everything is connected, and measurements need to be automated, seamless and instantaneous. The challenge is how to create measurement systems that are both accurate and flexible enough to deal with the complexity of interconnected devices.*

Malaysia is involved in several metrology organisations, including the Asia-Pacific Legal Metrology Programme (APMP), Asia-Pacific Legal Metrology Forum (APLMF), International Organization in Legal Metrology (OIML), ASEAN Consultative Committee for Standards and Quality (ACCSQ) Working Group on Legal Metrology (WG 3) and ASEAN Committee on Science, Technology & Innovation, Experts Group on Metrology (EGM) which have formed working groups to focus on various issues at hand.

"For example, the APMP has established a Digitalisation Focus Group (DFXG) that is dedicated to exploring how digitalisation can be integrated into the metrology community across the Asia-Pacific region. Besides that, the APLMF formed a Digitalisation Working Group last year.

"Our goal is to raise awareness and foster the exchange of knowledge and technology, particularly by facilitating the transfer of expertise and innovations from our Western counterparts. This collaborative effort aims to accelerate the adoption of digital solutions and enhance the capabilities of the metrology community in our region," explained Dr. Muhammad Azwan.

## AN INTRICATE PROCESS

Europe is currently in the process of developing a metrology cloud, designed to serve as a centralised repository for all regulatory data associated with measurement standards. In the future, Malaysia aims to follow Europe's lead in establishing its own metrology cloud. However, Dr. Muhammad Azwan recognises that the project will require significant investment and the collaboration of various stakeholders from multiple sectors to bring it to fruition.

"Metrology needs to adapt to this new digital world. Digitalisation requires us to rethink how we measure. We are moving into a world where everything is connected, and measurements need to be automated, seamless and instantaneous. The challenge is how to create measurement systems that are both accurate and flexible enough to deal with the complexity of interconnected devices," he said.

For example, when incorporating AI, there is an added layer of uncertainty introduced by the AI algorithms. It is, therefore, imperative to follow several stringent steps before a new technology or measurement can be officially accepted.

"One critical step is undergoing peer review by publishing the measurement outcomes in the international Key Comparison Database. This facilitates transparency as well as gaining recognition and acceptance from the global metrology community," explained Dr. Muhammad Azwan.

## THE WAY FORWARD

At this point, AI is still being used in a research capacity. It is not yet applied at the operational level in metrology. Although the metrology community is still at the beginning phase of its journey in embracing AI, Dr. Muhammad Azwan recognises the potential benefits AI brings to the field.

"We are closely observing AI's ability to enhance various aspects, particularly in speeding up and streamlining processes. At this point, AI certainly has the capacity to improve metrology by handling the groundwork such as the collection and analysis of data," he said.

Looking ahead, he is optimistic about the future of metrology, envisioning a seamless integration with the digital world. However, he cautioned that to

do so would require significant financial and talent investment as well as adequate resources and synergistic collaborations.

## Unlocking the Full Potential of Metrology in the Digital Era

Key elements to successfully integrate the field of metrology with the digital world include:

1. **Financial Investment:** Sufficient funding is vital to support the research, development and adoption of technologies that bridge the gap between traditional measurement systems and digital platforms.

2. **Specialised Expertise:** A deep pool of highly skilled professionals in both traditional measurement science and emerging technologies is required to effectively design, implement and maintain digital metrology solutions.

3. **Robust Resources:** Access to high-quality tools, software and hardware such as advanced sensors and cloud infrastructure will be pivotal for the development of accurate, reliable and scalable systems.

4. **Strategic Collaborations:** Partnerships across industries, academia and research institutes can encourage knowledge exchange, drive innovation and ensure standardisation across the different sectors to drive meaningful progress.
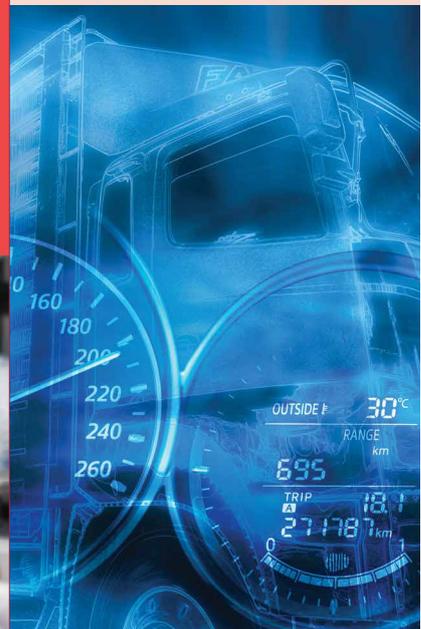


"I believe that AI's true potential in metrology lies in the future, where it may be able to independently manage the entire calibration process. This vision reflects the exciting potential for metrology to keep pace with advancements in technology," he continued.

