



Malaysian Industries
Urged To Overcome
Labor Shortage and
Enhance Productivity
through Robotic
Automation

Industry 4.0 in Manufacturing:
The Path to IT/OT Convergence

We Are Entering a New Era for
AI-Powered Robotics

In The Hot Seat

Sustaining the People, Planet, and Profits
through Digitalization

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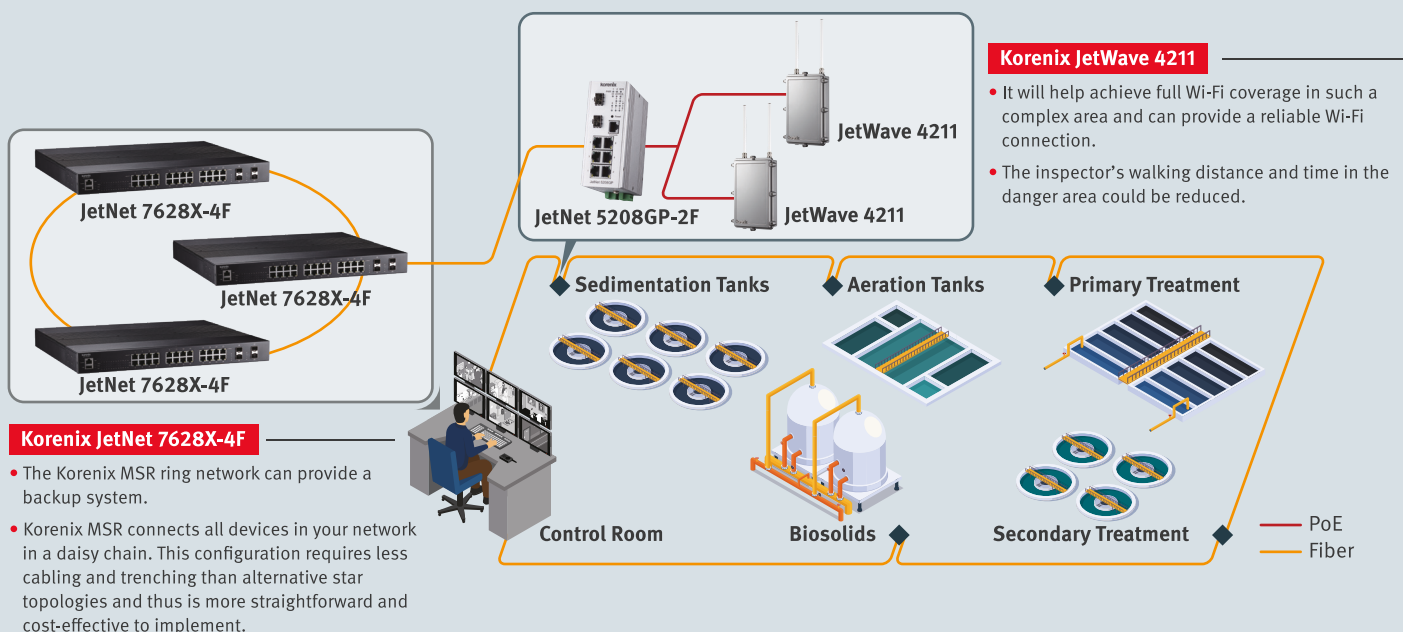


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PUBLISHER'S MESSAGE

2022 has come to an end! We wouldn't be here if not because of our readers. As we're closing in the year, let's refresh a little bit on the current events that took place. The 19th of November saw Malaysians go out to vote for the 15th General Election. It was a nerve-racking moment as it took approximately 5 days for the new government to be elected. A huge hearty congratulations to our new Prime Minister, Dato' Seri Anwar Ibrahim for winning the election! Together let's make Malaysia a better place!

Major Malaysia states such as Selangor, Penang, and Sabah are already set to deploy 5G technology by year-end, according to the Ministry of Communications and Multimedia. We have seen most companies shift towards Industry 4.0 and fully utilize digital solutions to keep up with the trend to deliver complete efficiency and improvements in the market.

According to Indonesia's Industry Ministry, the 4th Industrial revolution will fully tap into Indonesia's potential in the manufacturing sector through its industrial value chain. This is as Indonesia aims to utilize Industry 4.0 to be among the top 10 economies in the world by 2030. Indonesia recently has implemented various initiatives and strategies such as Making Indonesia 4.0 as a way to achieve their target.

With all the programs and projects being carried out as a way to shift towards Industry 4.0, let's hope that Asia will slowly follow the steps toward the fourth industrial revolution.

On behalf of the editorial team, thank you for your massive support to Automate Asia Magazine. Stay in touch with us at www.asiaautomate.com for more updates. Happy New Year 2023!

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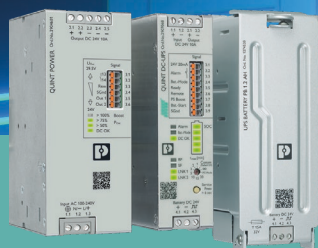
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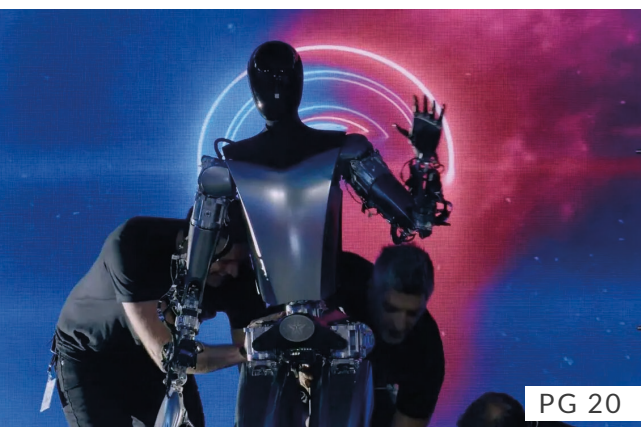


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CONTENTS

VOL.4 NO.2



INDUSTRY NEWS

8. Nokia Reaffirms Commitment to Malaysia's Industry 4.0

ARTIFICIAL INTELLIGENCE

9. We Are Entering a New Era for AI-Powered Robotics

IOT

12. How Industrial Data Sparks Productivity, Innovation, and Sustainability
14. Industry 4.0 in Manufacturing: The Path to IT/OT Convergence
16. Singapore, Germany to Mutually Recognize IoT Cybersecurity Labels

ROBOTICS

18. HKL Now Offers Robotic Knee, Hip Replacement Surgery
19. IPG Miri to Represent Malaysia at World Robot Olympiad in Germany
20. Musk Reveals 'Optimus' Humanoid At Tesla Event
22. Tamil School Impresses Judges at Robotics Meet
24. Cost-Effective Labelling Robot Wins the 2022 Igus ROIBOT Award
26. Malaysian Industries Urged To Overcome Labor Shortage and Enhance Productivity through Robotic Automation
28. UTM Students Champion for 2 Years at NI Autonomous Robotics Competition (ARC) 2022

SPECIAL INSIGHT

30. Disrupt the Disruptions: Industry 4.0-Driven Nearshoring to Bolster Your Supply Chain

IN THE HOT SEAT

32. Sustaining the People, Planet, and Profits through Digitalization

EVENT HIGHLIGHT

36. Messe Frankfurt Adds Intelligent Manufacturing to Its Event Portfolio in ASEAN
39. Asia Pacific Assistive Robotics (APARA) and Singapore Industrial Automation Association (SIAA) MoU Signing with Malaysia Pavilion in ITAP 2022 at Singapore Expo

DID YOU KNOW?

40. Three Ways for OEMs to Embrace Industry 4.0

What's your next plant digital transformation move?



Find out the Business Objective

Assess current Digital Maturity level

Prioritize the areas of focus and solutions

Create the Transformation Roadmap

Strategize Your Way with the Proven S.I.R.I. Concept for Your Digital Transformation Journey

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Nokia Reaffirms Commitment to Malaysia's Industry 4.0



- *Remained committed to supporting customers, partners in Malaysia*
- *To provide mission critical in manufacturing, oil & gas, agriculture*

Nokia has said that it remained committed to supporting its customers and partners in Malaysia to create value and provide a foundation to accelerate the digitalization of the country's key industries.

In a statement, the Finnish telco vendor said since the introduction of its National IR 4.0 Policy last year and the recently launched Centre for the Fourth Industrial Revolution earlier this year, Malaysia has made progress in steering strategic socio-economic transformation with the adoption of Industry 4.0 technologies nationwide.

Mohd Rauf Nasir (*pic*), managing director of Malaysia, Sri Lanka & Maldives, Nokia said, "Private wireless has proven to be a critical enabler to accelerate Industry 4.0 and as Malaysia continues to implement its Industry 4.0 strategies, it is more critical than ever for enterprises to accelerate the adoption of these technologies and unlock new opportunities to boost Malaysia's economy."

"We look forward to continuing our long-standing relationship with our partners here in Malaysia and deploying the best-in-class solutions needed to drive the nation's digital transformation journey as well as transforming the lives of Malaysians," said Mohd Rauf.

During its recent Nokia Technology Day, the company said it highlighted how it is providing mission critical solutions for communication service providers and enterprises across key industries such as manufacturing, oil and gas, and agriculture.

It noted that Malaysia observed a key milestone of achieving 27% of 5G coverage nationwide, with the targeted 36% expected to reach by the end of 2022.

Through a series of demonstrations, the company also presented some of its latest innovations, products and technologies. They include:

- **Award-winning Liquid Cooling AirScale:** As part of Nokia AirScale Base Station portfolio, the company has embedded liquid cooling technology to make radio networks more sustainable and cost-efficient;
- **5G Fixed Wireless Access (FWA):** Nokia's 5G FWA complements customers' mobile offering, bringing new revenues and opening the door to new value-added services for homes and businesses;
- **Enterprise 5G Private Wireless :** Nokia's industrial grade private wireless powers Industry 4.0 digitalization; and
- **FP5 Router:** As the new core of Nokia's IP service routing platforms, FP5 will enable service providers to address today's requirements to efficiently scale network capacity.

We Are Entering a New Era for AI-Powered Robotics

Image Credit: Yuichiro Chino/Getty

Many observers were disappointed with the recent demo of the AI-enabled “Optimus” robot at Tesla’s AI Day. One reviewer cleverly titled his article “Sub-Optimus.” However, these views actually miss the point. Whatever else may be said of Elon Musk, he is a genius at sensing timing and opportunity, applying technology and providing the necessary resources.

The quality and enthusiasm of the engineering team suggest Optimus could succeed, even if it takes longer than the estimate of 3 to 5 years for full production. If successful, Optimus could bring personal robots into the mainstream within a decade.

Although initially expensive at an estimated \$20,000, an Optimus sibling in 2032 could be as commonplace in shops or factories as Tesla is today on the road. Fast forward another 10 years and humanoid robots in daily life could be commonplace, whether at home or in stores and restaurants, in factories and warehouses, or in health and home care settings.

AI hype: Interacting with robots

In this vision, the idea of an “artificial friend,” an emotionally intelligent android as portrayed by Kazuo Ishiguro in *Klara and the Sun*, does not seem so farfetched. Neither do “digients” (short for “digital entities”), as described by Ted Chiang in *The Lifecycle of Software Objects*. Digients are artificial intelligences created within a purely digital world that inhabit a digital shared space (much like the emerging metaverse) but also can be downloaded into physical robots such that they can interact with people in the real world.

This ability for people to interact with a robot appears to be the key to successful

robot implementation. At least that is the view of Will Jackson, the founder and CEO of Engineered Arts, who recently said: “The ‘true killer app’ for a humanoid robot are people’s desire to interact with it.”

Is it possible that this robot vision is entirely unrealistic and little more than science fiction or entrepreneurial hype? That is the view of some, says Michael Hiltzik of the Los Angeles Times. He stated: “AI hype is not only a hazard to laypersons’ understanding of the [robotics] field, but poses the danger of undermining the field itself.” In this he is correct and, certainly, it is important to cull the hype from reality.



ARTIFICIAL INTELLIGENCE

What Hiltzik is perhaps missing is the arc of history. Robotics today, much like the broadening field of artificial intelligence (AI), is still in its early days. The rate of progress, however, is phenomenal. While Optimus is years from a finished product and numerous technical and cultural hurdles remain, it is impossible to ignore the extraordinary pace of advancement. In just one year, Optimus went from concept to a mobile, bipedal robot. It is a growing field as Tesla is hardly alone in building a humanoid robot. For example, a team of engineers from the Rochester Institute of Technology (RIT) have announced a humanoid robot that can teach Tai Chi.

A long way to go to achieve AI-powered robots

Building robots that emulate human actions is extremely difficult. An EE Times article describes these challenges. “From a mechanics perspective, for example, bipedal locomotion (walking on two legs) is an extremely physically demanding task. In response, the human body has evolved and adapted such that the power

density of human joints in areas like the knees is very high.” In other words, simply staying upright is very difficult for robots.

Despite such challenges, real progress is being made. Oregon State University researchers recently established a Guinness World Record for a robot running a 100-meter dash, completing the course in under 25 seconds. The team has been training “Cassie” since 2017, using reinforcement-learning AI algorithms to reward the robot when it moves correctly. The significance of the record was noted by the lead researcher who said: “[Now we] can make robots move robustly around the world on two legs.” While impressive, the human body not only stays upright but navigates the world through an extremely intricate sensory system.

“The hardest part is creating a machine that interacts with humans in a natural way,” according to Nancy J. Cooke, a professor at Arizona State University. Re-creating that in a robot is still in its infancy. That is now among the most daunting challenges for Optimus and other humanoid robotic efforts.

