Vol 3. No 1, Sept - Nov 2021

www.asiaautomate.com

AUTOMATE
ASIA MAGAZINE

Thailand Confident on Achieving Industry 4.0 Ambition

Greater Kuala Lumpur, an Attractive Business Hub for Future Growth

Seoul Will Have a City-Wide Public Iot Network By 2023

COVER STORY

Interview with David Chia,
Chairman of the Smart Automation Industry Group in the Singapore Manufacturing Federation and Managing Director of Beckhoff Automation

PP19554/06/2020 (035190)
ISSN 2735-0223
9 772735 022008
RM 10/ USD 5

www.asiaautomate.com

PRODUCT RANGE

OIL FREE Vacuum Pumps and Compressors Flow Rate 2-1420m^3/Hr Vacuum 100mbar abs, +2000mbar relative

OIL LUBRICTED Vacuum Pumps Flow Rate 4.0 ~ 732 m^3/Hr Vacuum 0.5mbar, abs

OIL FREE Combined Vacuum & Pressure Pumps Flow Rate 10.0 ~ 575 m^3/Hr Vacuum +/-600mbar, abs

SIDE CHANNEL Vacuum/COMPRESSOR 1~2 STAGE Flow Rate 41 ~ 1250 m^3/Hr Vacuum -420/+500 mbar

Becker Asia Pacific Pte Ltd
No 12 Little Road #01-01 Lian Cheong Industrial Building Spore 536986
Tel: +65 64875951 Fax: +65 64875952. www.beckerasia.com.sg

| AT11-15E |

Ultra-compact: the versatile AX8000 multi-axis servo system

EtherCAT®

Highly flexible:
- Free combination of modules as required:
  - Power supply module, 20 A, 40 A
  - 1-channel axis module, 1 x 8 A, 1 x 18 A
  - 2-channel axis module, 2 x 6 A

Safe:
17 drive-integrated TwinSAFE functions

High performance:
- Current controller response time of 1 µs
- Current controller cycle time of 62.5 µs (down to 16 µs)
- Position controller cycle time of 62.5 µs
- EtherCAT cycle time of 62.5 µs

Simple installation:
Fast, fail-safe and tool-free assembly

Highly scalable:
AM8000 synchronous servomotors with One Cable Technology

The modular AX8000 system complements the highly scalable Beckhoff Drive Technology portfolio: In addition to the TwinCAT software motion control solutions and scalable motor series, a wide range of drive controllers is available, from compact drive technology in I/O terminal format to powerful AX5000 Servo Drives. With freely combinable drive modules, the AX8000 multi-axis servo system can be scaled to demand. It delivers high-performance drive technology and enables optimised space utilisation in any control cabinet.

Scan to discover everything you need to know about the performance of the AX8000 system

New Automation Technology **BECKHOFF**

Publisher's Message

We are here on the September issue! It's almost the end of 2021, and we have seen many events happened throughout the year. The national immunization program is still ongoing with 61.9% of Malaysia's adult population had completed their two-dose COVID-19 vaccination program as of August 28 according to figures provided by the Special Committee for Ensuring Access to COVID-19 Vaccine Supply (JKJAV).

The government has bought an additional six million COVID-19 vaccine doses which are expected to arrive in early September to achieve herd immunity. The government has also eased restrictions on the Standard-Operating Procedure (SOP) to those who have fully vaccinated to support and help businesses and economic sectors.

Although the contagion of the highly infectious Delta variant continues to widely spread in several countries, over 5.18 billion vaccine doses have been administered worldwide. Singapore, India, Japan, and the United States are among the countries with the highest vaccination rates across the world. We have also seen few countries such as the United Kingdom lifted some of the coronavirus-induced restrictions.

This month have also seen a lot of key players in the industry actively engaged and organized virtual events and webinar. Let's support each other in these tough times and until we've achieved herd immunity for the economy to return to normal.

On behalf of the editorial team, I thank you for your massive support to Automate Asia Magazine. Stay in touch with us at www.asiaautomate.com for more updates. Let's get vaccinated and together we can achieve herd immunity.

AUTOMATE ASIA MAGAZINE

PUBLISHER
FBI Publications (M) Sdn Bhd

PUBLICATION MANAGER
Vanny Lim
vanny@fireworksbi.com

MARKETING COMMUNICATION
Nur Izyan binti Dzulkifli
izyandzul@fireworksbi.com

ASSISTANT EDITOR
Atthira Zawana
atthirah@fireworksbi.com

CREATIVE DESIGNER
Muhammad Fadzil
design@fireworksbi.com

CONTRIBUTORS
- Emerson Automation Solutions
- Black & Veatch
- Keysight Technologies, Inc.

www.fireworksbi.com FBI fireworks business information

FBI Publications (M) Sdn Bhd (1168942-P)
Unit 9-3, Jalan PJU 5/6, Dataran Sunway, Kota Damansara, 47810 Petaling Jaya, Selangor. | Tel: (+603) 5636 1952

DISTRIBUTED BY

Central Paper Agencies Sdn Bhd (111330-T)
11, Jalan SS 13/3C, Subang Jaya Industrial Estate, 47500 Selangor Darul Ehsan.
Tel: (+603) 5636 1278 / 5636 1358 Fax: (+603) 5636 1952
Email: cpa@tm.net.my Web: www.centralreader.net

PRINTED BY

MMS PRINT SHOP (M) SDN. BHD. (1246387-v)
NO 43G, Jalan PBS 14/2, Taman Perindustrian Bukit Serdang, 43300 Seri Kembangan, Selangor.

"Revitalizing Malaysia's Electronics Manufacturing Industry!"

"Asia's most complete Electronics Manufacturing & Assembly Technology Exhibition at the heart of the industry!"

The 2nd Edition of

EMAX

Electronics Manufacturing Expo Asia 2022

EMAX 2021, Malaysia's most prominent Electronics Manufacturing event is set to host more than 100 exhibitors in Penang!

19 - 21 July 2022

10.00AM - 6.00PM

Setia SPICE Arena, Penang, Malaysia

Meet some of our exhibitors and more

VITrox · SMC · GW INSTEK · BIZIT Systems · IBS · ELLSWORTH ADHESIVES · MALAYSIA · MOUSER ELECTRONICS · Orientalmotor

...and more

www.emaxasia.com

(+603) 6151 9178

info@nrg-expo.com

Electronics Manufacturing Expo Asia - EMAX

emaxasia

@ExpoEmax

Hosted By: SIAA

Jointly Organized By: FIREWORKS, NRG EXHIBITIONS

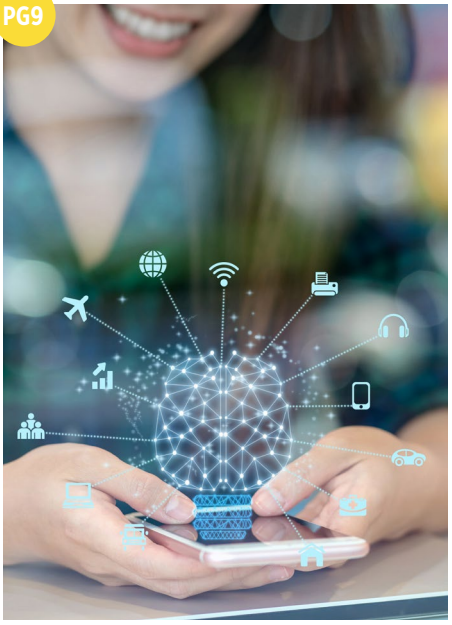
Endorsed By: MATRADE

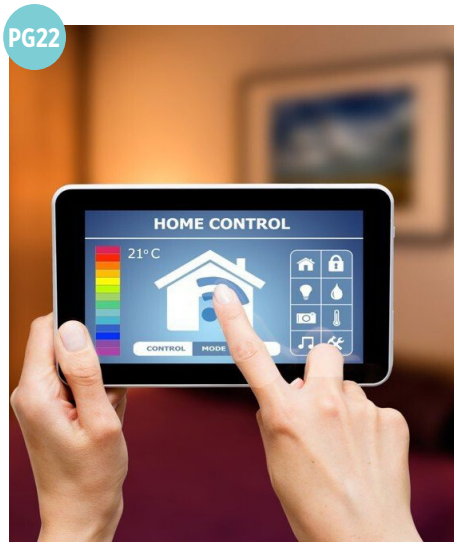
Supported By: SAMENTA, IPC, PSEMA

Official Media By: AUTOMATE

CONTENTS

Vol.3 No.1





Incorporating:

Smart Manufacturing Asia 2022

PMAX

Penang Manufacturing Expo 2022

"Manufacturing Made Smart!"

Join Us Now!