Nevertheless, he acknowledges that this transformation will take time and persistence. "We are not quite there yet. It will take at least five to 10 years before we see AI being practically applied in metrology. While the research is promising, it's still in its early stages."

For metrology to continue its vital role in the future, it is essential that all parties are able to address current challenges and embrace advancements head-on. Adopting digitalisation, evolving measurement techniques and encouraging global collaboration will be key to ensuring metrology remains adaptable and relevant in a rapidly changing world.

By focusing on these priorities, we can ensure that the measurements we rely on, whether for physical or digital data, remain accurate, reliable and trustworthy, helping to build a future where technological progress is aligned with precision and consistency.

*We are closely observing AI's ability to enhance various aspects, particularly in speeding up and streamlining processes. At this point, AI certainly has the capacity to improve metrology by handling the groundwork such as the collection and analysis of data.*



*I believe that AI's true potential in metrology lies in the future, where it may be able to independently manage the entire calibration process. This vision reflects the exciting potential for metrology to keep pace with advancements in technology.*



*Scan to watch the exclusive interview*

As artificial intelligence (AI) continues to evolve, it has emerged as a game-changer for businesses aiming to stay ahead in an increasingly competitive market, transforming operations, enhancing decision-making and improving customer experiences. While the potential of AI is vast, its adoption presents challenges, from significant infrastructure investments to the need for workforce reskilling.

*In the realm of software development, for example, our programmers now use AI tools to write codes that we design. In a way, their roles have been transformed into that of an editor or supervisor.*

# FUTURE-READY AI UNLEASHED

by
Mohd Izzat Muslim
Managing Director, Fulkrum Interactive Group of Companies



Artificial Intelligence (AI) is no longer a futuristic concept; it is a present-day reality. In fact, AI has been enhancing lives for years and is already embedded in many aspects of our daily routines. From automatic licence plate recognition to sophisticated customer service powered by advanced language models, AI is seamlessly integrated into our environments. Whether we realise it or not, we are interacting with AI on a daily basis, shaping how we navigate the world around us.

As adoption of AI solutions accelerates and increases in accessibility, the ramifications of this trend have begun to permeate all aspects of our lives and become evident, especially in the way we work.

"In the realm of software development, for example, our programmers now use AI tools to write codes that we design. In a way, their roles have been transformed into that of an editor or supervisor," said Mohd Izzat, Managing Director of Fulkrum Interactive Group of Companies.

This has sparked significant impacts across industries, revolutionising the way businesses operate and compete. For companies looking to remain competitive in the digital age, adopting AI is essential. However, successfully integrating AI technologies into business practices can be complex and is rooted in education and training to ensure the rise of a talent pool that is able to navigate this landscape and maximise the potential of AI.

## future-ready AI unleashed



### A Software Powerhouse

Fulkrum Interactive Media comprises a dynamic group of digital transformation companies specialising in information technology software and solutions across diverse industry sectors. The Group is currently focusing on the development of Vixiomatic, an innovative AI-powered personnel and operation tracking tool designed to optimise business operations by enhancing productivity, streamlining workflows and providing insights for more informed decision-making.

## EVOLUTION FOR A NEW ERA

As AI continues to transform businesses, it is also revamping the workforce. By automating routine tasks, AI creates opportunities for employees to focus on more creative and complex work that requires problem-solving, critical thinking and emotional intelligence—skills that AI cannot replicate.

"AI is already automating repetitive tasks like data entry, scheduling and customer support, allowing workers to engage in higher-level roles. This shift will lead to the creation of new jobs that demand advanced problem-solving abilities, AI management skills and technical expertise," shared Mohd Izzat.

**Key Changes in the Workforce**

↗ **Automation of Repetitive Tasks:** AI handles manual tasks like data entry and customer support, freeing employees to focus on creative, problem-solving roles
↗ **Evolving Skill Sets:** The demand for skills in data analysis, AI management and machine learning is growing
↗ **New Roles:** While some traditional jobs will fade, new roles centred on AI management, integration and optimisation will emerge
↗ **Human Skills:** Emotional intelligence, creativity, complex problem-solving and consulting expertise will become a focus

For businesses to succeed, employees must adapt by acquiring skills in areas like data analysis, machine learning (ML) and AI integration. Companies, therefore, need to invest in retraining programmes focused on human-centric skills to ensure workers are prepared for this shift.