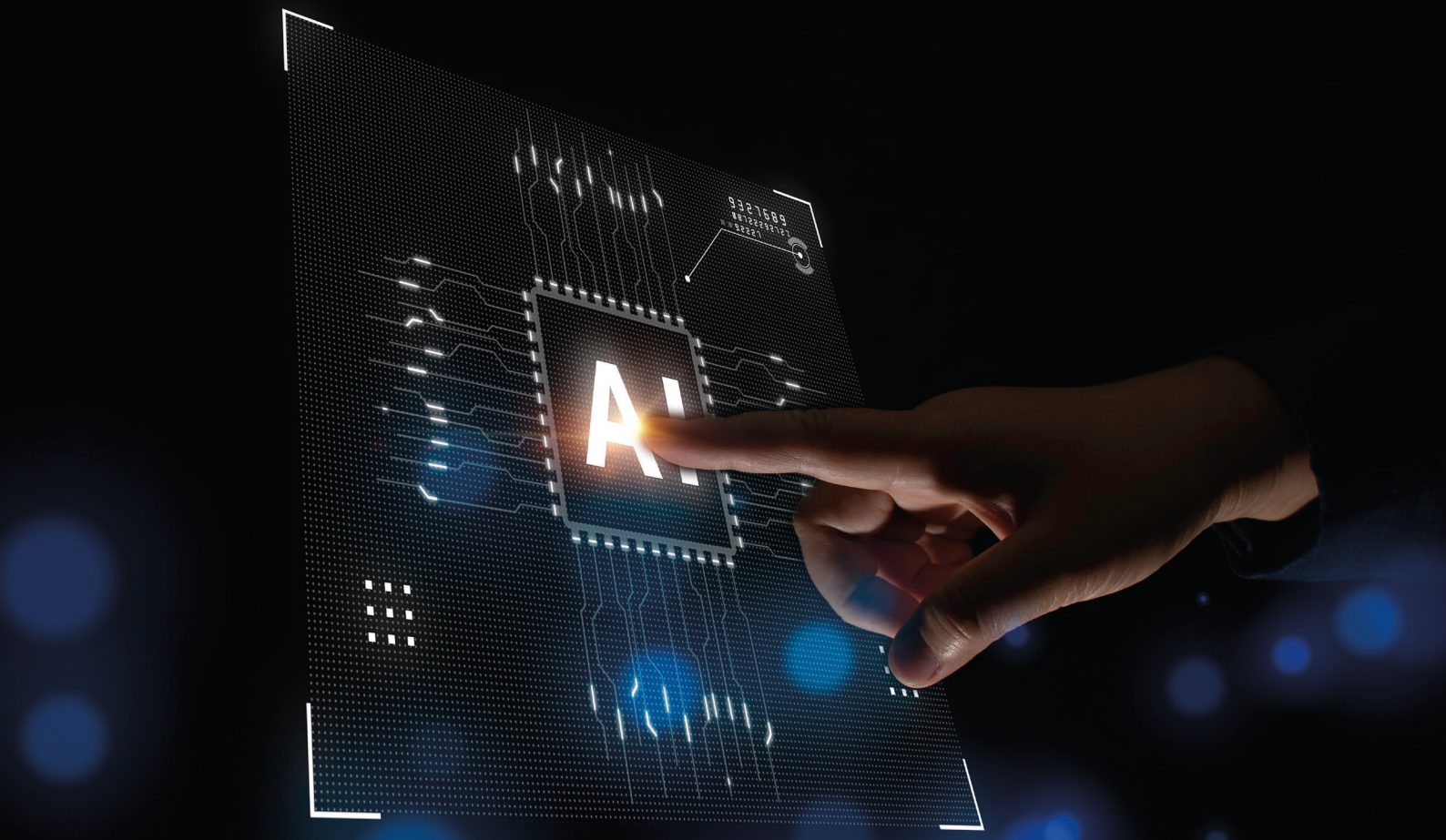
AI automation takes center stage

Humanoid robots are becoming possible because of AI, and AI is racing forward aided by the triple exponential growth of computer power, software development and data.

Perhaps nowhere is this rapid AI progress better exemplified than with natural language processing (NLP), especially in relation to text and text-to-image generation. OpenAI released its first text-generation tools in February 2019 with GPT-2, followed by GPT-3 in June 2020, and the text-to-image DALL-E in January 2021, and DALL-E 2 in April 2022. Each iteration was vastly more capable than previous versions.

Additional companies are pushing these technologies forward, such as MidJourney and Stable Diffusion. Now the same phenomena is occurring with text-to-video, with several new apps appearing recently from Meta, Google, Synthesia, GliaCloud and others.





NLP technologies are quickly finding real-world applications, from code development to advertising (from copywriting to image creation), and even filmmaking. In my last article, I described how creative artist Karen X. Cheng was tasked with creating an AI-generated cover image for *Cosmopolitan*. To help create ideas and the final image, she used DALL-E 2.

The Crow, an AI-generated video, recently won the Jury Award at the Cannes Short Film Festival. To create the video, computer artist Glenn Marshall fed the video frames of an existing video as an image reference to CLIP (Contrastive Language-Image Pre-training), another text-to-image neural network also created by OpenAI. Marshall then prompted CLIP to generate a video of “a painting of a crow in a desolate landscape.”

If it only had a brain

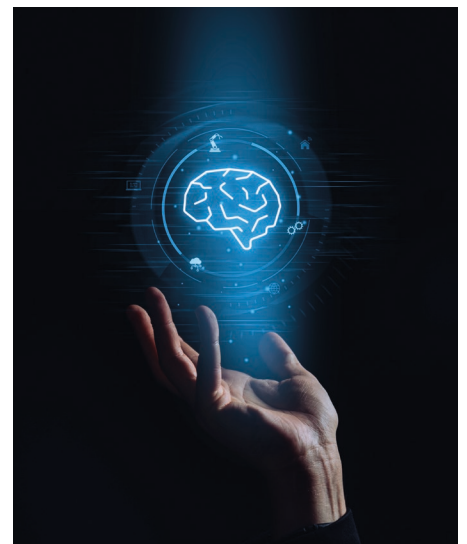
Of course, building an NLP application is not the same as robotics. While computing power, software and data are commonalities, the physical aspect of building robots that need to interact with

the real world adds challenges beyond developing software automation. What robots need is a brain. AI researcher Filip Piekiewicz told Business Insider that “robots don’t have anything even remotely close to a brain.” That is largely true today, though what NLP provides is the beginning of the brain robots need to interact with humans. After all, a major humanoid brain function is the ability to perceive and interpret language and turn that into contextually appropriate responses and actions.

NLP is already used in chatbots, software robots that facilitate communications with people. Project December, a text-based chatbot developed using GPT-3 – has helped people to obtain closure by “talking” with a deceased loved one. Bot developer Jason Rohrer said of Project December: “It may not be the first intelligent machine. But it kind of feels like it’s the first machine with a soul.” Intelligent robots with a soul that can walk and manipulate objects would be a major advance.

That advance is near, though it could still be a decade or more for humanoid robots

to roam the world. Optimus and other robots today are mostly simple machines that will grow in capabilities over the next couple of decades to become fully evolved artificial humanoids. We have now truly begun the modern robotic era.



Gary Grossman is the senior VP of technology practice at Edelman and global lead of the Edelman AI Center of Excellence.

The above comments and opinions in the article are the author’s own and do not necessarily represent Automate Asia Magazine’s view.

How industrial data sparks productivity, innovation, and sustainability



The volume of industrial data doubles roughly every two years. In 2021, industries generated **74 zettabytes of data**¹, and by 2023, the number is expected to rise to 130 zettabytes. However, rapid growth in data collection and consumption does not lead to innovation on its own—data must be organized, structured, and analyzed to unlock business value. The average data scientist **spends up to 60% of their time**² gathering, cleaning, and collating data, rather than analyzing it and identifying inefficiencies or poorly performing assets.

Sparking industrial ingenuity with data-driven insights

Putting data in the right context and analyzing it for useful insights is the key to unlocking the potential of industrial data. However, human operators are often not capable of accomplishing this at the scale and speed of digital solutions. Analytics and artificial intelligence (AI) purpose-built for industrial applications help make sense of data and stitch it into a digital thread that spans the entirety of your business operations.

Using insights from your industrial data, you can discover patterns and anomalies, or use AI to shift entire business models from reactive to proactive decision-making strategies to boost efficiency and work more sustainably.

Organizations such as Veolia, SCG Chemicals, and Commonwealth Fusion Systems are adopting hybrid architectures—systems that span from edge computing and the industrial internet of things (IIoT) to the cloud—to increase mobility, scalability, and cost-efficiency.

Use data to visualize the industries of the future

The universal first step of putting data to work is to build your industrial information infrastructure. This is where you'll collect data, establish baselines, and track progress over time. Having a unified industrial information platform is essential for companies that are serious about understanding and improving their performance and moving toward decarbonization.

Global automobile manufacturer Toyota created a unified energy monitoring and management system that spans eight plants to cut aggregation and validation time for energy consumption from hours to seconds. It also provided Toyota's leaders with intuitive trend analysis and smart reporting, making it easy to optimize for carbon efficiency and quickly identify operational abnormalities that could result in negative carbon impacts. Now the Toyota team can both see and measure progress on the company's commitment to reach net-zero at their global plants by 2050, in real time.

Unlocking the promise of renewables – using integrated information

Driven by stronger support from government policies and more ambitious clean energy goals announced before and during COP26, the International Energy Agency now expects renewables will account for almost 95% of the increase in global power capacity³, with solar PV alone providing more than half. Data-centric operating models have a huge role to play in accelerating and scaling renewable power.

A good example is US power company Dominion Energy. Their data-centric approach ensures the smooth operation of their network. An industrial information management system unifies data on power grid performance so that they can optimize energy supply to customers. The company achieved three objectives:

- They provided accurate, trusted data on energy sources and power flows to their own engineers to optimize the grid

- They unified a high volume of data into a single interface
- They discovered that in addition to the power-optimization benefits, the company's performance data itself had value to their customers, who could then validate their net-zero commitments in real time.

A new mindset for a new opportunity

As companies switch their focus towards data-centric operations, simplifying processes, and minimizing wasted work, their ability to respond with agility to new information and create resilient systems expands, as does the sustainability of their operations. This is the promise of digital transformation—that digitizing information and uniting it into a single digital thread, companies can connect their own teams around centrally managed data and use relevant information to make decisions that impact the entire organization.

Sources:

¹ <https://quadrillionpartners.com/digital-transformation-services/data-analytics-strategy>

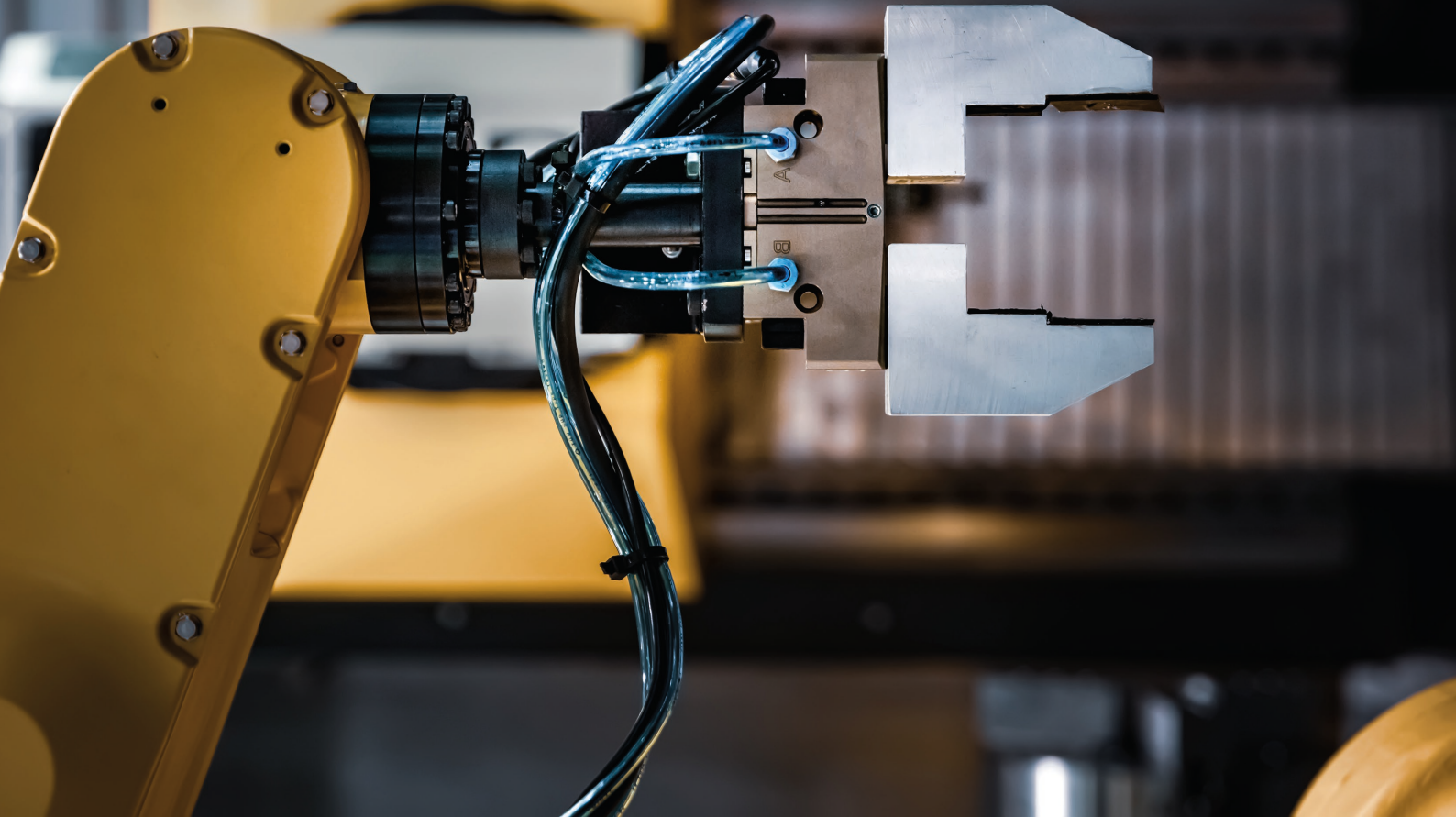
² <https://www.forbes.com/sites/gilpress/2016/03/23/data-preparation-most-time-consuming-least-enjoyable-data-science-task-survey-says/?sh=5d5542376f63>

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Industry 4.0 in Manufacturing: The Path to IT/OT Convergence

Ask anyone: We're in the midst of a fourth industrial revolution. It's not powered by steam, like the first; assembly lines, like the second; or even information technology alone, like the third. This paradigm shift is driven by a cluster of smart technologies, from the Industrial Internet of Things (IIoT) to AI-powered analytics to innovative networking frameworks. At the core of Industry 4.0, of course, you find automation.

But it's one thing for a manufacturer to commit to Industry 4.0. It's quite another to make the transition. The Global Lighthouse Network (GLN)—a research partnership between McKinsey and the World Economic Forum (WEF)—studies the development of Industry 4.0 around

the world. As of 2022, GLN has identified only 103 “lighthouses,” industrial facilities said to have completed the Industry 4.0 transformation. Meanwhile, over 70% of companies are “still stuck in ‘pilot purgatory,’” says the WEF.