Penang Manufacturing Expo-PMAX

pmax_expo

@Expo Pmax

(+603) 6151 9178

info@nrg-expo.com

19 - 21 July 2022

10.00AM - 6.00PM

Setia SPICE Arena, Penang, Malaysia
(Level 2 - Arena Hall)

www.penang-expo.com

Hosted By: SIAA

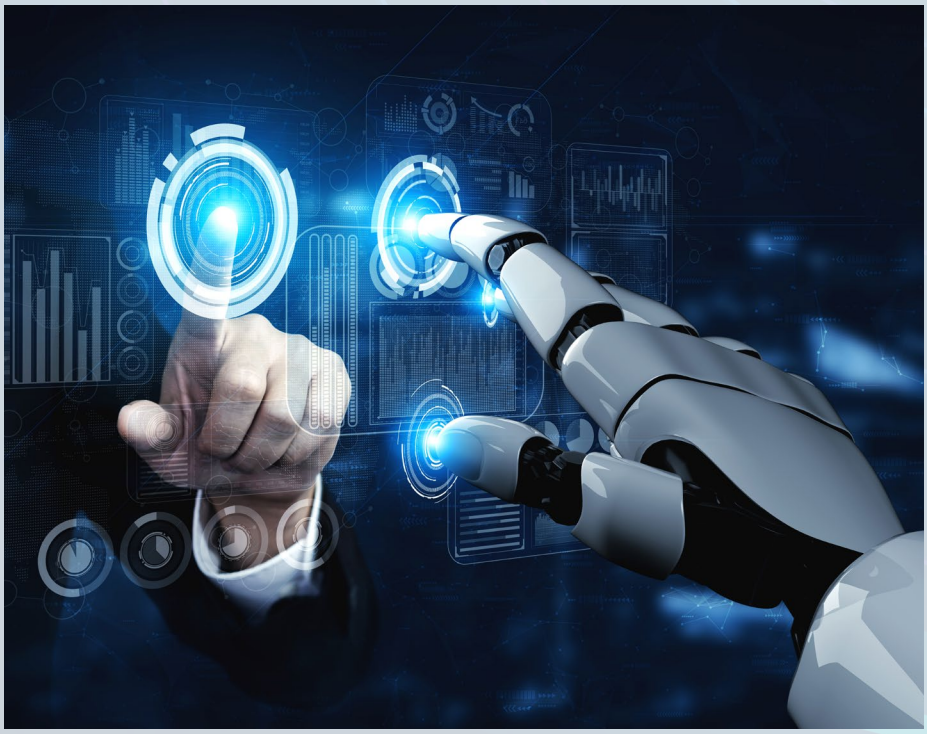
Jointly Organized By: REWORKS, NRG EXHIBITIONS

Supported By: SAMENTA, IPC

Official Media: AUTOMATE ASIA MAGAZINE

Become the World's Leading Industrial Hub

Eric Chin, Entrepreneur Leadership Network Contributor, Chief Business Development Officer of InCorp Global



How is the country set to be the world's leading manufacturing hub?

There are deep rumblings afoot in Singapore's manufacturing sector, and I think the world will soon be surprised at its rise to global prominence.

In recent decades, technology, globalization and Asia's rise have all caused significant changes in the manufacturing sector. At least within the confines of Asian and ASEAN countries, this has often meant a race to the bottom for competitiveness based on price, rather than value. With Singapore arguably being better known for financial services and tax incentives, you might assume it would have no future in the global manufacturing sector.

I'm pleased to say, that's a wholly incorrect assumption.

While low-cost and repetitive-task human labor has had its heyday, Singapore has shown itself to be a lighthouse of forward-thinking. By fully embracing Industry 4.0, Singapore is moving up the value chain in order to consolidate its position as the world's leading industrial hub.

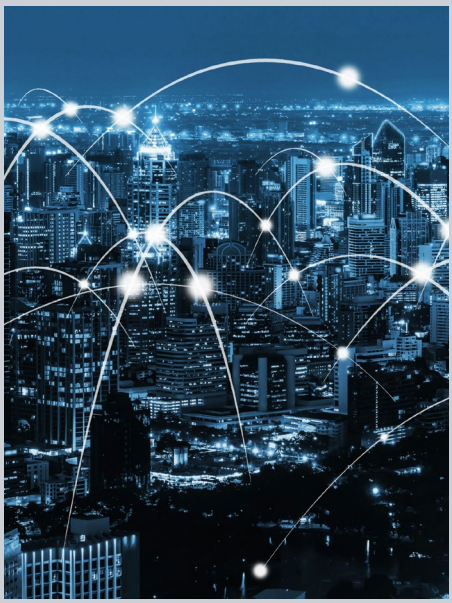
Such a lofty ambition takes immense proactivity of course, so here are four reasons why Singapore will be the world's leading industrial hub.

1. The Singapore government's foresight

Singapore has a long history of showing immense foresight into the needs of the nation. The most famous example of this was perhaps the government's establishment of the Housing and Development Board (HDB) in 1960, designed to lift the population out of poverty and into their own homes.

It's that culture of foresight that has led to many other progressive insights, including the government's recent pledge to grow its manufacturing sector over the next 10 years. Crucially though, this is not a scattergun strategy to build factories and import workers to manufacture low-quality goods.

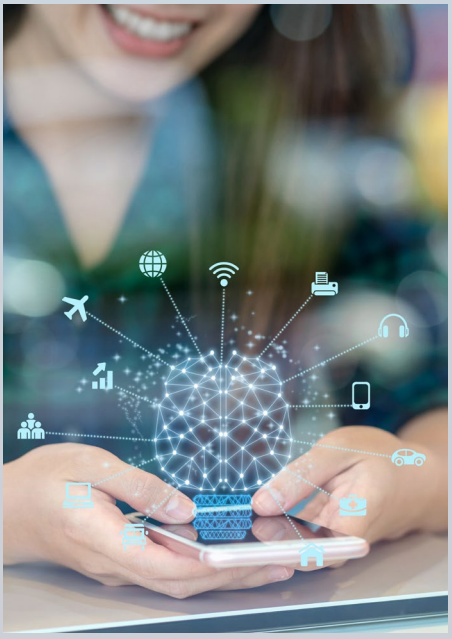
The government has robust plans in place to be competitive not in terms of cost, but based on the intellectual property the country can generate. This means rather than low-value manufacturing, Singapore will aim to manufacture in the higher end of the value chain, including sectors like pharmaceuticals, fintech and biotechnology.



Singapore's three-pronged legislation for this growth is detailed and well thought out, making provisions for attracting top-tier companies, creating higher-paying manufacturing jobs, and training the local population with extensive tertiary education collaborations.

2. A world-class ecosystem for manufacturing

While the government's recent but detailed plan for a high-value manufacturing future inspires confidence, you only have to look at how Singapore is performing today to see an upwards trajectory. Singapore is already the world's third-largest exporter of high-tech goods, produces four of the world's top 10 drugs, and is the fourth-largest producer of refined oil. It's little surprise then, that industry giants like Micron, Shell and Merck have not only chosen Singapore as a manufacturing base, but as a strategic hub for R&D, headquarters and supply chain management.



This world-class ecosystem is bolstered by active government initiatives where multinational corporations (MNCs) can partner with research and tertiary education institutes to develop cutting-edge innovations with global impact.

Singapore's reputation as a plug-and-play manufacturing ecosystem will only continue to grow, as more and more top MNCs leverage the country's investment in the sector.

3. A workforce of skilled humans and adaptable robots

While China and many parts of Southeast Asia persist with a repetitive-task-based human workforce, Singapore is forging ahead with an adaptable but highly skilled local workforce comprised of complementing robots and humans.

Singapore currently ranks third in the Global Talent Competitive Index, thanks largely to two major strategies. First is the government's significant investment in human talent through their SkillsFuture series in advanced manufacturing and their partnerships with industry leaders and tertiary institutes. Second is a massive investment in robotic technology, which has led them to become third in the world for robot density, according to the Global Talent Competitive Index.

These synergetic workforces show an established commitment to both human and robot capital that provides end-to-end manufacturing expertise — an enormous plus to prospective MNCs looking to manufacture in Singapore.

4. An established culture of innovation

Finally, Singapore continues to solidify its reputation as a global powerhouse for innovation. Singapore is currently ranked third in the Bloomberg Innovation Index, primarily due to its productivity and value-added manufacturing growth, while maintaining a top-in-world ranking in tertiary education efficiency.

This culture of innovation has led to the likes of Siemens and ABB to leverage Singapore's growing momentum within industry 4.0, and I fully expect many other global innovators to follow.

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

Source: wwtw.entreprneur.com

Building Bridges:
Philippines -Silicon Valley Startup Cooperation Opens Opportunities in the US and Southeast Asia

DTI Undersecretary Rafaelita Aldaba delivering her keynote remarks on PH-SV startup cooperation highlighting opportunitiest to access the US and Southeast Asia

As part of the ongoing initiatives to promote the Philippine startup industry and connecting it to the startup ecosystem in Silicon Valley for possible collaboration in the areas of training, mentorship, financing, and networking, the Philippine Consulate General in San Francisco, the Philippine Trade and Investment Center – Silicon Valley, and Dynamico Space organized its first hybrid (in-person and online) event entitled "Building Bridges: The Philippines and SF Startups and Mentoring."