"Education needs to evolve—not just in technical skills but also in conceptual understanding and problem-solving abilities. In my industry, for example, it is no longer sufficient to focus solely on coding; the workforce of the future must learn to harness AI as a powerful tool to approach and solve complex challenges with creativity and innovation," highlighted Mohd Izzat.

## MITIGATING THE AI BUBBLE RISK

While AI offers immense benefits, its adoption carries significant risks. Many organisations struggle with high upfront costs, lack of in-house expertise and difficulty aligning AI strategies with business goals. Smaller companies, or those in traditional industries, often find it more difficult to scale AI solutions effectively.

The rapid rise of AI has also brought about what some call an "AI bubble," where companies, especially startups, may overestimate its potential while underestimating the risks. Over-reliance on external AI solutions can make businesses vulnerable to disruptions like service shutdowns or price hikes.

"We may be living in an AI bubble right now. As such, businesses should avoid merely short-term fixes and, instead, adopt a long-term, sustainable approach to AI, focusing on scalable solutions that can evolve alongside their needs," cautioned Mohd Izzat.

To reduce dependency on third-party providers, businesses should think strategically about in-house solutions.

"Deploy locally whenever feasible. Once you reach critical mass, consider transitioning your infrastructure in-house. This strategy reduces dependence on external vendors, providing more control over operations, and can lead to lower costs over time," he advised.

*It is essential to find AI services that offer flexibility and scalability to accommodate future growth. Businesses should avoid jumping into short-term fixes that could become costly or inefficient as they scale.*

Preparing for an

# AI-Powered Future

↗ **Education + Innovation:** Combine learning with advancing tech

↗ **Focus Areas:** Technical Skills – Master AI tools and systems Core Competencies – Build problem-solving, critical thinking and adaptability

↗ **Goal:** Empower success in an AI-driven world

*AI adoption is not just about achieving short-term gains; it is about building a foundation for long-term, sustainable success. By approaching AI with foresight and responsibility, businesses can thrive in this new era, navigating the AI revolution with strategic intent and ethical consideration.*

*Scan to watch the exclusive interview*

## STRATEGIES FOR SUCCESS

Smaller businesses, especially in traditional sectors, often struggle to access the data needed for AI. Larger organisations have a data advantage. This creates a gap between them and small and medium-sized enterprises (SMEs). To address this, Mohd Izzat suggests creating data-sharing programmes to enable collaboration between businesses, ensuring that smaller enterprises can access vital datasets and innovate.

"There could be pilot programmes—sandboxes—where multinational companies (MNCs) are encouraged to engage with local players and provide them with access to data. This equips the smaller players to adequately train their models to provide the necessary solutions," he said.

For SMEs, AI adoption must be approached strategically. Rather than rushing into full-scale implementation, businesses should start small, testing AI solutions that are well-aligned with their goals. This allows them to scale gradually and ensure that the AI technologies they adopt are sustainable in the long run.

"It is essential to find AI services that offer flexibility and scalability to accommodate future growth. Businesses should avoid jumping into short-term fixes that could become costly or inefficient as they scale," explained Mohd Izzat.

AI's rapid evolution presents a challenge for businesses. The market is unpredictable, and AI startups are known for their quick pace of innovation—and equally fast failure. Businesses need to be prepared for potential disruptions, such as price hikes or service interruptions, and develop contingency plans to ensure continuity if an AI provider goes out of business or changes its pricing structure.

Mohd Izzat emphasised the need for resilience. "AI startups often rise quickly but can also fail just as rapidly. Having a backup plan for potential service disruptions is crucial. By diversifying AI solutions and incorporating redundancies into their systems, businesses can effectively mitigate risks associated with market volatility, ensuring stability and continuity in an ever-evolving landscape."

## SEIZING THE POTENTIALS

As AI continues to evolve, its potential to transform industries is undeniable. However, with this transformation comes responsibility. Businesses, governments and educational institutions must ensure that AI adoption is not only effective but also sustainable and ethical.