The challenge is especially steep for manufacturers. Technology updates can shut down production lines. New operational equipment is mind-bogglingly expensive. Worst of all, current computing architectures aren't built for broad integration—an essential prerequisite for any smart factory.

The promise of Industry 4.0 is huge: faster time to market, lower production costs, better asset utilization, real-time business

insights. All of these benefits rely on the lifeblood of digital transformation: *big data*. But even if they can collect that data, manufacturers often struggle to mold it into a usable form.

Here's the key challenge manufacturers face as they transition to Industry 4.0—and how to solve the problem.

The Challenge of Industry 4.0 in Manufacturing: Achieving IT/OT Convergence

Operational technology (OT) includes all the hardware, software, and communications protocols that manage and control industrial processes. Information technology (IT), on the other

hand, covers the computing systems and networks that transfer and process data. For decades, these fields have been stuck in their own silos, locked away from one another by incompatible protocols, high-latency networks, and different paradigms of data processing.

To achieve the ends of Industry 4.0, OT must share data with IT. Collecting frontline information—a particular advantage of IIoT—falls under OT's mandate. Transforming that information into insight, making it usable in the broader sense of business, outside the scope of purely controlling the machines, is its job. Industry 4.0 projects aren't possible if these two sides can't communicate or interact to produce value to the company.

Traditional OT architectures were built to supervise and control industrial processes—not to share data widely. They use a handful of communication protocols (Modbus, OPC-UA, BACnet) that isolate their data into independent islands: data puddles, as the technologists call them. Even if you could connect OT and IT systems, high-latency, cloud-based networks with brokered traffic systems make real-time analytics impossible.

There's good news too, though: IT/OT convergence is possible. You just need a new approach to networking, a communication protocol that flows seamlessly through both systems, and a common model to share and exchange data. Two technologies work together to accomplish all three goals: edge computing and the MQTT protocol.

IT/OT Convergence in Manufacturing: IIoT Edge Databases and the MQTT Protocol

A new approach to IT/OT convergence has to solve two problems at once. First, it must allow IT and OT systems to



communicate freely. Second, it must enable the low-latency data transfer that's essential for real-time intelligence. Here are the solutions for each challenge.

Bridging OT and IT with the MQTT Protocol

The first problem boils down to communication protocols, the file formats and formal rules that allow one machine to "talk" to another. As we mentioned, traditional OT protocols are locked into their own domains. Luckily, a better option has arrived.

For IIoT systems, MQTT is the ideal messaging protocol, and it's quickly become the de facto standard in all sorts of IoT networks. MQTT is lightweight enough to work on the low-footprint data demands of IoT devices, including those with unreliable bandwidth. And you don't have to shut down production to make the switch: MQTT clients can be installed on existing OT (including IIoT) systems. On the IT side, MQTT brokers can work alongside traditional cloud or on premise servers.

That takes care of the IT/OT convergence issue. Next, you need a network architecture that can handle all that MQTT traffic—reliably, securely, and *quickly*.

Enabling Real-Time Business Insights with Edge Computing

Remember, Industry 4.0 isn't just about IIoT or automated equipment on the production line. It's also about innovative technologies that can dramatically improve the industrial environment: big-data analytics, machine learning, and artificial intelligence, for example. These new technologies lead to advantages like predictive maintenance and smarter, faster decision-making. The closer to real-time you get your data feeds, the more responsive your business can be.

The trouble is, the further data travels, the slower your digital tools respond. Edge computing—in which data is collected, organized, and processed near its origin point—boosts speed by limiting distance. And speed isn't the only advantage of placing your IoT database at the edge. An IoT Edge Hub is a new piece of technology that's becoming more common in Industry 4.0 topologies. An IoT Edge Hub enables different data sources and targets to interact seamlessly, providing robustness and resilience to the communication layer that's the backbone of this new environment. An edge-based IoT hub can also:

- Reduce bandwidth demands
- Cut cloud storage costs
- Minimize spending on cloud data processing
- Do more with a smaller IT footprint
- Support digital twins by storing the same data in multiple locations

Ready to get the advantages of Industry 4.0 for your manufacturing facility? It all starts with the right computing infrastructure: an edge IoT hub that supports the MQTT protocol. These systems are the key to IT/OT convergence in manufacturing, effectively removing the final stumbling block to smart factory implementation.



Singapore, Germany to Mutually Recognize IoT Cybersecurity Labels

The two countries have signed an agreement to recognize their respective security rating mechanism for a range of consumer products, including smart televisions, smart speakers, health trackers, and home automation hubs.

Singapore and Germany have inked a pact to recognize their respective cybersecurity rating system for smart consumer products, including smart speakers, household robots, and home automation hubs. The EU member is the second country to do so, following Finland.

Cyber Security Agency of Singapore (CSA) said it signed the agreement with Germany's Federal Office for Information Security (BSI) to mutually recognize

cybersecurity labels issued by both countries.

Under the pact, products issued with BSI's label would be deemed to have fulfilled Level 2 of CSA's cybersecurity labelling scheme.

Singapore's labelling model assesses and rates smart devices into four levels based on the number of asterisks, each indicating an additional tier of testing and assessment the product has gone through. Level one, for instance, indicates a product has met basic security requirements such as ensuring unique default passwords and providing software updates, while a level four product has undergone structured penetration tests by approved third-party test labs and fulfilled level three requirements.

Products rated Level 2 and above would be recognized by German's BSI.

The mutual recognition would apply to consumer Internet of Things (IoT) devices that included smart televisions, smart toys, health trackers, smart lighting, and smart thermostats.

The agreement initially would not cover some products, such as smart door locks, general computing devices such as computers and smartphones, as well as fire, gas, and water detectors, which were designed to run any applications without a predefined purpose, CSA said.

The Singapore government agency said it would work with BSI to add more product categories under the bilateral agreement.

The Asian nation had inked a similar pact with Finland in October 2021, with consumer IoT products carrying the latter's cybersecurity label deemed to have met Singapore's Level 3 requirements, and vice versa.

Such agreements saved smart device manufacturers not only cost and time they would otherwise have spent on duplicated testing, but also gave them access to new markets.

As of October 2022, more than 200 products had been issued Singapore's cybersecurity labels. CSA had received more than 300 applications for the labels.

Connected medical devices to be assessed for security hygiene

The country's labelling scheme on Thursday was expanded to include medical devices, which was launched in collaboration with the Ministry of Health (MOH), Health Science Authority (HSA), and Integrated Health Information Systems (IHIS).

Such devices increasingly were connected to hospitals and home networks, but could cause physical harm should an IoT attack occur, said Singapore's Senior Minister of State, Ministry of Communications and Information, Janil Puthuchear.

Speaking Thursday at the Singapore International Cyber Week conference, the minister said medical devices such as ECG monitors and pacemakers were getting smarter as healthcare companies and professionals leveraged technology to improve their ability to collect patient data, deliver therapy, or customize therapy.

Increased connectivity, though, meant increased cybersecurity risks and could compromise patients' personal information, clinical data or treatment protocols, ultimately, affecting patient health outcomes.

Puthuchear said: "When we think about IoT devices, convenience and efficiency are top of mind, but not necessarily security and safety of the users. The lack of strong IoT security can pose serious risks. Many consumer IoT devices contain a cache of consumer data and information that, if leaked, could compromise consumer privacy.

"In more severe cases, IoT hacks can lead to serious physical harms, even risking lives," he said, pointing to a 2017 vulnerability the US Food and Drug Administration discovered in pacemakers, which made it possible to alter the device's functions and deplete its battery.

Extending Singapore's cybersecurity labelling scheme to include medical devices would encourage manufacturers to design such products with cybersecurity in mind.

The labelling scheme would apply to medical devices that handled health data or were able to connect to other devices, systems, and services.

Comprising four levels of rating, each level would indicate an additional level of testing and assessment that product had undergone. Level 1 meant the medical device had achieved baseline regulatory requirements, currently aligned with registration requirements for medical devices approved by HSA.

Baseline cybersecurity requirements for Level 1 of the labelling scheme comprised requirements medical devices would have to meet to be registered with HSA. Hence, all HSA-registered medical products would be deemed to have complied with Level 1 of the cybersecurity labelling scheme.

Products rated under Levels 2 through 4 would have to meet "enhanced" cybersecurity requirements, such as device and data requirements. Devices in these categories might have to pass independent third-party tests, according to CSA, which said further details would be provided at a later date.

The government agency said a formal consultation with the medical device industry as well as associations would be held within the next month, to gather feedback on the proposed requirements of Levels 2 to 4. These would include the timeline for implementation.



HKL Now Offers Robotic Knee, Hip Replacement Surgery



The use of the Robotic Surgical Assistant (Rosa) has increased the precision of implant placement, says Dr G Kunalan. (Bernama pic)

Hospital Kuala Lumpur (HKL) has become the first government facility to provide robotic knee and hip replacement surgery services to osteoarthritis patients.

Its joint replacement unit head, Dr G Kunalan, said the services have been available since July after receiving delivery of a Robotic Surgical Assistant (Rosa) from the United States.

He said Rosa, on a one-year loan to HKL, had enabled a total of 21 joint replacement surgeries to be performed so far, including four complex cases that required the expertise of a computer navigation system.

“With the use of this robot, the precision of implant placement in the correct spot can achieve up to 98% compared with about 94% through the conventional method.

“This at once reduces the pain experienced by patients after surgery and enables them to recover faster, in addition

to making the implants last for a long time,” he said after the first joint robotic surgery workshop at the hospital today.

Kunalan said the use of the robot would also help surgeons to plan operations using the patient’s pre-surgery data from CT scans and X-rays so that the procedure could be performed more safely.

“As the robot is only on loan to HKL and the cost for each robot is between RM3 million and RM6.5 million, we hope the health ministry will consider getting these robots for use by specialists in the four hospitals that provide this sub-specialty service.



Dr G Kunalan

“The four hospitals are HKL, Sarawak General Hospital in Kuching, Hospital Raja Perempuan Zainab II in Kota Bharu (Kelantan), and Hospital Sultanah Bahiyah in Alor Setar (Kedah),” he said.

Meanwhile, the health ministry arthroplasty sub-specialty head Dr Yusof Ibrahim said the evolution of robotic joint replacement surgery has proven to reduce the need for revision surgery and manpower.

“Conventional surgical methods usually cause a high probability of revision surgery due to the inaccuracy of placing the implant in the correct place.

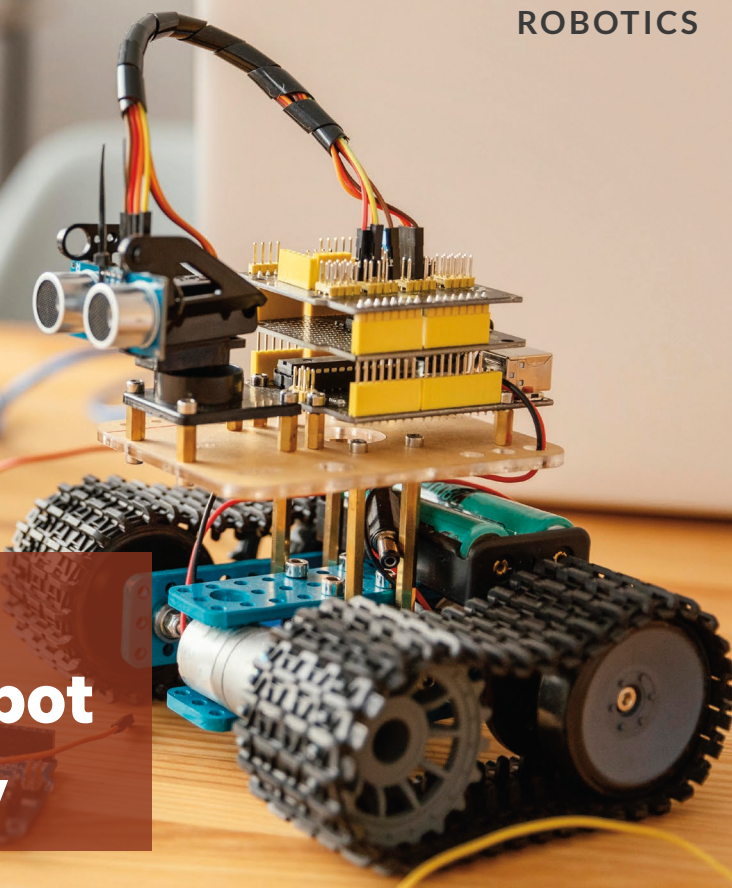
“In addition, the conventional method requires at least four specialists to be involved in the operation compared with only two or three if the robot is used,” he said.

Yusof said an estimated 10% of the adult population in Malaysia needed arthroplasty surgery due to a damaged knee or hip joint.

“However, for now, I feel our society still lacks awareness about this surgery because only 1-2% of such patients are willing to undergo this surgery compared with those in Singapore and Thailand.

“For example, Singapore conducts more than 100 such surgeries a week, whereas here, for example, in Kelantan, only 10 to 12 surgeries are carried out a week. So, the government’s support for the use of robotics is needed because it will be a plus point for the health ministry,” he added.

IPG Miri to Represent Malaysia at World Robot Olympiad in Germany



The IPG Miri robotics team with their trophies.

The Teachers Education Institute (IPG) Miri Campus emerged as overall champion in the Future Engineer Challenge (FEC) category of the National Robotics Competition in Terengganu recently.

This year's competition, held at Bendahara Hall, IPG Sultan Mizan Campus in Besut from Sept 27 to 29, had 44 teams competing in the challenge.

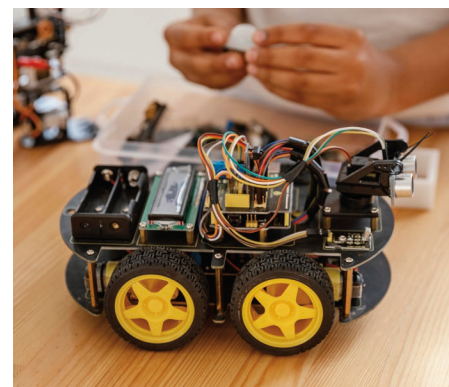
The competition was organized by IPG Sultan Mizan Campus in collaboration with the Ministry of Education (MoE), Teachers Education Institute of Malaysia (IPGM) and Sasbadi Learning Solutions.