As the Philippines and the United States recover from the impact of the COVID 19 global pandemic and economic recession, Undersecretary Rafaelita Aldaba, who heads the Competitiveness and Innovation Group of the Department of Trade & Industry (DTI) shared that the program is a breath of fresh air bringing with it so much hope and inspiration in shaping the future of Philippines-Silicon Valley startup cooperation.

In January 2020, prior to the Pandemic and the lockdowns, the DTI together with the Department of Science and Technology (DOST) held consultations on the Innovative Startup Act in San Francisco. This landmark legislation promotes innovation by providing financial subsidies such as tax breaks and grants for startups along with startup visas, building of startup ecozones, startup grant fund and an innovative startup venture fund.

To date, the Philippines was able to implement a more comprehensive startup program focusing on incubation and acceleration services, mentorship, industry matching and development support, along with internationalization activities to expose our startups to ecosystems abroad. The National Development Company already allocated P300M for the matching grant fund program for this year. DTI is also collaborating with 500 Startups, a startup accelerator and global venture capital firm based in San Francisco, as the Philippines develop programs to foster the growth of local startups and promote the digital transformation in the country.

The DOST allotted a total of P43M to support the R&D of 14 local startups focusing on providing solutions to help jumpstart the economy and communities as the Philippines adjust to the new normal.

Undersecretary Aldaba noted that despite the COVID-19 pandemic disrupting economies and lives, it is amazing to see how startups have been offering solutions through the creation of new products, services, and processes. Based on a survey done by Price Waterhouse Cooper (PWC), 49% of Philippine startups explored new product/services and more than 20% of the startups said that they experienced an increasing demand for their services and products.

Using new technologies, startups have been providing support to government through contact tracing apps, personal and community health monitoring, chatbots, along with social distancing and online marketplaces. New innovative startups emerged during the crisis and some were even able to raise funds abroad.

One key lesson that can be draw from the pandemic is the acceleration of the use of digital technologies and innovation, which played a crucial role in ensuring quick responses to the crisis. The Philippines' strategy embraces Industry 4.0 and view these new technologies such as Artificial Intelligence (A.I.) as drivers to achieve an inclusive, resilient, & sustainable industrial development.

Amid the Pandemic, DTI formulated and launched the Philippine A.I. Roadmap. The roadmap focuses on uplifting the lives of Filipinos, industries & the economy with the vision of positioning the Philippines as an A.I. regional hub. By adopting A.I., the Philippines can tap vast opportunities to help maintain the regional & global competitiveness of its industries, prepare the future workforce for the jobs of the future, & attract large companies to set up in the country.

One important goal of the roadmap is to identify and support local startups that can significantly contribute to the development of the A.I. ecosystem. Another equally important goal is the establishment of a National Center for A.I. Research. The A.I. Center will serve as hub for world-class A.I. scientists and researchers where multinational companies can explore various R&D projects with the researchers, and linkages with universities & research institutes. The Center will provide consultancy services, create A.I. tech products, along with data literacy trainings.

The Philippines will focus on the following applications of A.I.: precision farming to improve the productivity of the agriculture sector and increase the incomes of farmers, smart manufacturing, healthcare services, A.I.-powered BPO, smart cities, resilient technology.

Another important initiative is the building of Regional Inclusive Innovation Centers. The Philippines is made up of over 7,100 islands and 16 regions. The RIICs serve as platforms that link together the different players in the innovation and entrepreneurship ecosystem: universities, LGUs, IPSOs/ITSOs, R&D labs, S&T parks, accelerators/accelerators, startups, MSMEs, LEs, government agencies & other players. The RIICs are innovation and collaboration spaces that focus on addressing industry issues/societal and environmental problems applying technological solutions.

Since the last gathering in San Francisco, there are also milestones that were highlighted:

- In January 2020, the architectural plans of Dynamico Space were revealed by Mr. JR Calanoc. Today, it is fully operational and the host for the event "Building Bridges: The Philippines and SF Startups and Mentoring.
- Plentina Founder, Kevin Gabayan, who was one of the panel speakers for the innovative startup act consultation was at the early stages of implementing his vision for a company that aims to advance financial inclusion in the Philippines. Today, PLENTINA has grown significantly in the Philippines and had expanded its merchant partners to include 7-Eleven Philippines and Smart Communications.
- TASKUS, a Philippine-reared BPO debuted on the US Nasdaq last June 11, valuing the company at US$2.8bn. TaskUs has not only triumphed, but it has helped to put the Philippines, and the Philippine outsourcing industry, in the spotlight on the global stage

Undersecretary Aldaba emphasized that these partnerships and achievements are testament to the opportunities that can be harnessed through strong collaborations. Through the Innovative Startup Act and the strong focus of the A.I. Roadmap to promote startups, the Philippines could build more successful startups like TaskUs. Cooperation and collaboration between countries would be a vital step as we face the post crisis future.

Source: www.einnews.com

Greater Kuala Lumpur, an Attractive Business Hub for Future Growth

Against a year that has been challenging, Malaysia continues to display immense resilience and growth. The vaccine rollouts are well underway, trade performance remains steady, and we continue to attract foreign direct investments.

With the business landscape shifting the world over, MNCs that have set up their bases in host countries are re-assessing the infrastructure and its relevance to support their growth and expansion strategies, while others are deferring their investment plans to see what the outlook would be like.

In the first half of this year, InvestKL secured RM1.92 billion in new investments from seven global multinational companies (MNC), creating 1,207 regional jobs. Despite the challenging economic environment, this achievement reinforces the appeal of Greater Kuala Lumpur (GKL) as a top choice for MNCs and fast-growing companies.

At InvestKL, we continuously engage with our MNCs that have set up their operations in GKL to ensure they receive the relevant support as part of our commitment to foster a facilitative business environment. Despite the prolonged pandemic period, it is positive to note that GKL continues to see MNCs carrying on with efforts to grow, expand, and strengthen their businesses, while contributing towards building a vibrant business ecosystem and creating more opportunities for Malaysians.

Muhammad Azmi Zulkifli, CEO of InvestKL

Building local ecosystems, creating jobs for Malaysians

Knowledge transfer is one of the core essentials for Malaysia to move up as a knowledge-based economy and become a developed, high-income country. It is also imperative for Malaysian MNCs to be competitive in the global landscape.

International SOS, the world's largest medical and travel security risk services organization, had its Southeast Asia regional hub located strategically in GKL since 1996. The company opened its new Global Shared Services Centre in 2014, which created 150 new jobs, 95% of them Malaysians.

Another success story, Alcon Global Services (AGS), is an MNC based in Geneva, Switzerland with its regional business services hub for Alcon Laboratories located in GKL, specializes in ophthalmology and producing vision care. This hub concentrates on providing business support across various functions that span finance, human resources, procurement, supply chain, enterprise resource-planning, IT, and quality assurance.

Companies like International SOS and AGS are just a couple of the many hundreds of MNCs that don't just create jobs for Malaysians but also build local

economies. The spillover effect on the ecosystem not only centers on the industry-specific support but also allows other small businesses to participate in the value chain. This would range from non-technical services such as canteen operations, building security, cleaners and drivers, and other such relevant services, as well as infrastructure development - building of roads and alongside it, businesses for the community.

What is important when global companies such as these set up their presence here is the training and teaching and hiring of locals that companies such as these will do. This means that the Malaysians who would fulfill these new jobs will be able to expand their skills and knowledge that makes them competitive in the future.

This is also where InvestKL plays a role in helping to facilitate local talent inflows into such organizations. We recently implemented a talent training programmer called Fit4Work that helps young Malaysians enhance their skills required for the Global Services Industry. We will then help match candidates with the right global MNCs. Since InvestKL's inception in 2011 to 30 June 2021, we have seen the creation of 15,318 regional and high-skilled jobs, and we are confident this number will continue to grow.

Foreign MNCs in Greater Kuala Lumpur still investing in growing business strength

While the investment context has changed somewhat with this pandemic, what we see now among the MNCs in GKL are their resiliency and adaptability in how fast they can roll out their solutions through digital and Industry 4.0 adaptation.

ABB Group, a Swiss MNC which is a global leader for digital technology, opened their first robotics Digital Centre here in GKL in 2019. The company provides real-time monitoring and tech support for over 7,000 connected ABB robots in more than 750 factories worldwide. They chose GKL because of our growing digital ecosystem, strategic location in Southeast Asia, accessibility, economic diversity, excellent infrastructure and a growing talent pool. When the pandemic hit, they were not as impacted because they had already embedded technologies and remote operations into their business activities, which served them and their clients well.

Air Liquide, a French company and a world leader in industrial gases and technology services, set up their Smart Innovative Operations (SIO) center for the South-East Asia Pacific region here in GKL. They leverage data analytics, artificial intelligence (AI) and predictive analytics to remotely manage and monitor as well as optimize the performance of their plants in the region.