To ensure that businesses and individuals are prepared for an AI-driven future, education and innovation must go hand-in-hand. Future education systems should focus not only on technical skills but also on skills such as problem-solving, critical thinking and adaptability that are essential for thriving in an AI-powered world.

In the end, the future of AI will depend on how businesses, governments and individuals prepare for it.

"AI adoption is not just about achieving short-term gains; it is about building a foundation for long-term, sustainable success. By approaching AI with foresight and responsibility, businesses can thrive in this new era, navigating the AI revolution with strategic intent and ethical consideration," reminded Mohd Izzat.

# AI'S NEXT FRONTIER FOR A SMARTER FUTURE

by
Ts. Engr. Syed Zaini Putra Aljamalullail Syed Yusoff
Executive Director, T Robot

With the increasing integration of artificial intelligence (AI) into everyday life, its applications are relying more on data-driven insights to improve outcomes. For example, AI algorithms can suggest healthier food options tailored to individuals with specific health conditions, alerting them to potential risks and promoting better health outcomes.

In retail, AI-powered simulations allow shoppers to virtually try on clothes, enhancing the shopping experience by making it more efficient and engaging. Similarly, in healthcare, AI is revolutionising medical services, from robotic-assisted surgeries to AI-powered diagnostic tools, enhancing both accuracy and efficiency.

Ts. Engr. Syed Zaini Putra Aljamalullail Syed Yusoff, Executive Director of T Robot, offers a comprehensive view of how AI is transforming various sectors, from daily consumer experiences to broader business processes.

According to him, "AI is already embedded in a wide range of applications, from robotics and automation to the routines we follow every day. While it may not be rocket science, its influence is undeniable—transforming the way we live and work. This growing integration illustrates AI's potential to revolutionise industries, driving innovation and reshaping both personal and professional landscapes."

Extolling the virtues of AI, he emphasised that its integration could significantly enhance the system's intelligence, offering better analytical capabilities at a cheaper price.

"Previously, AI applications were expensive, often requiring specialised equipment like computer vision systems. Today, however, a simple camera paired with sophisticated algorithms can achieve the same results. This combination of increased efficiency and affordability underscores AI's potential to drive smarter, more cost-effective solutions that are now within reach for businesses of all sizes," he said.

In recent years, there has been considerable buzz surrounding the rise of artificial intelligence (AI) in Malaysia. Preparing for this technological shift requires a multi-faceted approach, encompassing significant investment, skilled human resources, advanced technology and much more.

*AI is already embedded in a wide range of applications, from robotics and automation to the routines we follow every day. While it may not be rocket science, its influence is undeniable—transforming the way we live and work. This growing integration illustrates AI's potential to revolutionise industries, driving innovation and reshaping both personal and professional landscapes.*

### Revolutionising Robotics

Established in 2015, T-Robot is aimed at assisting local players to adopt automation in their processes. With the introduction of Malaysia's Industry4WRD policy a few years ago, T-Robot has expanded and diversified its operations to include Internet-of-Things (IoT) and AI.



AI's next frontier for a smarter future

*The adoption of AI isn't just an opportunity; it is a necessity for survival in a fast-paced market. SMEs have roughly five to 10 years to catch up with the AI revolution before the gap between them and larger corporations becomes unsurmountable.*

## Importance of Driving AI Adoption

↗ Ensures widespread AI integration across industries
↗ Fosters innovation for a competitive, future-ready economy



*Government initiatives are essential, but they must be complemented by stronger marketing and awareness campaigns. SMEs must truly understand AI's benefits and have the confidence to implement it within their operations.*

### ADDRESSING INDUSTRY READINESS

While AI continues to reshape industries, the level of preparedness for its adoption varies. Malaysia, for example, has been developing AI technologies for over two decades, providing a solid foundation for integration across various sectors. However, the gap between readiness and full-scale adoption remains, especially for small and medium enterprises (SMEs).

"The adoption of AI isn't just an opportunity; it is a necessity for survival in a fast-paced market. SMEs have roughly five to 10 years to catch up with the AI revolution before the gap between them and larger corporations becomes unsurmountable," explained Syed Zaini.

As such, SMEs must act swiftly to remain competitive. While multinational corporations (MNCs) have the resources to seamlessly incorporate these technologies, many SMEs face challenges due to budget constraints and limited capacity. highlighting the urgency for smaller businesses to modernise or risk obsolescence.