The team led by their lecturers Dr Hu Laey Nee, Dr Norsarihan Ahmad and Tracy Mensan emerged champions in both Closed category (Under 19) and Open category (20 and above).

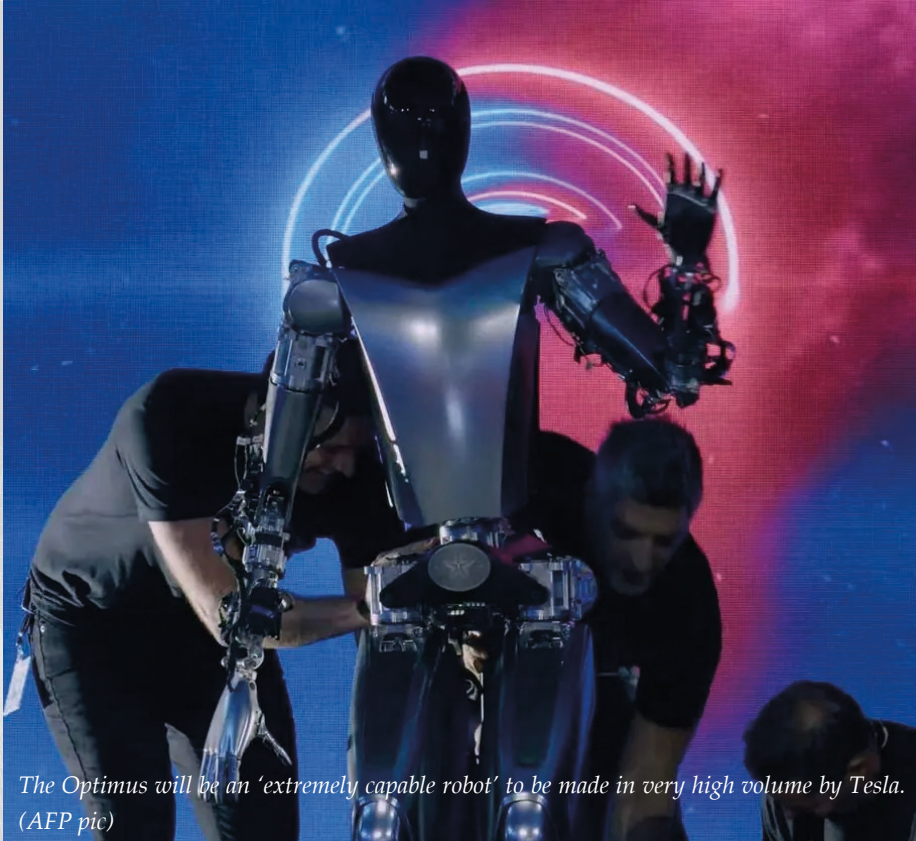
As the winner, IPG Miri will represent Malaysia at the World Robot Olympiad (WRO) which is set to take place in Dortmund, Germany from Nov 17 to 19 this year.

A total of three robot kits were used in the competition. Two were purchased through contribution from Ministry of Education, Innovation and Talent Development (MEITD).

IPG Miri in a statement said that the achievement of its students at international level supports the institutions' strategic plan that aims to produce competent world-class teachers.



Musk Reveals 'Optimus' Humanoid At Tesla Event



The Optimus will be an 'extremely capable robot' to be made in very high volume by Tesla. (AFP pic)

Tesla CEO Elon Musk showcased his much-touted humanoid robot 'Optimus' at the electric vehicle maker's "AI Day" event yesterday.

The billionaire has said a robot business will be worth more than its cars, hoping to expand beyond self-driving cars that have not yet become a reality despite his repeated promises.

A prototype of the robot walked on stage and waved to the seated audience.

A video of the robot carrying a box, watering plants and moving metal bars in the automaker's factory was shown.

"Our goal is to make a useful humanoid robot as quickly as possible," Musk said

at the event being held at a Tesla office in Palo Alto, California.

"There's still a lot of work to be done to refine Optimus and prove it."

Musk said currently humanoid robots are "missing a brain", saying they don't have the intelligence to navigate the world by themselves, and they are also very expensive and made in low volume.

By contrast, he said, the Optimus will be an "extremely capable robot", to be made in very high volume, probably, ultimately millions of units and is expected to cost much less than a car, at under US\$20,000.

Musk is also expected to discuss Tesla's long-delayed self-driving technology.

In May, Musk said that the world's most valuable car maker would be "worth basically zero" without achieving full self-driving capability, and it faces growing regulatory probes, as well as technological hurdles.

"There will be lots of technical detail & cool hardware demos," Musk wrote on Twitter, adding the event was aimed at recruiting engineers.

Tesla's live demonstration record is mixed.

Launches typically draw cheers, but in 2019 when Musk had an employee hurl a steel ball at the armored window of a new electric pickup truck, the glass cracked.

The key test for the robot is whether it can handle unexpected situations.

Musk announced Tesla's plan for humanoid robots at its AI day in August last year and delayed this year's event from August to have its robot prototype working, with a plan to start production possibly next year.

Tesla teased the unveiling of the bot on social media with an image of metallic robotic hands making a heart shape.

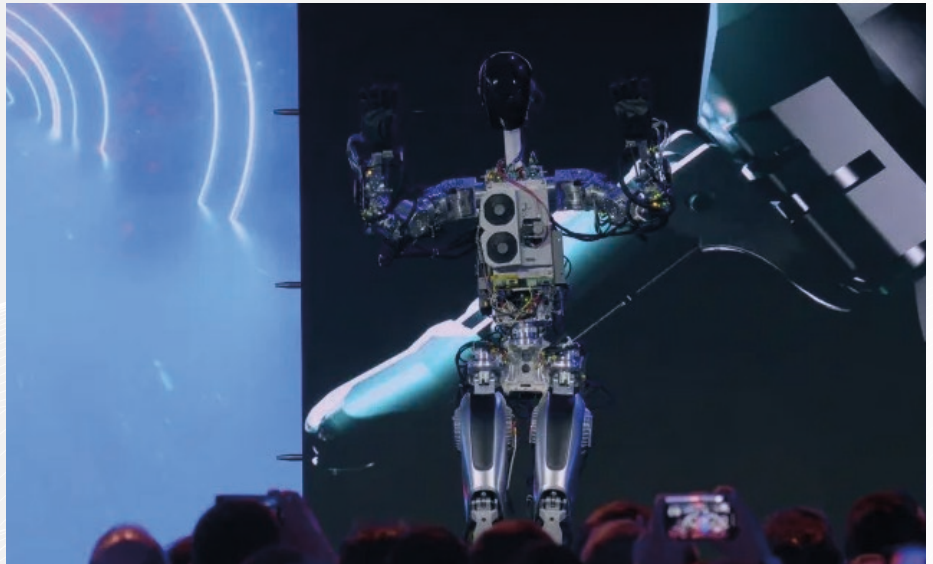
But building human-like, versatile hands that can manipulate different objects is extremely challenging, said Heni Ben Amor, a robotics professor at Arizona State University.

Initially, Optimus, an allusion to the powerful and benevolent leader of the Autobots in the Transformers media franchise, would perform boring or dangerous jobs, including moving parts around Tesla factories or attaching a bolt to a car with a wrench, according to Musk.

“There’s so much about what people can do dexterously that’s very, very hard for robots. And that’s not going to change whether the robot is a robot arm or whether it’s in the shape of a humanoid,” Jonathan Hurst, chief technology officer at Agility Robotics, a humanoid robot firm, told Reuters.

Musk has said that in the future robots could be used in homes, making dinners, mowing the lawn and caring for the elderly, and even becoming a “buddy” for humans or a sex partner.

Source: www.freemalaysiatoday.com



He was due to give updates on Tesla’s much-delayed plan to launch self-driving cars, and on its high-speed computer, Dojo, which was unveiled last year and the company has said is integral to its development of self-driving technology, at yesterday’s event.

Musk has said he expects Tesla will achieve full self-driving this year and mass produce a robotaxi with no steering wheel or pedal by 2024.

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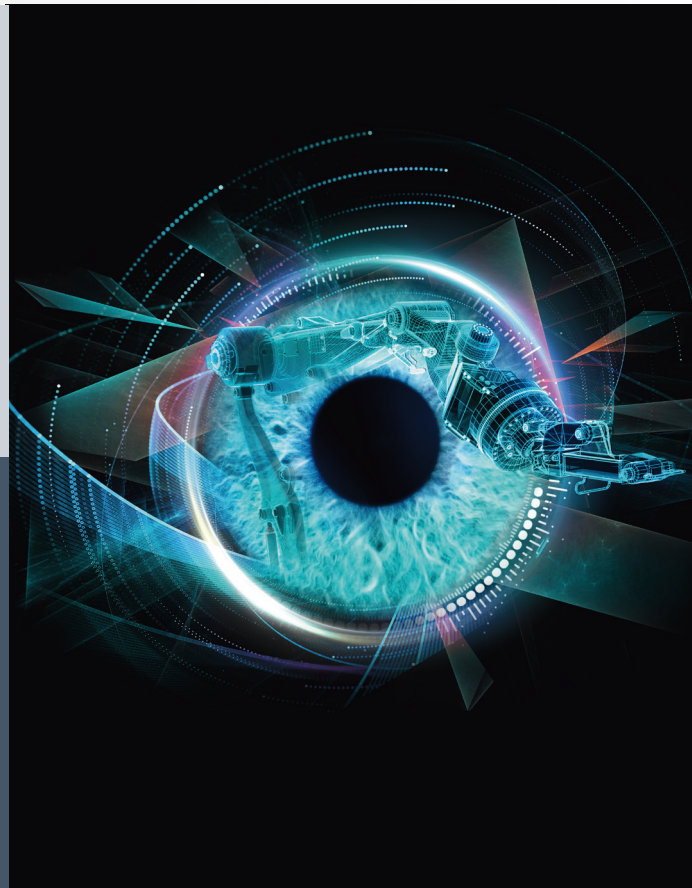
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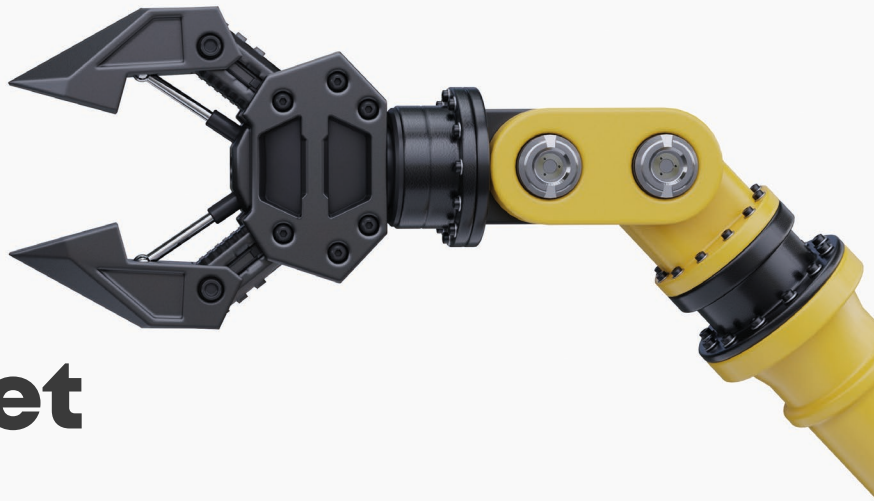
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Tamil School Impresses Judges at Robotics Meet



A group of pupils from SJK (T) Kangkar, Pulai, won the state-level Young Roboticist challenge organized by the Johor Education Department, reported Malaysia Nanban.

SJK (T) Kangkar beat over 101 schools to emerge as champions in the robotics competition. It also got fourth place in another event.

“With their win, the pupils will proceed to take part in the national-level competition,” said headmaster Mayachandran Subramaniam.

The challenge was part of a science, technology, engineering, and mathematics (STEM) event which included the Young Innovators Fair, Bridge Building Competition and STEM Decathlon Challenge. The competition included all the schools in the state.

Manufacturers in India have got the domestic mobile phone market wrapped up tight, with 97% of those used in the country made locally, the daily also reported.



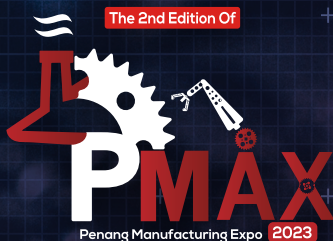
India’s state minister Rajeev Chandrasekhar revealed the statistics during a speech at the opening of a Taiwanese electronics plant Chengalpattu in Chennai recently.

He claimed that when Prime Minister Narendra Modi took office in 2014, 90% of the mobile phones used in the country were imported but in just eight years, this was no longer the case.

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Cost-Effective Labelling Robot Wins the 2022 Igus ROIBOT Award

An amortization period of 16 to 24 months and a zero margin of error convinces the panel of expert judges for the robotics competition



Picture PM6122-1

MFG Technik & Service GmbH took first place in the ROIBOT Awards for its labelling robot, followed by Farmionic with its automatic container system and the tapo-fix pasting robot. (Source: igus GmbH)

Simple, cost-effective automation solutions can be found both in an increasing number of Small and Medium Enterprises and among large industrial players. Every two years, igus presents the ROIBOT Award for the most creative applications. This year, the inventors of a labelling robot, the developers of a fully automatic container system for growing vegetables and herbs, and the designers of a wallpapering device received the coveted prize.