Both ABB Group and Air Liquide are continuing with their investments and focus on Industry 4.0 and digital transformation through using technology enablers like AI and data analytics to run the operations. Our talents in these organizations will certainly benefit from learning these innovations.

So, we continue to see an expansion in skills and services as well as investments into strengthening their business here, not just from these two examples cited, but also from the many other MNCs that InvestKL regularly talks to.

Upskilling knowledge pool and strengthening local supply chain

While we are currently in a good position to leverage our talent pools, the fast-evolving knowledge and business landscape require us to ensure that Malaysia's bright and hopeful young minds are equipped with the right proficiency for the work of the future.

This is where collaborations between universities and the industry partnership models come in to deliver valuable insights and real-world experience to students who need to understand today's dynamic business environment. At InvestKL, we have helped many of these MNCs collaborate with academia to develop research and innovation through joint research projects, delivery of innovative commercial products,

Source: www.theedgemarkets.com

improvements in teaching, learning and enrichment of students' knowledge and their employability. Participating MNCs include Oleon, CANBOT, Vinci Construction, Leviat, and Indra, working closely with University Malaya, Monash University, Universiti Kuala Lumpur (UniKL), among others.

InvestKL's Greater KL (GKL) Live Lab - a strategic programmer to facilitate collaboration between foreign MNCs and our local players - is a programmer that helps the supply-demand side to tap onto each other to build a more efficient ecosystem. The focus of the GKL Live Lab is on driving and accelerating the adoption of innovation-led and knowledge-intensive activities. Since our announcement in April 2021, we have already secured three companies, successfully achieving our target for the year ahead of schedule.

When we engage these global MNCs, we are heartened to note their exciting plans for the future. Many of our conversations are peppered with their plans to grow their business, invest in technology and digitalization, look at new markets, hire more talents, and strengthen their base here because they continue to find GKL attractive and facilitative for their business to grow.

The long-term value that global MNCs offer to Malaysia is immeasurable as it includes a whole plethora of benefits - creating high-value jobs, elevating industry knowledge, building new sub-industries and ecosystems, increasing economic complexity, extending domestic linkages and improving inclusivity, over and above the foreign-direct investments they bring into the country.

We at InvestKL, are excited at seeing Malaysia transform itself in line with its aspirations to be a high-value knowledge-based economy, and we must start by recognizing the contribution of global MNCs towards this journey.

Source: www.theedgemarkets.com

Hyundai Motor to Buy Robot Maker Boston Dynamics from Softbank

The logo of Hyundai Motor Group is seen during a general shareholders' meeting in Seoul, South Korea, March 22, 2019. REUTERS/Kim Hong-Ji

Hyundai Motor Group and its chairman have agreed to buy an 80% stake in Boston Dynamics from SoftBank Group Corp (9984.T), as the South Korean automaker group seeks to expand factory automation and design autonomous cars, drones and robots.

Hyundai Motor Group said the transaction values Boston Dynamics, the maker of a four-legged dog-like robot, at $1.1 billion, suggesting the automaker group and its chairman offered $880 million for the 80% stake.

The newly promoted Hyundai Motor Group chairman Euisun Chung has pledged to reduce reliance on traditional car manufacturing, saying robotics would account for 20% of the company's future business, with car-making taking up 50%, followed by urban air mobility at 30%.

Chung will own a 20% stake in Boston Dynamics, while Hyundai Motor (005380.KS) and its affiliates, Hyundai Mobis (012330.KS) and Hyundai Glovis (086280.KS), will hold a combined 60% stake.

Softbank Group CEO Masayoshi Son said the partnership with Hyundai would accelerate the robot maker's path to commercialization.

Boston Dynamics, which was spun out from the Massachusetts Institute of Technology in 1992, was bought by Google (GOOGL.O) in 2013 and sold to SoftBank in 2017.

The company's products include Spot, a dog-like robot that can climb stairs, and have gained media attention even as it struggled to build a commercial business.

The transaction, subject to regulatory approvals and other customary closing conditions, is expected to close by June 2021.

'INNOVATION RACE'

Boston Dynamics' clients include Ford Motor Co (F.N), which leased two Spot robots in July as part of a pilot programme.

Last year, Ford Motor also said that it was partnering with walking robot maker Agility Robotics as it designs a planned fleet of self-driving delivery vans that will drop packages at the doorsteps of people's homes.

The Boston Dynamics deal is the latest pullback by SoftBank from operating businesses as Son focuses on investing.

It also marks the fading of SoftBank's robotics ambitions, which were talked up by Son, and leaves the group's own rump robotics business, which includes humanoid robot Pepper, looking increasingly isolated.

For Hyundai, this is the latest in a flurry of deals under Chung, who pledged to transform the automaker into a mobility provider, amid threats from electric carmaker Tesla and tech firms with ride-sharing, self-driving and other technologies.

"Automakers are in an innovation race. Hyundai is a late-comer to the race, and it seems that they want to showcase that they can do it, rather than trying to generate money from the robot business," said mobility consultant Cha Doo-won.

Hyundai Motor Group has developed a wearable robot to reduce fatigue for factory workers and ran pilot programmes at its U.S. plants.

In January, Hyundai Motor announced it had partnered with Uber to develop electric air taxis, but the U.S. firm said this week it would sell its loss-making flying taxi unit to Joby Aviation, an electric passenger aircraft developer. (1 = 1,087.2200 won)

Source: www.reuters.com

The Time to Unlock Industry 4.0 Growth is Now - Here's How

Indonesia's digital manufacturing ambitions are well-known. In 2018, the Industry Ministry launched Making Indonesia 4.0, a roadmap to accelerate digitization in the country's industrial sector.

Strides were made in 2019 when the World Economic Forum inducted two Indonesian factories –Schneider Electric's Batam facility, as well as local mining company Petrosea's Kalimantan operation – into its Global Lighthouse Network, in recognition of their transformation efforts. Then COVID-19 struck.

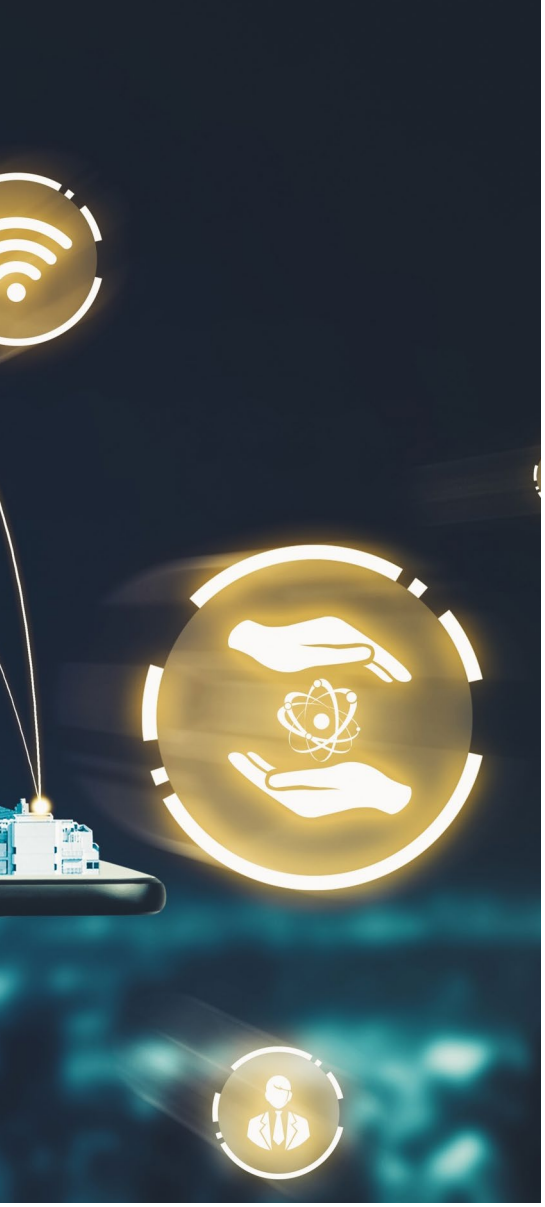
In the past year, companies have taken massive steps to protect their people and business. This has been the biggest test facing industrial digitization. McKinsey looked across industries and spoke to 400 business leaders worldwide to understand how their approach to digitization has affected their response to the pandemic. Overall, 94 percent of respondents said Industry 4.0 and its associated technologies helped them keep their operations running during the crisis, and 56 percent said these technologies are critical to their crisis response.

Respondents in Indonesia partly reflected these results, with 94 percent saying that Industry 4.0 technologies kept them moving throughout the pandemic, while 26 percent classed them as critical to their response.

Looking more closely at responses to our survey, three broad outcomes have emerged.

First, a win for early adopters. Based on our research, a majority of companies that embarked on digitization efforts before the coronavirus crisis felt more prepared to respond when the pandemic hit. 65 percent of respondents reported feeling more optimistic about the prospects for digital technologies than a year ago.