### CHALLENGING CLIMATE

Despite its promise, however, the adoption of AI in the manufacturing sector is often misaligned. In the rush to embrace AI, many companies overlook crucial foundational steps, such as digitising data, integrating the Internet-of-Things (IoT) and implementing automation. These steps are essential for ensuring that AI can be applied effectively and deliver maximum value. Without a solid technological infrastructure in place, AI risks being underutilised or unable to reach its full potential.

Furthermore, AI also raises concerns about privacy, security and ethics. As AI's footprint expands, it becomes crucial to address these concerns in order to fully realise its potential while ensuring responsible usage across industries.

Overcoming the barriers to widespread AI adoption requires collaboration. "Many organisations operate in silos, unwilling to share knowledge and resources. Partnerships could result in more holistic and impactful solutions," said Syed Zaini.

Additionally, a lack of standardised AI frameworks complicates implementation. Malaysia is progressing in this area, but globally, AI standards are still underdeveloped. Industry bodies like SIRIM can play a crucial role in certifying AI applications to ensure they meet specific quality benchmarks, making their integration smoother and more reliable.

For businesses still on the fence about AI adoption, the risks of inaction are clear. As competitors push forward with innovative technologies, companies that do not embrace AI will find themselves left behind. In today's fast-moving market, AI is no longer a luxury; it is a critical tool for success.

The drive for AI adoption hinges on strong cooperation between the government and the private sector. In Malaysia, the government has already initiated efforts to promote AI awareness and facilitate integration, particularly among SMEs. However, experts agree that these initiatives need to be expanded and amplified to ensure that AI adoption is widespread.

"Government initiatives are essential, but they must be complemented by stronger marketing and awareness campaigns. SMEs must truly understand AI's benefits and have the confidence to implement it within their operations," urged Syed Zaini.

Meanwhile, the private sector also has an important role to play. By investing in AI research and development, private enterprises can lead the way in innovation and create scalable solutions for various industries.

Strategic partnerships between private companies, government agencies and academic institutions are also critical for developing a supportive ecosystem that fosters AI growth and removes barriers to adoption. Such collaboration will ensure that AI technology remains accessible to businesses of all sizes, helping them stay competitive in a rapidly changing market.

"Collaboration between the private and public sectors is key to overcoming the challenges of AI adoption. Together, they can create a supportive environment that encourages the development and integration of AI solutions, ultimately benefiting the wider economy," emphasised Syed Zaini.

## UPHOLDING BALANCE

As AI becomes an integral part of our daily lives, managing the balance between innovation and privacy concerns becomes increasingly critical. The reliance of AI systems on vast amounts of data raises important questions about data ownership, usage and security. In Malaysia, efforts are being made to ensure that individuals retain control over their personal data while AI is used to generate valuable insights. The development of cybersecurity frameworks and digital trust standards is essential to protecting personal information and ensuring transparency in data usage.

Ethical issues surrounding AI are also becoming more prominent. Technologies such as chatbots and AI educational assistants have raised concerns about the potential loss of intellectual integrity and the erosion of critical thinking skills. Clear policies must be established to protect intellectual property, regulate data use and ensure that AI does not replace human skills or compromise decision-making.

"The ethical use of AI is just as important as its technological advancement. AI is transforming innovation, but balancing it with privacy and ethical concerns is essential. Developing transparent policies and establishing boundaries for AI usage will help preserve human autonomy while fostering responsible innovation," Syed Zaini shared.

It is important to remember that AI is only one part of a larger technological landscape. The rapid growth of quantum computing, blockchain and biotechnology suggests that we are on the brink of new breakthroughs that may eclipse AI in their impact and potential. The pace at which these technologies are developing requires businesses and individuals to remain adaptable and constantly update their knowledge.

The real question is not whether these technologies will emerge, but how quickly they will be adopted. Staying informed and agile will be essential for navigating the rapidly shifting technological landscape.

As Syed Zaini aptly put it, "AI isn't just a tool, it is a catalyst for change. How we harness it will determine the future of innovation."