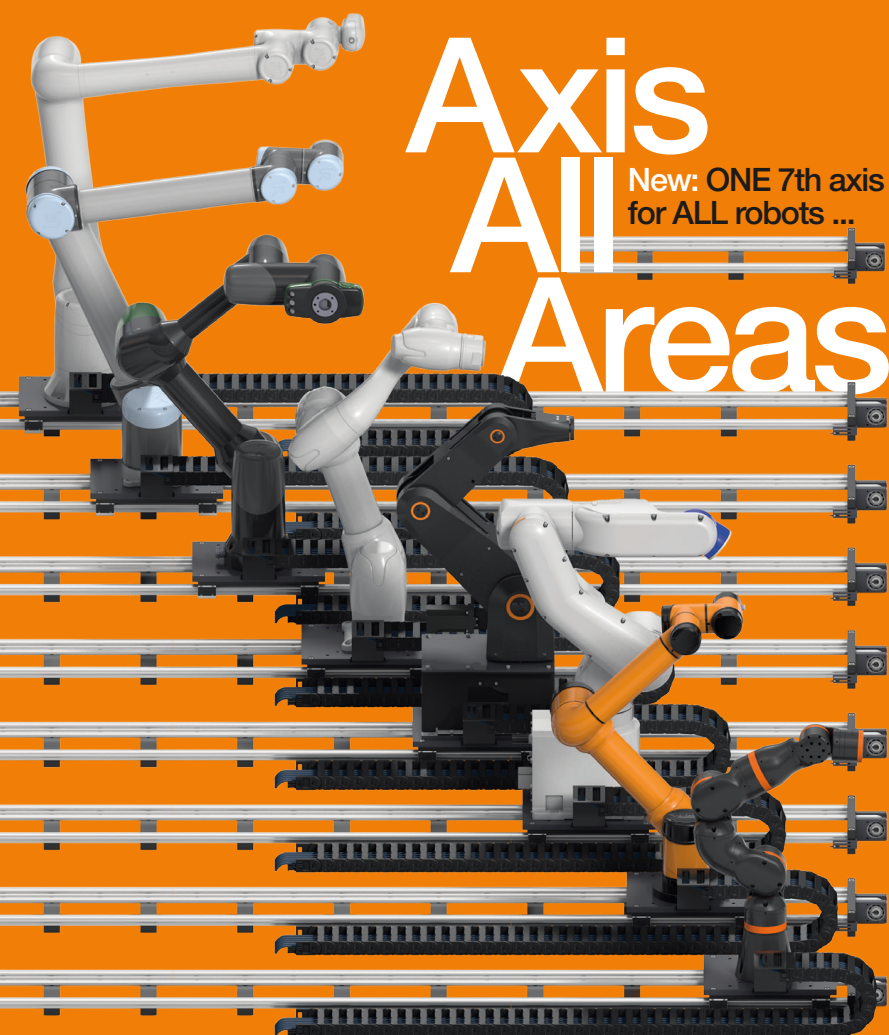
Robots are in use all over the world – in logistics, laboratories, and agriculture. Every two years, experts from industry and trade press work with igus GmbH to honor the most cost-effective, creative, clever solutions with the ROIBOT Award. The focus of the competition is on igus Low Cost Automation solutions such as delta robots, Cartesian robots, and articulated arm robots. The award's name says it all and reveals main decision criterion for the panel of judges: return on investment that quickly pays for the outlay. A total of 110 submissions from 20 countries show the diverse application options for cost-effective robotics. In the second iteration of the competition, MFG Technik & Service GmbH won over the judges with its "LabelMonkey" labelling robot, winning robotic components worth 5,000 euros. A robolink DP multi-axis articulated robot for 7,700 euros is the heart of this system. Its two printing modules ensure

that logistics labels are reliably affixed to pallets. The LabelMonkey is a simple, cost-effective mechanism for the end user. The system pays for itself in just 16 to 24 months, making it very attractive for many logisticians to use.

Automatic harvest assistant takes second place

The increasing extremes in weather conditions due to climate change requires ever greater expenditure of resources and personnel in agriculture. Then there is crop storage and the long transport routes. Farmionic, an Austrian company, has therefore set itself a very special goal: The engineers are developing the vegetable garden of the future. It is a fully automatic, resource-conserving container system for growing vegetables and herbs with 24/7 availability, anywhere in the world. A robolink DP robot takes on all

tasks, from planting to harvesting, on a seventh axis. The robotics system costs 11,200 euros. It pays for itself in 13 to 15 months. The pioneering invention took second place. tapo-fix GmbH & Co. KG, based in Wolfsburg, took third. Using a room linear robot, the manufacturer of wallpapering equipment for home and crafts has developed an extremely affordable automation solution for applying paste to metal. The acquisition value is 6,700 euros. To free up employees, the dosing robot is now assuming this task. It works extremely precisely and hand-in-hand with staff, saving the company up to 8,000 euros per year.



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Malaysian Industries Urged To Overcome Labor Shortage and Enhance Productivity through Robotic Automation

Malaysia's National Robotics Roadmap (NRR) 2030 robot density target of 195 robots per 10,000 workers to help step up productivity and reduce local industries' reliance on foreign labor

Universal Robots (UR), the global leader in the rapidly growing market of collaborative robots (cobots), has advised industries in Malaysia to accelerate automation and adopt collaborative robots (cobots) to help solve labor shortages, increase productivity and improve product quality.

Malaysia's National Robotics Roadmap (NRR) 2021 – 2030 aims to push the country's robot density to 195 robots for every 10,000 workers by 2030. NRR is expected to help step up productivity and reduce the country's reliance on foreign labor and minimize currency outflow.

Based on a recent industry survey by Federation of Malaysia Manufacturers (FMM), labor shortage is estimated to cost local manufacturing industry RM50 billion in the first eight months of 2022, due to inability to ramp up production to fulfil global supply and increase export trade volumes. Rising cost of labor and labor shortage is also expected to persist in second-half of 2022.

[Pandemic causing massive labor shortages](#)

The COVID-19 pandemic has presented a set of challenges for the manufacturing industry. The closure of borders,





shutdowns of factories, and restrictions on movements had ground operations within Asia Pacific to a halt. Besides facing the unappealing prospect of shuttering facilities, manufacturers were also facing massive labor shortages. These challenges are prompting manufacturers to embrace automation and robots to ensure business continuity during such uncertain times. Especially in the Asia Pacific region, it was reported that Asia remains the world's largest industrial robot market. According to research firm Fortune Business Insight, the global industrial robots market is projected to grow from US\$16.78 billion in 2022 to US\$35.68 billion by 2029, at a CAGR of 11.4% in the forecast period.

Industrial robots are in high demand in industries such as electronics, automotive, packaging and pharmaceuticals while increased public awareness of industrial accidents and employee safety are contributing to its market growth. Smaller, more affordable, and versatile robots are helping to remove many of the barriers previously preventing companies from investing in robots.

Challenges faced by Seng Heng Engineering

Seng Heng Engineering, a Singapore-based third-generation manufacturer with 70 years of experience, is a single-source solution provider of fasteners, turnkey machining, and corrosion-resistant coating products.

During the pandemic, Seng Heng Engineering faced unprecedented disruptions to their workforce. This prompted them to consider automating some functions to ease the production bottlenecks caused by labor shortages and uncertainties. Traditionally, the loading and unloading of fasteners into the Computer Numerical Control (CNC) machines were conducted manually. The deployment of cobots relieve human employees from the repetitive processes that may take up to five minutes before the completion of each fastener. Seng Heng Engineering experienced a 50 percent increase in productivity and efficiency on the production line within three months.

"Collaborative robots have the power to transform a business's capabilities, productivity and overheads. More affordable, versatile and compact than traditional industrial robots, cobots allow industries across Malaysia to leverage the power of automation and push their productivity to the next level," said James Mckew, Regional President APAC, Universal Robots.

After implementing two UR10e cobots, Seng Heng Engineering experienced a 50 percent increase in productivity and efficiency on the production line within three months. In addition, the cobots are capable of working around the clock in tandem with our employees, relieving them from working on dull and monotonous tasks," says Jackie Lau, Managing Director, Seng Heng Engineering.

UTM Students Champion for 2 Years at NI Autonomous Robotics Competition (ARC) 2022



Team Airost (Champion)

1. Chai Han Qing (Electrical Engineering 4th Year)
2. Chan Jing Yik (Mechanical Engineering 3rd Year)
3. Tan Hon Teck (Mechatronics Engineering 3rd Year)
4. Loke Rui Kee (Bioinformatics 2nd Year)

Team Bridger

1. Melanie Pai Yi Xuan (Electronics Engineering 4th Year)
2. Chung Hui Qi (Electronics Engineering 4th Year)
3. Ivyn Tan Shi Han (Electronics Engineering 4th Year)
4. Denson Pau Jiong Han (Electronics Engineering 4th Year)

An opportunity to learn

Under NIARC 2022 theme, students are required to design and program mechanical wheeled robots with industry leading tools for the benefits and improvements in the development and preservation of human life, both autonomously and manually, within a specific duration based on requirements.

“All teams must complete six Milestones, which includes documentation of work and video(s) to the mentors, in order to qualify for the live competition. A fund of RM 1,000 and a unit of myRIO 1900 was provided by NI as the funding for the competition”, said Dr. Yeong.

1st Place Award presented to UTM Team Airost by Ybhg. Prof. Dato' Ir. Dr. Abdul Rahman Mohamed (USM Deputy Vice-Chancellor), Mr. Selvam Chinappan (Managing Director of NI Malaysia) and Azian Wahab (NI APAC Corporate Impact Lead)

Team Airost from Universiti Teknologi Malaysia (UTM) was declared as the Champion in National Instruments Autonomous Robotics Competition 2022 (NIARC 2022) held at Universiti Sains Malaysia (USM) Engineering Campus, Nibong Tebal on 26th November 2022.

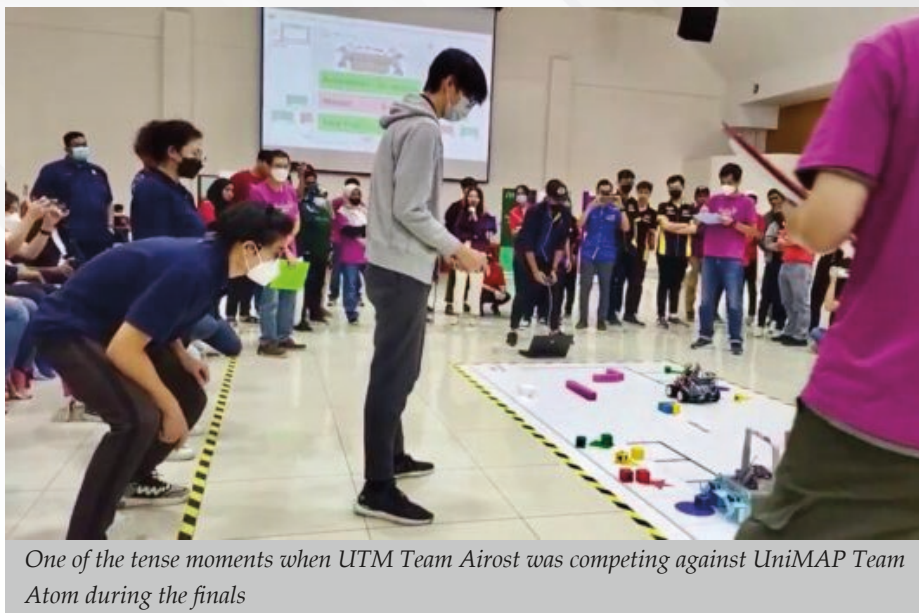
NIARC 2022, with the theme of “Robots in Medical Industry: The Next-Generation Savors”, is a student robotics competition sponsored by NI Malaysia, in partnership with USM for the 4th year running to continue its effort in encouraging learning, development and innovation among university students in the field of robotics.

The competition which began in May 2022 was concluded in late-November. It managed to attract a total of 13 qualifying teams from eight local institutions of higher learning (IHL), which are UTM, USM, Universiti Tunku Abdul Rahman (UTAR), Universiti Kebangsaan Malaysia

(UKM), Universiti Putra Malaysia (UPM), Universiti Malaysia Perlis (UniMAP), Penang Skills Development Centre (PSDC) and Kolej Poly-Tech MARA (KPTMara).

Team Airost from UTM became the Champion and managed to take home RM 5,000 after the stiff competition. The team had to undergo two Qualifying Rounds (Round-Robin), followed by three Championship Rounds (Knockout), in which Team Airost advanced, towards the Finals and defeated the opponent team.

NIARC 2022 features two teams from UTM, namely Team Airost and Team Bridger which are supervised by Assoc. Prof. Dr. Yeong Che Fai and Ir. Dr. Fauzan Khairi bin Che Harun respectively. The students were from the School of Electrical Engineering, School of Mechanical Engineering and School of Computing.



One of the tense moments when UTM Team Airost was competing against UniMAP Team Atom during the finals

Partnerships with industry

DF Automation & Robotics Sdn. Bhd. as the key partner of Team Airost plays an important role in the team's success. Having interest in developing a Mecanum-based product, DF saw an opportunity in Team Airost and decided to fund the team a total of RM 7,000 to build the robot. With the funding, Team Airost is able to acquire better technologies and components.

Three members of Team Airost had undergone a one month period internship program (Voluntary Industry Experiential Programme) organized by UTM at DF Automation & Robotics Sdn. Bhd. Within a month, the members are provided with

industrial training and advice from its CTO and R&D Director, Mr. Tan Ping Hua, in regards to the technical aspects of building a mecanum-based robot.

Teamwork is fundamental but instrumental

Chai Han Qing, the representative of UTM Team Airost, stresses the importance of teamwork in NIARC 2022. According to her, the team consists of Airost club members from different academic backgrounds, each with different skill sets and working styles. But with a common mindset, everyone collectively contributed their talents and showed relentless effort in team cooperation while being able to work independently on assigned tasks.

"I deeply appreciate every member of my team. We always have mutual respect for each other, and constantly motivate ourselves in times of difficulties when pushing past new limits. With a support system like this at the back, everything seems effortless. They set a phenomenal example of good teamwork and team spirit", said Han Qing.

She added, the team was very grateful to have Associate Professor Dr. Yeong Che Fai from the School of Electrical Engineering, Faculty of Engineering, UTM to supervise, provide internship opportunities and to guide them.

Participation is its own reward

Team Airost and Team Bridger have each received various support from different sources, including National Instruments (NI), UTM, Center of Artificial Intelligence (CAIRO) and UTMXcite.

"On behalf of both teams, I would like to extend my utmost gratitude to NI and USM for organizing such a wonderful competition that allows university students to get exposure in the field of robotics. The past 30 weeks have been interesting and full of new challenges that require full dedication to push on.

It has been a pleasure to cordially cooperate with the mentors and staff from National Instruments (NI) and become acquainted with robotics enthusiasts from different universities. The experience that we gained is truly invaluable", said Han Qing and Melanie Pai.

The event wrapped up with remarks from the managing director of NI and USM Deputy Vice-Chancellor, followed by a prize giving ceremony.



UTM Team Airost, Mr. Ng Mun Kit (NI Mentor) and Assoc. Prof. Dr. Yeong Che Fai (Team supervisor) with the winning robot, trophies and mock cheque



Both UTM Team Airost and Team Bridger with the trophies and mock cheque

Disrupt the Disruptions: Industry 4.0-Driven Nearshoring to Bolster Your Supply Chain

The past few years have shown just how vulnerable the global supply chain is to disruptions. The COVID-19 pandemic brought unprecedented challenges for manufacturers everywhere and the cross-border flow of materials and components. With added climate change challenges and an ever-evolving geopolitical landscape, such disruptions seem to be more frequent and intense. To thrive in this dynamic environment of constant change, manufacturers can leverage digital technologies to find new ways to protect their supply chains amid uncertainty.