Locally, respondents felt less optimistic, with just 30 percent in Indonesia more optimistic than a year ago. Second, reality check. Compared to last year, McKinsey's research revealed a significant



drop in respondents' assessment of their organization's maturity. We saw a 40 percent drop in respondents saying they had successfully scaled some or many Industry 4.0 use cases. This figure was below the level we recorded in 2017. Locally, the figures are even lower – with just 4 percent of respondents in Indonesia reporting that they had scaled their adoption of industry 4.0 technologies.

This change in perceived maturity has two likely causes. First, Industry 4.0 technologies are no longer measured for their ability to add value during business as usual. Instead, they are expected to prove valuable during trying times such as the COVID-19 crisis. Many are also finding that they can no longer ignore the limitations created by weaknesses in their underlying information technology/ operational technology (IT/OT) infrastructure.

Third, a wake-up call. Companies that didn't implement Industry 4.0 before COVID-19 are having a wake-up call. About 56 percent of respondents globally that hadn't implemented Industry 4.0 technologies before the pandemic found themselves constrained in their ability to respond to the crisis, in the absence of digital technologies for support. In Indonesia, 25 percent of respondents feel unable to respond to the pandemic using Industry 4.0 technologies to the extent they would like.

At this time, leaders can overcome their Industry 4.0 challenges through collaboration.

Based on McKinsey's latest survey, respondents expressed that progress in accelerating digital transformation is now more difficult. Almost one-third of the participants in our survey expect recovery to take a year or more, citing constraints including lack of funding and talent. In Indonesia, the figure was comparable at 42 percent of participants.

Even before the pandemic, Indonesian business leaders were facing challenges such as defining the roadmap of Industry 4.0 use cases with clear business value and finding available cost-effective technology providers. Upskilling is another challenge leader's face in Indonesia, especially for micro, small and medium enterprises (MSMEs).

Indonesian leaders can look to a broader sector or market collaboration to overcome some of these challenges. For example, the Ministry of Industry plans to create a network of digital capability centers (DCCs), with the flagship PIDI4.0 in Permata Hijau to open at the end of 2021.

Meanwhile, the first satellite DCC by the Industrial Human Resources Development Agency (BPSDMI) has opened in the Institute of Industrial Management (STMI) Jakarta and is now ready to serve companies who want to understand and experience the transformation journey of Industry 4.0.

The center is equipped with training and learning modules on Industry 4.0 levers, technology stack and organizational requirements. It also features an ecosystem of technology and service providers, and can help companies along their Industry 4.0 transformation journey through "delivery" services.

Indonesia can also look to its ASEAN neighbors for partnerships on relevant programs. For example, at a joint event in January hosted by the Singapore Economic Development Board and the Indonesian embassy in Singapore, industry leaders discussed ideas such as collaborations with model factories in Singapore, or leveraging the lessons of successful programs, such as the Industry 4.0 Human Capital Initiative to upskill Indonesian MSMEs. Such partnerships could help foster cooperation between Indonesian manufacturers and service providers in Singapore.

Across industries, the pandemic is changing the rules of the digital game. It reinforced the value of Industry 4.0 but also exposed the limitations of today's implementations and set a higher bar for success. For Indonesian leaders, the time to act boldly on digital transformation is now.

Alpesh Patel is a partner and leader of McKinsey's Digital Capability Centers (DCCs) in Asia, while Carlos Karo leads McKinsey's Digital Capability Center in Indonesia. Thomas Hansmann, a partner, and Khoon Tee Tan, a senior partner, both are based in Jakarta, contributed to the article.

Source: www.thejakartpost.com

Thailand Confident on Achieving Industry 4.0 Ambition

Thailand is making great strides towards complete digitalization, taking it on the verge of being an Asian digital behemoth, according to the country's Ministry of Foreign Affairs.

"Industry 4.0, artificial intelligence (AI), e-payment and cutting-edge technology are all but part of the daily realities for most of those who live in the country. With a strong industrial policy that favors digitalization, Thailand is on the cusp of becoming the next Asian digital behemoth through its adoption of the 4.0 digital revolution," the ministry said in a media statement.

A vibrant startup ecosystem

Thailand hosts an enabling ecosystem under which startups can thrive.

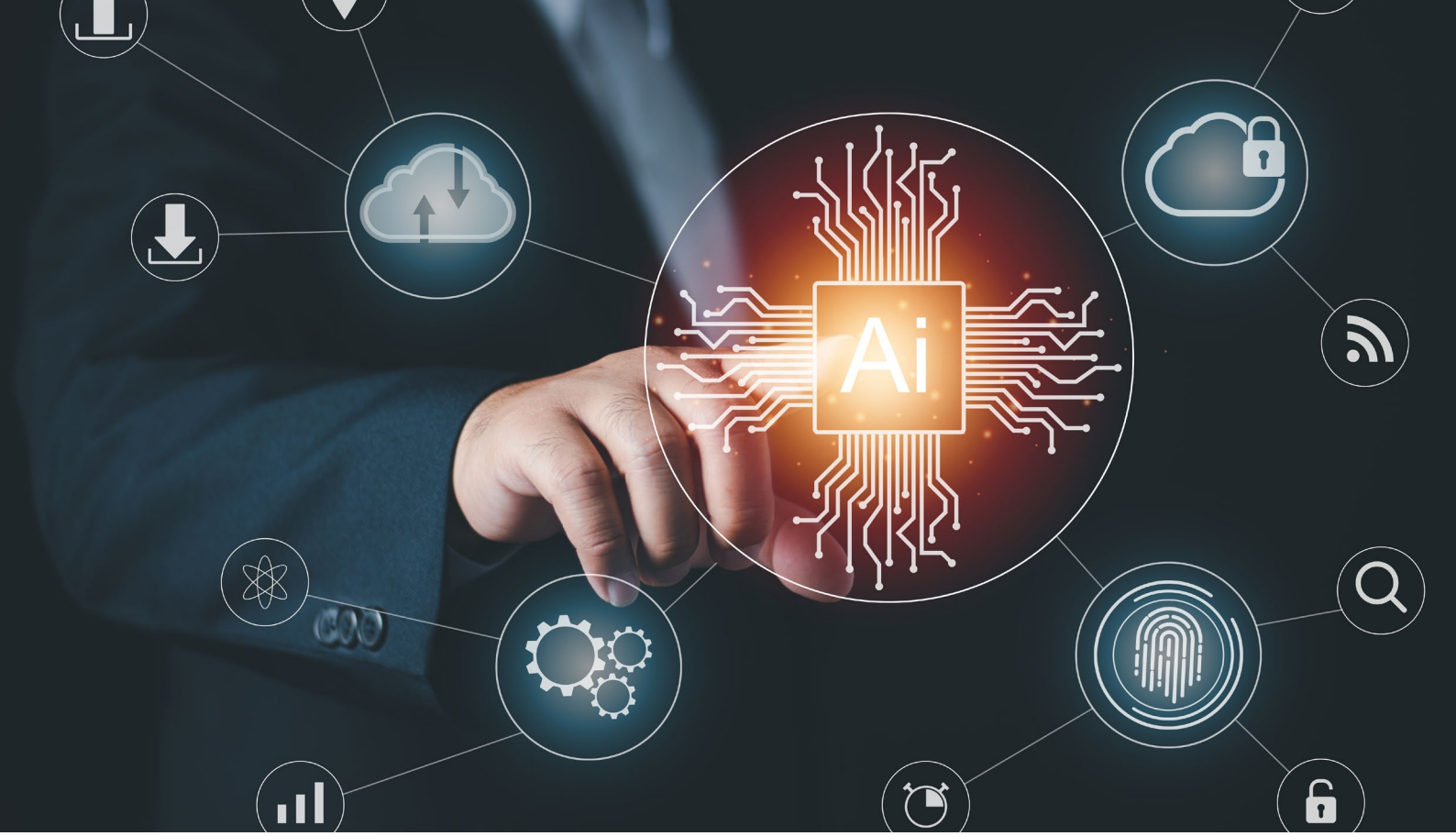
In June 2021, the country has seen its first unicorn with Flash Group, an e-commerce logistics and delivery services provider Flash Express, after the company's Series D+ and E funding raised more than US$150 million, shooting up its total value to more than US$1billion. There also are "half-unicorns" that are expected to join the coveted ranking soon. In short, the Thai economy looks set to be transformed into a cutting-edge economic powerhouse through digitalization.

Last year, the country's digital industry grew by more than 10% to reach US$20.6 billion. Digital content is a robust industry in Thailand with a total market value estimated at US$1.08 billion in 2020, driven by gaming, big data and animation industries.

Moreover, Thailand's overall Gross Merchandise Volume hit US$18 billion in 2020, a 7% year-on-year growth. Thailand's digital economy will likely reach US$53 billion in value by 2025,

PHOTO by Oleksandr Pidvalnyi from Pexels

according to a joint report on Southeast Asia's e-economy published last year by Google, Temasek and Brain & Company. The Ministry of Digital Economy and Society has also fortified the capacity of local e-commerce, digital entertainment and food delivery platforms to keep up with the implosion of online shopping associated with the COVID-19 lockdown economy, in line with its Digital Economy Development Plan that began in 2016.