*Collaboration between the private and public sectors is key to overcoming the challenges of AI adoption. Together, they can create a supportive environment that encourages the development and integration of AI solutions, ultimately benefiting the wider economy.*



*The ethical use of AI is just as important as its technological advancement. AI is transforming innovation, but balancing it with privacy and ethical concerns is essential. Developing transparent policies and establishing boundaries for AI usage will help preserve human autonomy while fostering responsible innovation.*

*Scan to watch the exclusive interview*

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|---|---|---|---|---|
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| Back Cover (A4) | 5,000 | 4,500 | 4,000 | 3,500 |
| Inside Front Cover (A4) | 4,500 | 4,000 | 3,500 | 3,000 |
| Inside Back Cover (A4) | 4,000 | 3,500 | 3,000 | 2,500 |
| Specified Positions (A4) | 4,000 | 3,500 | 3,000 | 2,500 |
| Half Page Specified Positions | 3,000 | 2,500 | 2,000 | 1,500 |
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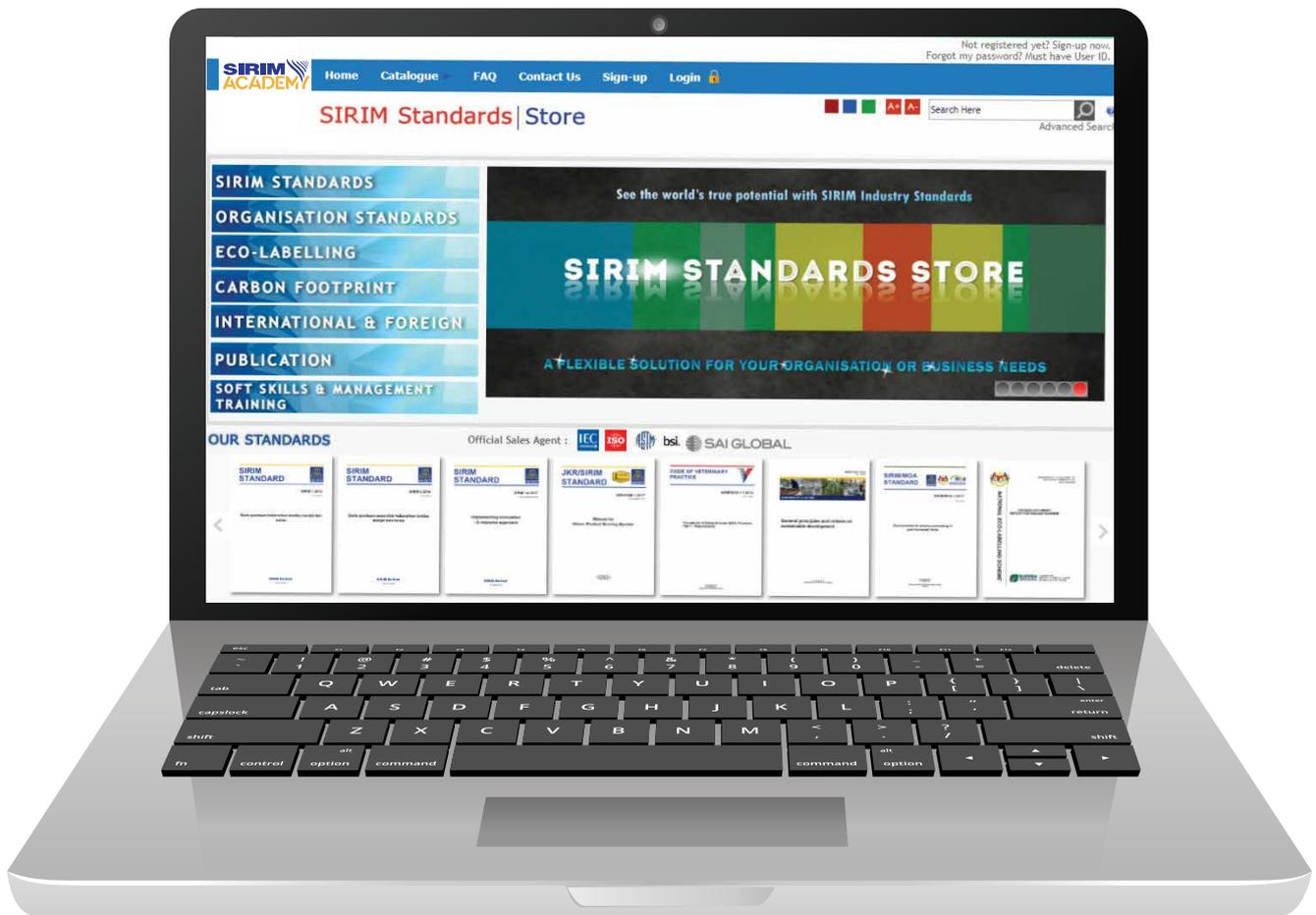Job Title: ………………………………………………………………….

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