One strategy companies are employing is known as “nearshoring”, which involves locating or investing in manufacturing capacity closer to the end customer, target market or corporate hub. To maximize

the logistical and operational benefits, nearshoring must be about more than just where factories are located, but also how their manufacturing operations are evolving. To that end, Industry 4.0 applications, technologies and processes — and the connectivity that enables them — are essential to maximizing agility, planning capacity and output.

The push and pull to closer shores

Companies have long placed manufacturing facilities “offshore” to take advantage of lower production costs, and readily available labor. However, as they became single modalities, this operating model proved under pressure to become a logistical liability.

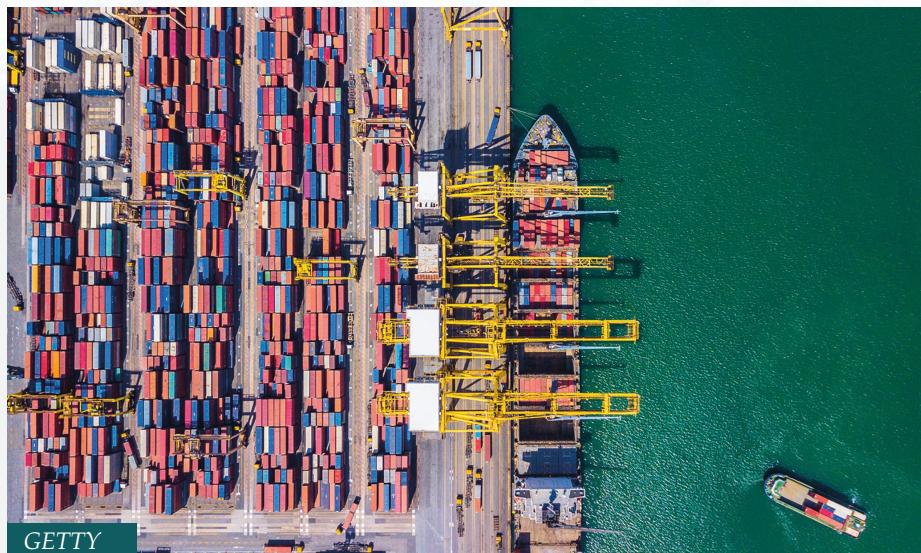
More and more, manufacturers are turning to nearshoring to insulate their supply chains from future disruption. In fact, 70% of U.S. manufacturing companies plan to establish or relocate production capacity closer to home, their customers, or potential buyers, according to a recent survey by ABB’s robotics and automation division.

Nearshored production offers more than supply chain resilience. Being close to customers leads to faster response times and eases adjustment to evolving regional requirements and regulations. Shipping is quicker and less expensive, and time-to-market falls. Localized factories can do away with customs and duty charges to customers, and reduce the impact of currency fluctuations.

But the most dramatic operational and productivity benefits will come to those companies that equip their nearshored facilities with Industry 4.0 technology and applications.

Stepping into the Industry 4.0 facility

In an Industry 4.0-enabled facility, advanced robotics can move products to, from and around production, warehouse and loading areas, streamlining operations while protecting employees



GETTY

from potentially dangerous work. Sensors throughout the plant collect data that's analyzed by cyber-physical systems and artificial intelligence, improving agility and real-time optimization of operations and workflow processes. Augmented reality and virtual twinning can create detailed digital representations of products, eliminating the need to reconfigure factories to manufacture prototypes and test models. Highly automated and flexible operations equipped with human augmentation will also help companies struggling with the availability of skilled labor in some markets and will give rise to a "new collar worker" according to Bell Labs Consulting.

It's an enticing picture. But making it real requires the right networks and connectivity. That means a robust, on-premises wireless network to connect to machines and workers, and an agile edge cloud infrastructure to connect the wireless network to applications running on local servers.



Flexibility on the factory floor

A factory is not a static environment. Product lines often need to be reconfigured or adjusted to respond to market needs. Factories also tend to have challenging layouts filled with obstructions, which can make it difficult to hardwire devices to a network. A private wireless network (either 4.9G/LTE or 5G) is well-suited for the untethered devices and business-critical applications that operate in these environments. A private wireless network offers the high bandwidth, high reliability and very low response times that are required for many applications. For instance, autonomous mobile robots can seamlessly operate across the factory floor to move product parts and tools, speeding up final assembly. And AI and AR/VR technologies can enhance the day-to-day of workers, from immersive on-the-job training to interactive digital representations of factory environments and machines.

Time-sensitive Industry 4.0 applications, such as augmented reality and process automation, require real-time data processing, making it important to keep them on-premises for the fastest response

times. Edge-compute is a reliable solution for such technologies, demanding a robust wireless network on-premises and an equally agile Ethernet network.

Beyond on-premises

Nearshored facilities don't operate in a vacuum, making high-performance, on-premises wireless just one requirement for the Industry 4.0 facility. Manufacturers and warehouse operators will need ready access to corporate assets living in the private cloud, like design documents and production specifications, and resources for essential activities such as email and enterprise resource planning.

Also critical is an elastic and flexible computing pool spread across data centers and the public cloud, enabling enterprise applications to scale and evolve to support more users and new use cases. Data center networks must be equally agile so they can synchronize with changing applications while delivering the connectivity needed.

Robust connectivity is key

Taking full advantage of nearshoring means thinking network first. The optimal nearshored facility attains maximum agility, adaptability and production capacity through Industry 4.0 technologies and applications, enabled by the reliable, secure and business-critical connectivity of an on-premises private wireless network, the underlying edge network, and a wide area network linking the facility with corporate resources across its cloud infrastructure.



Sustaining the People, Planet, and Profits through Digitalization

1. Could you share about the history of Phoenix Contact SEA and its greatest achievement since the firm's establishment?

Established in 1997, Phoenix Contact Southeast Asia (SEA) started out with five employees in Singapore. Phoenix Contact SEA has two key milestones. The first is the organization's gain in the competitive ground against well-established market leaders within the region. Though globally recognised, the subsidiary was still nascent, often finding itself in a game of catch-up with our rivals. Our goal? – To be on the same level field as them.

In 2003, the business witnessed yet another milestone; A whopping market turnover, bigger than both our largest competitors combined. This not only changed the competitive landscape within the industry but amongst the team. By 2011, we crossed the 50-million-dollar mark and this year, after overcoming the adversity and economic strains caused by the Covid-19 pandemic, Phoenix Contact SEA has surpassed a record 3-figure million dollar in revenue earned. Besides

the tremendous economic success, the organization will soon be 200 employees strong.

To achieve all that we have within 25 years is a humbling yet motivating achievement. Above all, the organization is still growing steadily for the 4th year in a row and is dedicated to accomplishing the same and more in the upcoming years.

2. What is Phoenix Contact's overview of Industry 4.0 in Southeast Asia and how does Phoenix Contact SEA help customers grow in Industry 4.0?

With the disruption caused by the Covid-19 pandemic, more factories and business owners are realizing the need to increase business productivity through the advancements in interconnectivity and autonomous systems. This surge in demand for intelligent automation has a direct impact on the demand for a control cabinet, an area in which Phoenix Contact hones expert domain and provides a plethora of connectivity and smart interfacing solutions.

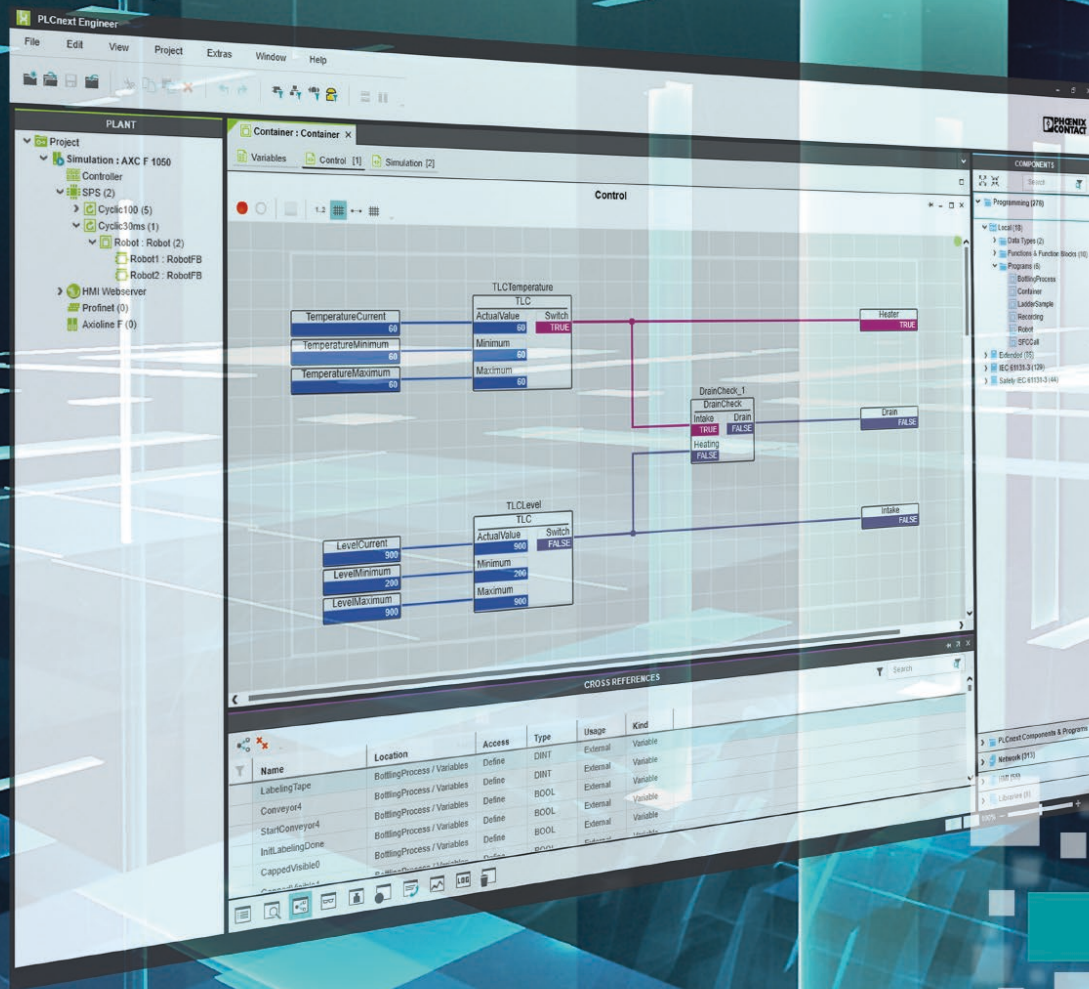
To assist businesses in their transition towards Industry 4.0, Phoenix Contact SEA adopts a consultative selling approach where we provide tailored advice and digital solutions for customers to scale their business. Phoenix Contact SEA has also established a dedicated Application Centre and Projects & Solutions team to guide customers through their digital transformation journey.

For more information, contact us at marketing@phoenixcontact.com.sg or visit our official website phoenixcontact.com/en-sg/.





Charlie is the Vice President for Phoenix Contact in Southeast Asia, a leading global manufacturer and supplier of power and data connectivity solutions. He is responsible for driving the company's growth within the Southeast Asia region in the core business of Industrial Components and Electronics.



3. Digitalization can be challenging, especially in the manufacturing industry. What are the solutions that Phoenix Contact is providing to help businesses in their digital journey?

The benefit of digitalisation is clear. Despite its economical outlay, digitalisation provides a lifetime of cost savings in the form of counteracting potential failures through predictive maintenance.

To help businesses meet today's digitalisation requirements, and achieve higher operational efficiency, Phoenix Contact is manufacturing smarter solutions and offering tailored industrial expertise to customers. Phoenix Contact provides a suite of intelligent monitoring solutions that cater to every need and budget. The advanced cloud-based PLC

software by Phoenix Contact, for example, allows users to access information anytime, anywhere. From monitoring a system's water temperature to its airflow and heat, this intelligent solution streamlines and simplifies the engineer's work. By doing so, businesses can achieve cost-efficient and data-driven solutions that optimise their digital transformation journey.

4. What is Phoenix Contact's plan towards a carbon-neutral society and its efforts to empower the All-Electric Society? How can customers contribute to the All-Electric Society?

Phoenix Contact aspires to be a role model in the industry for sustainable manufacturing. With our portfolio of products and solutions, we are carving the vision of the All-Electric Society

into reality. The All-Electric Society (AES) embodies the organisation's 100-year legacy of innovation and expertise in electrification, networking, and automation to develop a world in which electrical energy generated from renewable sources is accessible and affordable to everyone, everywhere.

To achieve this, the organization has invested significantly in manufacturing products that enable intelligent automation, efficient energy consumption and economical production processes. Phoenix Contact offers a comprehensive portfolio of reliable power supply solutions for customers who aspire to automate their operating systems as energy efficient as possible. Whether you are creating new systems or retrofitting, Phoenix Contact has detailed solutions ready to support you in your journey towards a carbon-neutral society.

5. What can customers expect to see from Phoenix Contact SEA in the upcoming year?

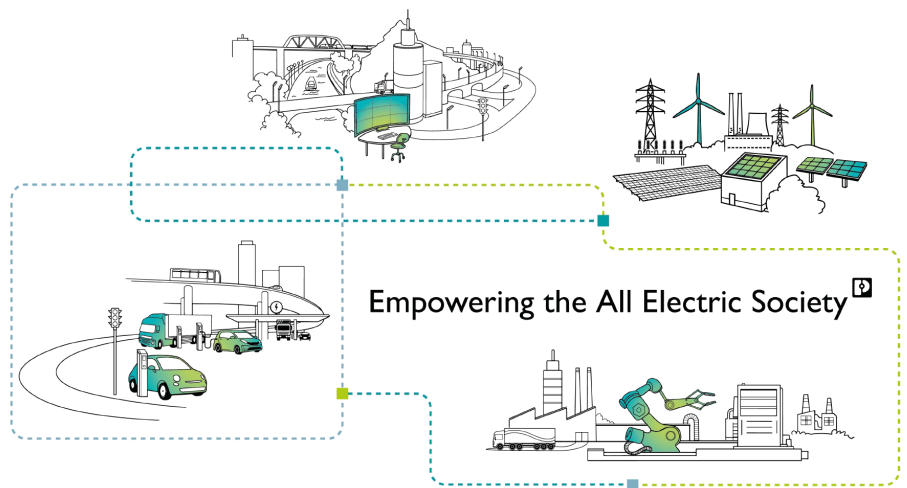
There has been an in-depth discussion to grow and invest in the Southeast Asia region so that the subsidiary can extend its solution and service provision to customers within the region and abroad. In 2023, Phoenix Contact would have delivered 100 years of business excellence and technological innovation in the field of power and data connectivity.