Banking on AI and 5G

Thailand is also eyeing artificial intelligence as the next key feature of its digital economy. The country's Digital Government Development Agency (DGA) established a government Artificial Intelligence (AI) Centre to boost efficiency of services of government agencies.

The center focuses on three core functions: fostering networks and systems for AI adoption support; generating digital platforms in the cloud where state agencies can seek consultancy and AI solutions for their services; and upskilling government officials on AI and data analytics.

Meanwhile, Thailand is eyeing the 5G technology digital transformation.

"The country's adoption of the 4.0 economy policy augurs well for its digital aspiration, expected to contribute to more than 30% of its GDP by 2025 from less than 20%at present," said Abel Deng, chief executive of Huawei Technologies Thailand.

In September 2020, Huawei launched a 5G ecosystem innovation center worth US$15 million in Bangkok and plans to invest another US$23 million to build its third data center in 2021 to satisfy growing demands in the Eastern Economic Corridor (EEC), especially from the financial sector and Cloud providers.

Buoyant e-payment system

In addition, e-payment has become the preferred choice of financial transactions for most Thais, according to the foreign affairs ministry.

More than half of Thailand's population --- approximately 30 million with a transaction value of over THB260 billion (USD 8.4 billion) --- have gone cashless. The number of registered PromptPay users in Thailand has surpassed 50 million in 2020 with daily transactions exceeding US$2.5 billion.

Based on figures from UnionPay and Nielsen, the use of mobile phone digital payment services including PromptPay and Quick Response (QR) Code has been growing exponentially with up to 75% of shoppers preferring QR Code payment

The Thai government has forged partnerships with Krungthai Bank to create an e-commerce platform that has been linked to the government's e-payment gateway, Pao Tang, and Thong Fah (Blue Flag) Pracharat shops for state welfare cardholders, thereby, realizing the Thai dream of a cashless society.

"In 2022, investment in digital infrastructure is expected to rise by 20.5% to more than US$6.6 billion and up to US$8.4 billion, thanks to rapid digital transformation and adoption of new technology," the ministry said.

Large banks have capitalized such growth by enabling mobile applications to support e-payments, while non-banks are launching promotions to draw in more e-Wallet users. The Bank of Thailand has implemented the fourth stage of its payments system roadmap (2019-2021) to build an ecosystem that supports digital payment as the preferred choice.

Source: futureiot.tech

Seoul Will Have a City-Wide Public IoT Network By 2023

The Seoul Metropolitan Government announced that its city-wide public IoT network (Internet of Things) is on track to be completed by 2023, reported *Korea Biz Wire*. The operating platform is planned to be established at City Hall by the end of 2021.

The public IoT network aims to support and provide public services such as shared parking, smart street lights, and disappearance prevention through the use of IoT sensors.

The government will collect data related to traffic, safety, and the environment using these IoT sensors while enabling such data to be transmitted mutually to and from 25 district offices in the city.

Public IoT Network Based On Lora

The LoRa-based trunk network will span 421 kilometers long, and be deployed across Seoul by the end of 2021.

LoRa (long-range) is a low-power wireless telecommunication technology that connects sensors to the cloud. Based on the LoRaWAN® standard, it is capable of enabling real-time data and analytics communications.

LoRa enables smart IoT solutions for low-powered devices and is used in energy management, natural resource reduction, pollution control, infrastructure efficiency, disaster prevention, and more.

As many as 1,000 IoT-exclusive LoRa base stations will be installed in public buildings such as community centers.

Of these, 195 are slated to be installed in the districts of Eunpyeong, Guro, and Seocho. These cities are currently carrying out pilot tests, whereas the other LoRa stations will be split across 19 district offices in 2022, and three district offices in 2023.

Public IoT Network Part of Seoul's Smart City Plans

These efforts to establish a city-wide IoT network are part of the Seoul government's 102.7 billion won (US$ 85.8 million) investment into establishing a "Smart Seoul Network" (S-Net).

Unveiled in 2019, the plan was expected to unfold over three years. The government is addressing pain points in the city such as widely available, free public Wi-Fi (on the Wi-Fi 6 standard) covering 4,237 kilometers, with a priority on installation in densely-populated regions.

By 2022, they intend to increase the number of public Wi-Fi access points (APs) by over 200%. With over 6 million residents, the costs savings are expected to be immense.

On a per-resident basis, the annual communications cost savings are projected to come up to 630,000 won (US$ 527) upon completion of the project. Annually, total savings in communications costs are expected to be around 3.88 trillion won (US$ 3.25 billion).

Korea's 5G to Support Its IoT Efforts

Seoul's IoT efforts seem right on time, as South Korea has established itself as an APAC leader in 5G deployment.

5G technology will be the key to help realize the full potential of IoT, as it promises high data rates, ultra-reliable transmission, and extremely low latencies.

This is especially pertinent when it comes to Industrial 5G, which will improve efficiencies and flexibilities for industrial players, as well as critical industries.

South Korea an APAC Leader in Smart City Development

In 2020, Seoul launched the country's first block chain-based digital driver ID, with over a million drivers eagerly signing up for the service.

Other than Seoul, South Korea has embarked on several other Smart City initiatives, with the most recent being the use of a decentralized identity system based on block chain for citizen identity management in the city of Busan.

As part of Korea's smart city strategy, the government has embarked on appointing special zones that have been strongly deregulated in the pursuit of various technological testing.

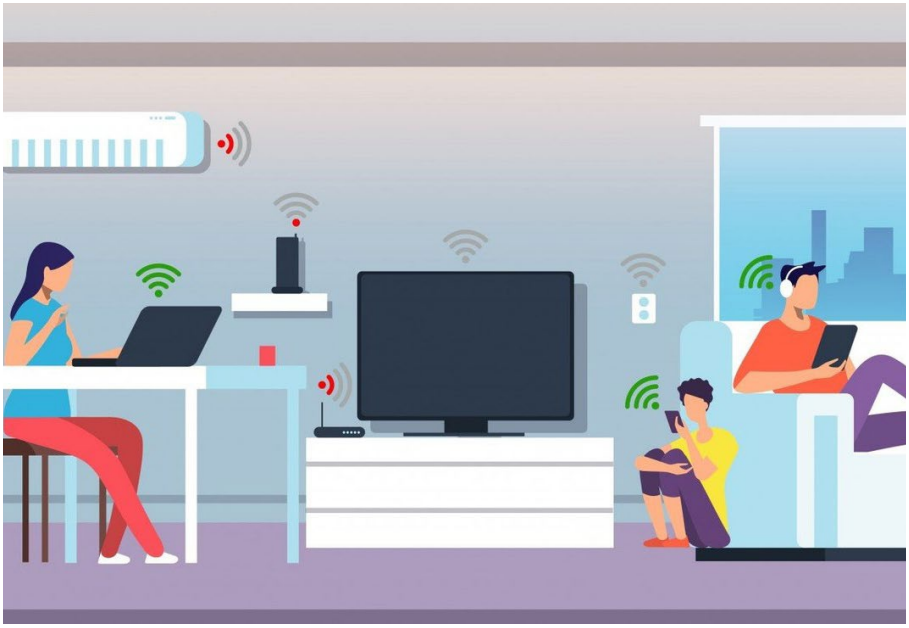
Busan's block chain zone is the latest in a series of "regulation-free zones" designated by the government in order to experiment with varying technologies and innovations.

Six other zones have been established in various parts of the country.

They include Gangwon-do (digital healthcare); Daegu City (smart wellness); Sejong City (autonomous driving); Jeollanam-do (e-mobility); Chungcheongbuk-do (smart safety control), and Gyeongsangnam-do (advanced battery recycling).

Source: techwireasia.com

How IoT Will Unlock Smart Living's Limitless Possibilities That Lie In Our Imagination



- Smart home industry – valued at US$826 million in 2019 – is expected to be worth US$3.28 billion by 2027
- Sharp growth in number of IoT appliances puts need for uninterrupted and reliable connectivity in limelight

Fast, stable and reliable internet connections are becoming more important in the home as people rapidly integrate smart everyday physical objects, such as air conditioners, refrigerators and security cameras, which are embedded with sensors, software and other technology that can exchange data online, into their lives.

As we enter the era of the Internet of Things – the network of everyday physical objects embedded with sensors, software, and other technology that can send and receive data from other computing devices over the internet – the global smart home industry is seeing exponential growth.

This market, which was valued at US$826 million in 2019, is expected to be worth US$3.28 billion by 2027, market research company Verified Market Research reported in June.

"IoT is about taking the existing products that are already there and making them better," Daniel Cooley, chief technology officer at Silicon Labs, an American tech service provider, said.

Demand for smart IoT technology has grown since the COVID-19 pandemic forced people to spend more time at home. Photo: Shutterstock

"It's about trying to make [the existing products] better, based on context, preferences and what you want to do with them."

Technology helps spark smarter living

Intelligent refrigerators already keep an inventory of their contents and send out phone alerts when certain items are running low, while smart mirrors that keep stock of the clothes in your wardrobe, and make recommendations about what to wear when you are going out, are no longer a new concept.

However, since the COVID-19 pandemic forced people to spend much more time in their homes, there has been a huge surge in demand for using new technology in living spaces to improve their quality of life.

Sarah Housley, head of consumer technology at WGSN, a trend forecasting agency, said: "All of these technologies that were projected for the next decade are coming much faster than we anticipated as consumers are becoming much more comfortable using them, wanting to buy them, and looking to invest their money in them."

Growing consumer interest in smart, voice-controlled household products led to sales of these items rising by almost 61 per cent last year compared with 2019, German market research company Growth from Knowledge reported in March.

It said the pandemic sparked a 41 per cent surge in demand in Europe last year for smart hygiene and health products, such as robot vacuum cleaners, personal diagnostics equipment and fitness trackers, compared with the year before, and a 71.5 per cent increase in purchases of smart cooking appliances, including a 48.2 rise in sales of intelligent built-in hobs.

Daniel Cooley, Silicon Labs' chief technology officer, said IoT technology is being used to improve existing products used in the home.

The rapid evolution of IoT technologies will also lead to voice-controlled virtual assistants, such as Alexa, eventually becoming redundant once all smart household products are designed to communicate with one another.

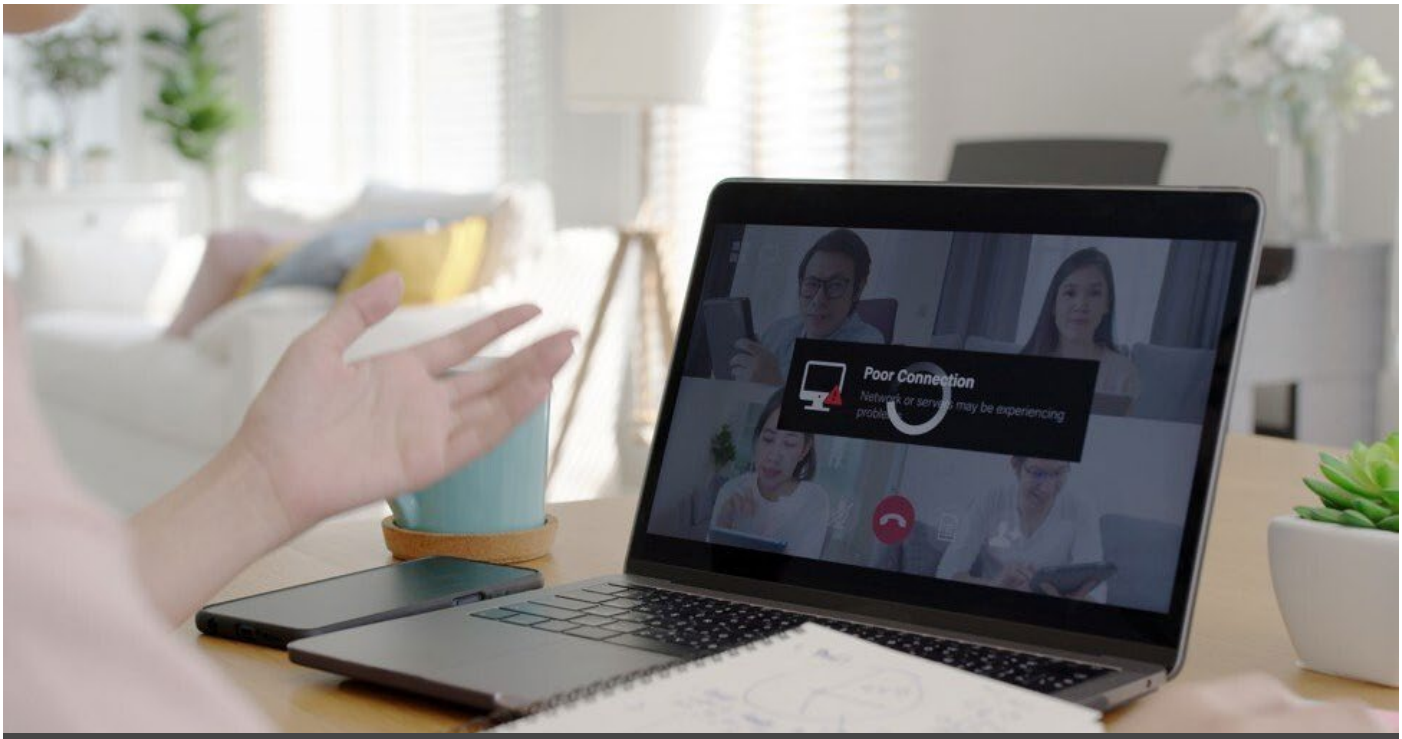
In a more fully integrated smart home, when the lighting system's motion sensor detects that no one is at home, it may "tell" the air-conditioning unit to switch off, or if the IoT network senses unusual movement, a security alert will be sent to your smartphone.

Greater need for reliable and secure connectivity

As IoT becomes increasingly integrated into our lives and people spend more time working from home, there will be greater focus placed on the reliability of wireless networks and issues such as cybersecurity.

Cooley said: "These [IoT] devices are always collecting data. The privacy issue is a real one here."

The hacking of household data from IoT devices could lead to malicious attacks, he said. A thermostat that can detect occupancy status inside a house might be hacked by someone who wanted to break into the property, rather than simply accessing the residents' private information, such as personal details and contacts, messages and even shopping habits.



Poor internet connections can lead to a variety of problems, including the disruption of video conference calls while people are working from home. Photo: Shutterstock

"Even though we are starting to see the tech being used and adopted, the next challenge will be around privacy and trust," Housley said. "Tech companies [need to devote] lots of work into designing products that customers feel they can trust."

With IoT devices becoming more widespread and increasingly sophisticated, the stability and reliability of internet connections have become paramount. Connectivity failures can sometimes cause physical risks, such when a smart lock is left open, a home security alarm goes offline, or the thermostat controlling your home's central heating stops working while you are away, leaving pipes to freeze in the winter.

These kinds of issues are constantly being discussed in online forums, such as Reddit and Tom's Hardware, with users complaining about connection problems leading to the malfunctioning of security cameras, thermostats, and other home smart devices. Up to 83 per cent of IoT manufacturers raised concerns about the impact that system or network failures can have on their products in global consultancy Marsh & McLennan's 2018 report, titled "Internet of Things: Limitless Connections – and Ways to Fail".

For people who want to build up well-functioning home offices, the "coverage, stability, and capacity" of their internet connections are of particular concern, Simon Long, director of workspace technology at CBRE, an American property services company, said.

There have been times when Long has had to come up with Wi-fi designs for traders who demanded strong coverage – even in their bathrooms – because they could not afford to lose their internet connection, even for a second.

"It's gone from 'How quickly can I download Netflix?' to 'Can I sit in the bedroom with my laptop and have a stable video call that doesn't get cut out every minute?'" Long said. "This is a very different internet coverage model."

Simon Long, CBRE's director of workspace technology, says internet 'coverage, stability and capacity' are important for people who want to set up well-functioning home offices.

The COVID-19 pandemic has caused a surge in online activity, which is likely to be because of the increased use of virtual meeting tools and a sharp increase in e-commerce sales. Nicholas Bloom, an American economist at Stanford Institute for Economic Policy Research, said in June last year that his study, titled "How Working from Home Works Out", showed the "US economy is now a working-from-home economy", with 42 per cent of American workers polled working from home full time.

"Working from home will be very much a part of our post-COVID economy," he said, adding that policymakers should ensure broadband service is expanded so that more workers can do their jobs away from a traditional office in the future.

The trend towards more people working from home around the world has led to other countries acknowledging the need to increase bandwidth connectivity.

In South Korea, internet traffic rose by 13 per cent in March last year compared with January that year. British telecommunications company BT reported a 35 per cent to 60 per cent increase in weekday daytime traffic early in March last year compared with previous weeks, while Spain's telephone operator, Telefonica, reported an almost 40 per cent rise in bandwidth demand and a 50 per cent rise in mobile data traffic in the first weeks of the nation's lockdown last year.

HyperConn technology ensures IoT devices are always getting the best signal, which helps homeowners keep an eye on their houses without the worry of network lapses. Photo: Shutterstock

Navigating the superhighway

"IoT consumers don't care what network they are on," said Victor Xu, chief sales officer at uCloudlink, a wireless service provider, which has its headquarters in Hong Kong. "They just want a fast, stable, and reliable internet [connection] at an affordable price."