On a note closer to home, Phoenix Contact SEA will be turning 25 in 2023. In this industry, our customer's support remains the bedrock for our business sustainability. It is unthinkable to believe that we have stood against the tides this long without them. I would like to take this opportunity to extend our gratitude to those that have stayed with us throughout this transformation journey. Through the years of relentless pursuit of innovative

solutions to this day, our business remains motivated by our customers' trust to perfect and deliver higher operational efficiency through industry-leading connectivity and power reliable solutions.

Despite its challenges, the sustainable future of the industrial sector presents a world of possibilities if we are to embrace long-term sustainable planning and

smarter solutions through digitalisation. Phoenix Contact will continue to work closely with industry partners, to achieve an All-Electric Society where smart automation technology and advanced cloud solutions for data-driven insights are accessible, economical, and sustainable.



MESSE FRANKFURT ADDS INTELLIGENT MANUFACTURING TO ITS EVENT PORTFOLIO IN ASEAN



Partnered with the Selangor Human Resources Development Centre (SHRDC), Messe Frankfurt (HK) Ltd announced its newest regional event in Malaysia. Intelligent Manufacturing is a one-of-a-kind conference-led event to spotlight the country's leap into Industry 4.0. The event will focus heavily on knowledge sharing to build up the competitiveness of key industries like the automotive sector in the domestic economy. To reflect this synergy, Intelligent Manufacturing will sit alongside Automechanika Kuala Lumpur as a co-located event from 16 – 18 March 2023, at the Kuala Lumpur Convention Centre (KLCC).

With the launch of Intelligent Manufacturing, Mr. Stephan Buurma, a Member of the Board of Management, Messe Frankfurt Group, reflects on over two decades of trade fair activity within Malaysia and the development of its manufacturing industry. "Malaysia's fast-growing infrastructure and dynamic pro-business environment create attractive conditions for manufacturers across numerous industries. The manufacturing sector played a key part in the industrialization that solidified its strong position in the global supply chain. However, the sector is on the cusp of a rapid transition phase as companies move to align their processes with international Industry 4.0 standards.

After consulting several stakeholders including various industry associations and influential brands, we are confident that adding Intelligent Manufacturing to our portfolio can help accelerate the degree of transformation in the domestic manufacturing market," he explained.

Providing a glimpse of what to expect at the brand-new event, Mr. Buurma added: "Intelligent Manufacturing presents a unique conference-led event to support businesses of all sizes to understand the opportunities presented by the digital transformation in manufacturing. Coupled with various interactive activities, the event will allocate a dedicated area for companies to showcase their latest solutions. Together, participants will put forward the latest enabling technologies and smart manufacturing solutions across product groups for the Digital Factory, Information Systems & Technologies, and Operational Technologies. Hosting all the industry's elites in Kuala Lumpur will have a strong influence on domestic applications of smart manufacturing solutions."

As the conference co-organizer of the event, Ms. Teh Sook Ling, Executive Director, at the Selangor Human Resource Development Centre (SHRDC), addressed several topics that will be covered at the debut event. She underlined: "Conferences, Tech Labs, and Deep Dive sessions will tackle several strong opportunities and underlying challenges in the country's Industry 4.0 transformation. A key topic will include the domestic requirements needed to develop talent and enhance overall the competitiveness of local companies, especially robotics, AIoT, and AI. In this regard, industry leaders with internationally established knowledge and

practices will offer appropriate guidance for upskilling the current workforce as well as producing future talent for entirely new jobs that require different skill sets." The SHRDC is a talent and skills development center that aims to elevate the capabilities of Malaysia's workforce in line with Industry 4.0 standards.

With support from the SHRDC, Intelligent Manufacturing also leverages expertise from two technical consultants to strengthen the collaboration between startups, research and development, and academia. Firstly, the Malaysian Smart Factory 4.0 is a technology center under the SHRDC that provides hands-on experience and application-based knowledge to effectively support businesses in transforming current manufacturing practices into Industry 4.0 processes. Additional resources also come from the Swiss Smart Factory. The overseas knowledge partner presents a highly flexible platform for research, development, and testing, and a firm understanding of global trends owing to their connections across various industry sectors.

Intelligent Manufacturing will leverage resources from Automechanika Kuala Lumpur, Malaysia's leading regional trade fair for the automotive industry. Taking place at the same time, the shows will highlight some interconnected themes and trends to foster greater cooperation between automotive manufacturing and automation.

For more information about the event, please visit www.myintelligentmanufacturing.com or email the organizers at imkl@hongkong.messefrankfurt.com.

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Asia Pacific Assistive Robotics (APARA) and Singapore Industrial Automation Association (SIAA) MoU Signing with Malaysia Associations in ITAP 2022 at Singapore Expo

The Industrial Transformation ASIA-PACIFIC (ITAP) 2022 opened its doors at the Singapore EXPO for the first time since the pandemic. The event with its international partner Deutsche Messe, returned for its 5th Edition this year from the 18th to the 20th of October saw attendees and delegates from the World Economic Forum and key representation from Europe, the US, and Asia on Industry 4.0 leaders and manufacturers in the region.

The three key dimensions that ITAP focused on were Digitalisation to accelerate productivity and quality control with lower costs; Talent and Workforce Development initiatives to equip personnel with the right skillsets for transformation, and Environmental Sustainability measures to help businesses reduce their carbon footprint and CO2 emissions.

The theme for ITAP this year was 'Industry 4.0 for Business Sustainability' which "As the leading trade event for Industry 4.0 in the region, ITAP 2022 will continue to empower manufacturing and related industries to leverage on Industry 4.0 for sustainable business development locally, regionally and globally", according to James Boey, Senior Vice President of Markets (B2B) at Constellar.

The opening ceremony saw Deputy Prime Minister Mr. Heng Swee Keat deliver his opening remarks as the Guest-of-Honour. He launched the event alongside the German Ambassador to Singapore, His Excellency Mr. Norbert



Riedel; and Mr. Arno Reich, Senior Vice President of ITAP's international partner Deutsche Messe.

A few event highlights throughout the event included Immersive Experiences at the Physical Exhibition and Connect with Leading Experts across 5 Conferences. The event also saw a keynote speech by Ms. Neo Gim Huay, Managing Director of the Centre for Nature and Climate at the World Economic Forum, with Mr. Vishal Agarwal, Senior Partner at McKinsey & Company, setting the pace for the three-day event.

Asia Pacific Assistive Robotics (APARA) and Singapore Industrial Automation Association (SIAA) MoU Signing with Malaysia Pavilion

The event also saw an MoU signing between Asia Pacific Assistive Robotics (APARA) with the Machinery and Engineering Industries Federation (MEiF), the Small and Medium Enterprises Association Malaysia (SAMENTA), and the Malaysia Automation Technology

Association (MATA). The MoU aimed to continue the active engagements to catalyze collaboration across identified key clusters and areas of productivity and growth and to support respective members by providing knowledge and technical exchange program synergies. Besides, the event also witnessed another MoU signing between Singapore Industrial Automation Association (SIAA) and MEiF.



Three Ways for OEMs to Embrace Industry 4.0



Global supply chains are buckling under the strain of unprecedented demand and constricted logistics capacity. Added to skyrocketing inflationary forces, it's no wonder that an increasing number of OEMs are embracing Industry 4.0 to bolster enterprise efficiency by making their manufacturing more aware, predictive, and autonomous.

The shift from Industry 3.0 to Industry 4.0 involves the convergence between information technology (IT) and operational technology (OT). Connecting OT systems to an IT network allows a more detailed view of individual equipment and creates a comprehensive view of the entire ecosystem, simplifying management and operation. Besides allowing machines to be largely operated autonomously without human supervision, Industry 4.0 creates higher value when data collected from intelligent sensors and actuators connected to equipment leads to better decision making, as well as to the 'learning' that's

now possible with artificial intelligence (AI) and machine learning (ML). These benefits are compelling and explain the explosion of interest in Industry 4.0.

Designed for Industry 4.0 environment, Antaira's 10-port gigabit PoE+ Ethernet switch is embedded with eight pots that support a maximum of 30W/port. Source: Antaira Technologies

For OEMs, Industry 4.0 unlocks actionable data throughout the plant and beyond, improving operational awareness in manufacturing and maintenance processes. For example, automated assembly systems that once operated in data silos can be connected with IT databases from purchasing, compliance, and customer service departments, or to data from a Manufacturing Execution System (MES) and Enterprise Resource Planning (ERP) to identify trends, detect bottlenecks, and take advantage of emerging opportunities. As another example, analyzing big data collected from

sensors on the factory floor provides real-time visibility of manufacturing assets to facilitate predictive maintenance in order to minimize costly downtime. In this instance, machine learning algorithms detect and target faulty parts before they wear out, rather than wait until repair work is more expensive.

Besides gaining insights from a local shop floor, warehouse, or assembly line, Industry 4.0 provides visibility into supply chains thousands of miles away where an OEM's suppliers may be located. OEMs can be informed of where their assets are in the supply chain so they are in a better position to fulfill customer deliveries in a timely fashion. Historical supply chain data could be sent to the cloud for analysis, helping to create predictive models and develop condition-based alerts. If a delay is detected, software will alert the OEM so that it can pivot in strategy.

Applying Industry 4.0

The Industry 4.0 megatrend is now being applied across a wide swath of industrial sectors where it is benefitting discrete and process manufacturing, petrochemical, mining, agriculture, and other diverse segments poised for unprecedented growth. Antaira has identified three ways to embrace this exciting paradigm shift:

- Artificial Intelligence
- Network Connectivity
- Device Cybersecurity.

Artificial Intelligence (AI)

AI is the simulation of human intelligence processes by computers to analyze data for correlations and patterns, and the use of these patterns to make accurate predictions about future states. AI is all around us. From agriculture applications that detect imperfections in fruits and vegetables during harvesting processes, to autonomous construction and farming machinery that use GPS technologies to navigate over predefined routes. Industry

4.0 uses AI to analyze sensor data to track equipment usage, improve workflows, streamline logistics, increase safety, and achieve higher overall efficiency across OT and IT operations.

One promising category for AI is providing intelligence for autonomous robotics. Autonomous robots are increasingly finding their way into warehousing, manufacturing, agricultural operations, and civil engineering. AI-driven 'cobots' reduce labor costs and increase productivity simply by continuously working around the clock without fatigue or breaks. In addition, safety is improved in hazardous environments, and insurance and injury leave costs are reduced significantly.

Antaira Technologies' LNP-C500G series is a compact 5-port industrial gigabit PoE+ unmanaged Ethernet switch. The small form factor of this metal IP30 rated design is 50% smaller which allows for a more versatile implementation. Source: Antaira Technologies



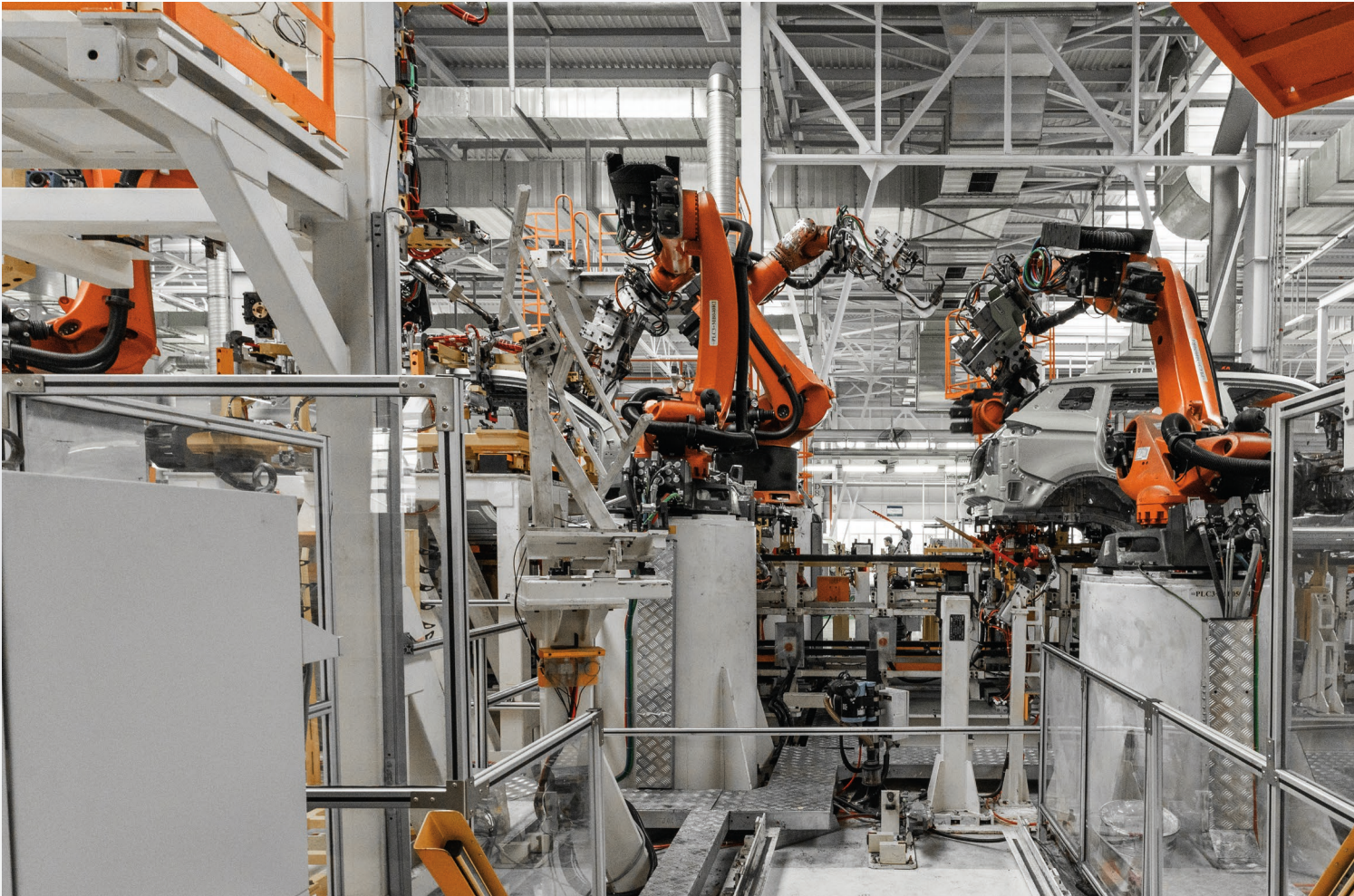
As AI continues to advance, problem solving and learning analytics will enable autonomous robots to be responsive to their environment with minimal or no human feedback. To give you an idea of what that means, think of the thousands of manned forklifts operating today in warehouses and port terminals. Forklifts are labor-intensive, expensive to maintain, and dangerous. As an alternative to a forklift, let's say AI is applied to an automated guided vehicle (AGV). Freight is picked using a barcode reader. The AGV then automatically reroutes itself with the freight on-board to the best path through the warehouse using wireless routers and industrial switches. Sensors assure no collisions occur with obstacles or employees.

Potential for autonomous robots using these devices are virtually endless. In the agricultural market, for example, Antaira industrial Ethernet switches are now being deployed in robotic fruit picking devices that can delicately grasp a single strawberry without bruising. Antaira is also connecting and transmitting data in robots capable of automatically targeting and eliminating weeds using thermal energy while rolling through agricultural fields. Also, Antaira industrial managed Ethernet switches are incorporated in an upgrade kit that transforms trench excavation equipment from the likes of Caterpillar, Volvo, Hitachi, Deere and Komatsu into autonomous robots operated remotely on a laptop.

Network Connectivity

With the exponential growth of Industry 4.0 technologies, operational networks are continually going through expansion processes, requiring the same type of bandwidth allocations and infrastructure support as the enterprise network counterparts. Furthermore, as Industry 4.0 is trending towards an increased focus on AI for big data analytics and

DID YOU KNOW?



cloud computing for process and control information collection, connectivity and connection points have become a critical piece in the industry 4.0 puzzle.

Ethernet is the technology of choice for operational networks, thanks to its standardization, versatility, and low cost. An all IP Ethernet infrastructure also helps to meet the imperatives of cybersecurity, determinism, and system reliability. Thanks to these advantages, legacy technologies such as analog fieldbus systems are migrating to Ethernet, allowing for communications with modern day technologies.

One of the main components in underpinning Ethernet connectivity within an industrial automation environment is the Ethernet switch. Source: Antaira Technologies

Ethernet thru TCP/IP-based communications now range from AI cloud-based processes to legacy bus

systems that can interconnect the smallest application using just one twisted wire pair. In a recent development, the IEEE published a standard for 10 Mbit/s (IEEE 802.3cg) important to Industry 4.0 that allows transmission distances up to 1000 meters (3280 feet), therefore holding the potential to replace virtually all fieldbuses currently in use.

One of the main components underpinning Ethernet connectivity is the Ethernet switch. Managed and unmanaged Ethernet switches are staples of Industry 4.0 architectures able to transmit data between connected devices and wider networks in a way that is secure from outside threats. While a basic Ethernet switch simply filters and forwards network packets from one networking device to another, industrial switches offer much more.





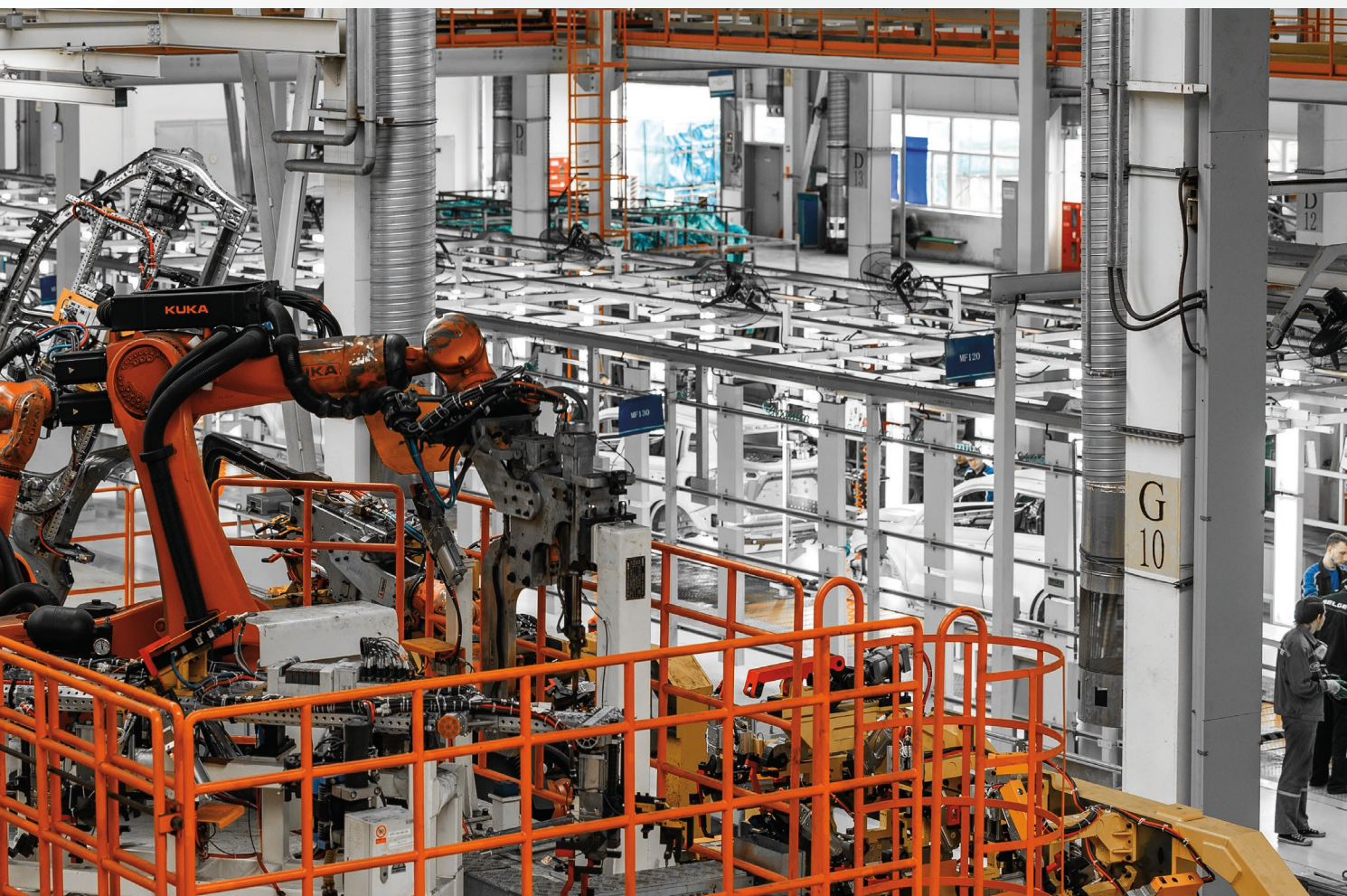
Device Cybersecurity

The tools and software of Industry 4.0 are revolutionizing manufacturing. We are now seeing the Smart Interconnected Gigafactory that can monitor and control every facet of intelligent production processes. But just as these new technologies have created the opportunities for optimization, they have also introduced new risks and security threats, creating a completely different threat vector than PC-based networks.

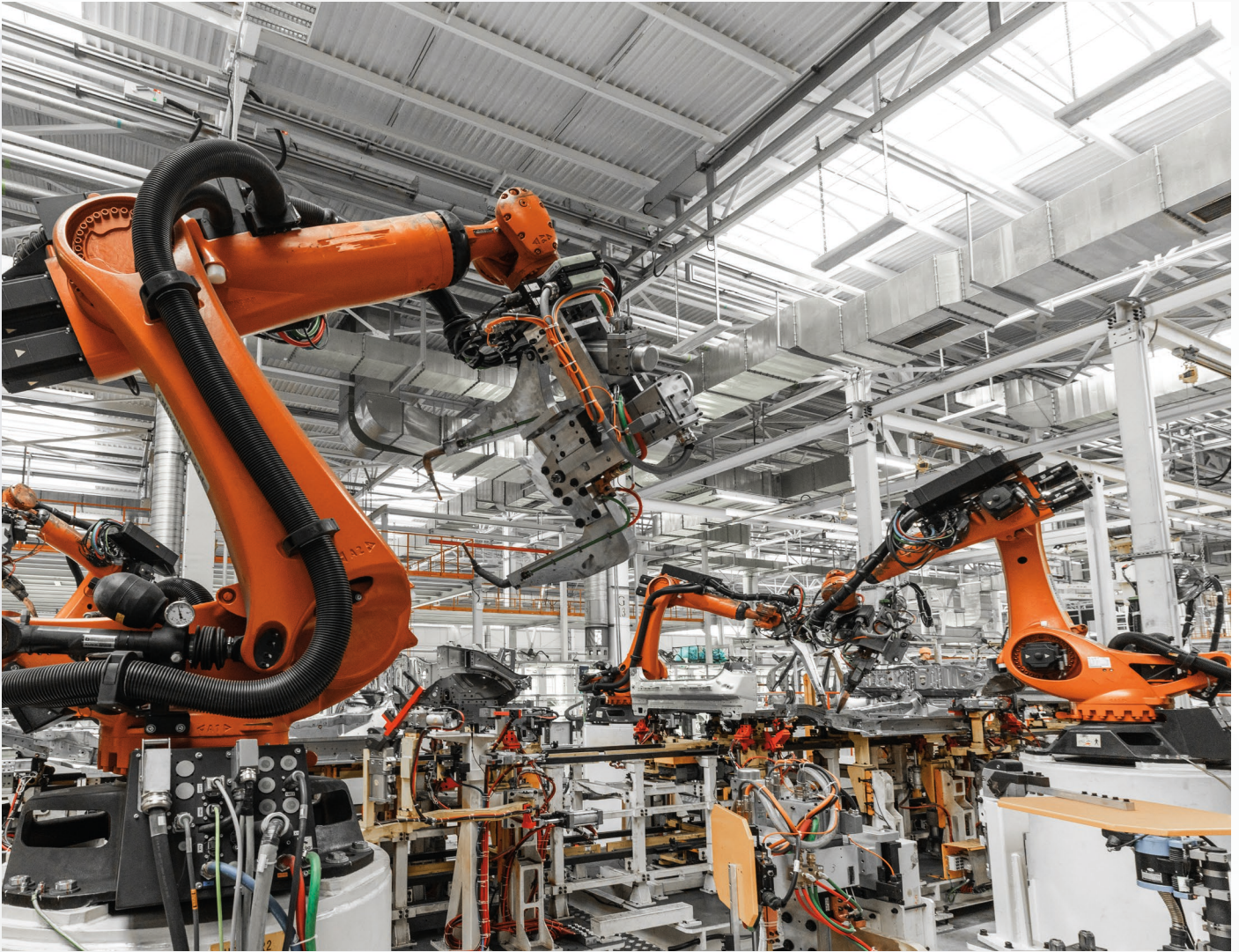
Industry 4.0, for all its benefits, makes 'Industry' an appealing target for cyberattacks. The expanded attack surface gives bad actors the opportunity to move laterally across a network, jumping across IT and OT systems for industrial espionage, intellectual property theft, IP leakage, or even production sabotage. For this reason, cybersecurity best practices must be acknowledged as one of the pillars to a successful Industry 4.0

strategy. Adopting this risk-based security mindset includes:

- Recognizing that every connected device represents a potential risk, therefore, you must maintain a real-time inventory of all OT assets and monitor the network for devices that have been added without authorization.
- Identifying and monitoring who can access devices. Implementing secure password policies that prioritize length over complexity will help prevent unauthorized network access.
- Taking a security-first approach to the deployment of any new connected devices. Require new devices go through verification before they can gain access to the network and proceed to communicate with other devices.



DID YOU KNOW?



- Performing real-time vulnerability assessments and risk-based prioritizations to spot potential threats. Regularly scanning the network will identify suspicious communications or content, malicious software, improper access, and any signs of access control manipulation.
- Fixing any outdated systems, unpatched vulnerabilities, and poorly secured files.
- Implementing multi-factor authentication whenever possible.
- Segmenting networks and restricting host-to-host communication pathways.
- Ensuring that device suppliers commit to regular security and software patches and audits.
- Involving, not just informing, the C-suite of the cybersecurity process.

Cybercriminals attack the low-hanging fruit, meaning they will go looking for easy targets and then work their way deeper inside the perimeter. In the case of Industry 4.0, the “low-hanging fruit” are your connected OT devices, especially those with decades-long life cycles, an inability to patch systems due to stability concerns, and a lack of basic cybersecurity features such as user authentication or encryption. This threat environment has been further heightened by device vendors jumping into the industrial market from the IT space with little background into OT cybersecurity.

Before Industry 4.0, OT devices and systems were ‘air-gapped’ to isolate them from risk. That is not possible today. Industrial switches, media converters, and wireless routers must feature robust, DoD-compliant layer two and layer three

security that helps manage network traffic at scale. And why your NAT routers should be able to conceal the identity of an IP address block being used on a network. The device manufacturer you work with should give administrators the tools they need to build on existing security policies and company standards, such as an Authentication, Authorization, and Accounting mechanism that can track user activities while limiting essential controls to employees who require them.

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TRANSFORMING TOMORROW'S BUILT ENVIRONMENT

BuildTech Asia (BTA) 2023 is coming back strongly to accelerate the adoption of Industry 4.0 for the Built Environment sector. Digital transformation is crucial especially in the current situation where the construction industry is experiencing shortage of resources globally.

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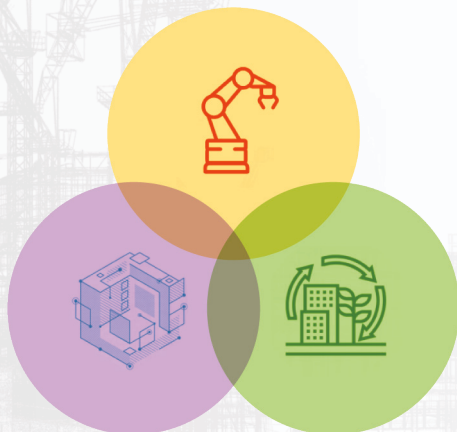


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