One of uCloudlink's leading products, HyperConn, allows users to switch smoothly between available networks – including 4G and 5G mobile signals and fixed broadband coverage – without any disruption. It connects to a host of devices with a family router and allocates a proper amount of internet resources to each device by analyzing IoT activities.

Victor Xu, uCloudlink's chief sales officer, says IoT consumers are most concerned about using a fast, stable and reliable internet connection.

To help smart living in the home, HyperConn can be integrated seamlessly and play a key role in home entertainment, online education and remote work. In addition to keeping stationary IoT household appliances fully connected at all times, it can also help households balance internet usage between the needs of family members, such as parents and children, Xu said. As the post-pandemic "new normal" has shifted everything online, there can often be "fights" for the best Wi-fi signal at home as they take part in online meetings and remote classes.

As users move around the home with their connected devices, the artificial intelligence-enabled technology will determine the best routing strategy for each of them by switching to the best performing network at a particular location at a given time, making sure that all the available signals are fully used.

When installed on mobile devices, HyperConn strengthens communications between homes and the homeowners by providing uninterrupted internet connections, Xu said. When users are out running errands, it will keep detecting all available internet signals in the changing surroundings and allow them to remotely control household IoT devices without interruption, which is especially important for things such as home security.

As a tech executive, Xu is no stranger to cutting-edge smart devices. He wears a pair of smart glasses with a Bluetooth function to connect him to all of his smart home devices, which can act like headphones with a simple tap on the frame with his finger.

He believes IoT will have unlimited potential in the smart homes of the future and imagines that one day almost all household appliances will be intelligent enough to truly understand humans. They will be able to take care of our health, like a doctor, when we are at home, enrich our entertainment experiences, with a holographic stage appearing in front of us after no more than a simple voice command, and work and communicate with us just like our peers.

"In the foreseeable future, we can achieve all of these," Xu said.

Source: www.scmp.com

Cellular IoT Network and Infrastructure Redundancy

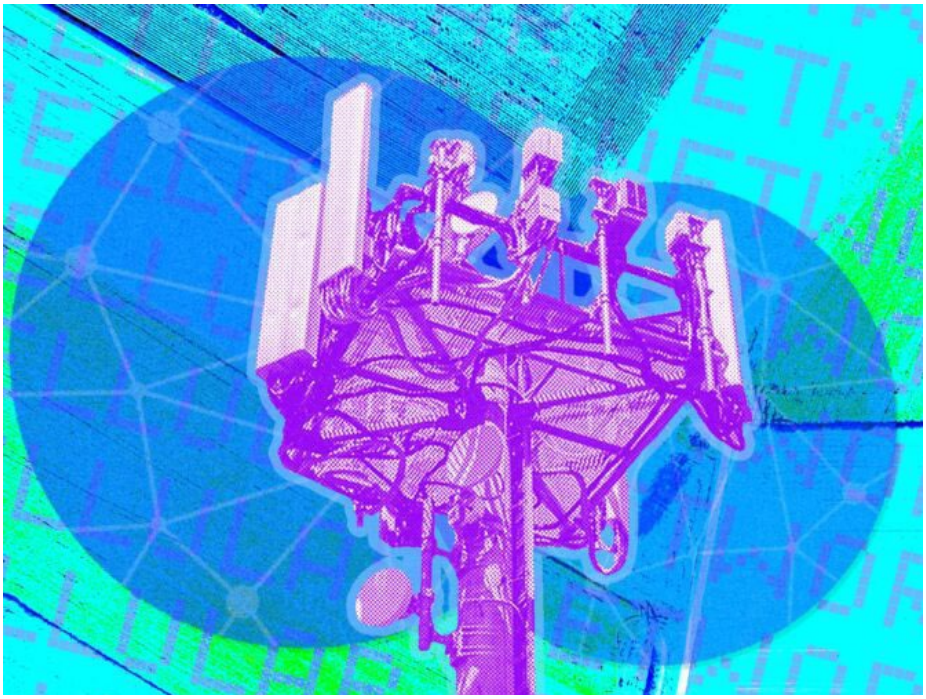


Illustration: © IoT For All

If you've been following along in this blog series, you've seen how cellular connectivity can be ideal for IoT solutions in logistics, manufacturing, security, asset tracking, among myriad other industries. You've also learned what "cellular IoT" really means and some of its associated advantages.

Today I want to take a brief look at another de facto advantage of cellular, which is the utilization of an underlying infrastructure built up over decades.

An overlapping, interconnected mesh of connectivity, if you will:

Specifically, we are going to look at the topic of *redundancy* and its relation to cellular IoT. How prepared are you for all possible remote deployment scenarios throughout the lifespan of your IoT deployments? Are you banking on a tried-and-true connectivity method?

In this blog series, we are demystifying cellular and taking a critical look at four key topics related to wireless in the Internet of Things:

- What is Cellular IoT?
- The Advantages of Cellular IoT
- Common Use Cases for Cellular IoT
- Cellular IoT Network and Infrastructure Redundancy (that's today)

Why Redundancy is Critical for IoT

What *does* happen if your device loses network connectivity? Can it still perform the tasks that it was built to do? Or does data accumulate in storage until the device is full, and then it fails hard?

Regardless of the *why* of a failure, your end users are less likely to blame their Wi-Fi routers and more likely to blame you, the device provider, for not account for all outage scenarios.

This is why redundancy is a critical component of proper cellular IoT deployments. With a contingency plan for every predictable failure point, you can maximize availability and reduce the impact of negative network issues. Even if you're banking on Wi-Fi, wired Ethernet, or LoRaWAN, cellular can (and should) be a key consideration when crafting a fallback or redundant network solution.

Redundancy is important with the devices themselves, yes, but it's just as important to work with a mobile network operator that considers redundancy at a higher level.

Cellular Network Redundancy

Many cellular IoT providers offer SIM cards limited to a single mobile network operator in a single geographic area. If this is the case, how do you deploy to rural areas with coverage on another network, not to mention other countries entirely?

A proper cellular IoT company will offer solutions that work with highly-regarded providers and their first-class partners in neighboring regions. When you can't predict the country of deployment or the solution itself is meant to travel between geographic regions, a seamless reconnection from network to network is critical.

It's also important to factor in which wireless standards your IoT module is using. For example, if you're moving from a region with primarily GSM support to LTE, will your solution gracefully recover?

Cellular Infrastructure Redundancy

If you consider a traditional Wi-Fi or wired Ethernet deployment, your network relies on a single node or gateway to function. Your devices will only be connected to the network as long as that centralized connection point is also live.

Cellular, on the other hand, has a massive advantage in terms of overlapping tower coverage. If access to one cell tower is lost, there is a high probability of another tower taking over (albeit with possibly a weaker signal, but a signal nonetheless).

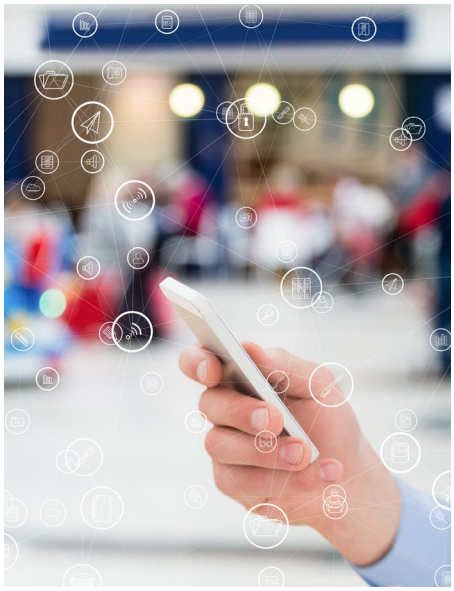
With this method of overlapping cell tower zones, your devices will always have a fallback connection should a centralized access point go down.

Cellular Security

There is always an inherent risk with connecting to the Internet. We constantly work to mitigate those risks with SSL certificate verification, robust authentication protocols, VPNs, and the like.

Cellular holds numerous security-related advantages for those of us building in IoT:

- Mobile networks securely authenticate devices via SIM cards.
- Devices don't "share" the network like they do on Wi-Fi, so they can't interact with each other.
- Cell network firewalls can limit device connectivity to only core functions.
- Device manufacturers can provide a VPN tunnel from device to cloud without exposing it to a public Internet connection.



Summary

Using an IoT connectivity option with redundant network, infrastructure, and security is paramount. Cellular IoT is the best choice for a wide range of IoT applications, and the baked-in advantages of utilizing an existing mature network can't be understated.

Source: www.iotforall.com

5 Ways 5G and IoT Could Help Change the World

GETTY

New advances in technology are generally targeted at making our lives better, but any improvement will fall short if it fails to help us preserve and improve the world.

Even before the pandemic hit, the clock was already ticking on our ability to avert an impending climate crisis. The pandemic has given us some additional challenges in terms of balancing economic recovery with environmental sustainability, but it could also be viewed as offering an unprecedented opportunity.

Fortunately 5G has been designed from the outset as a more energy-efficient technology than its predecessors, and it also has the potential to unlock broader environmental stewardship by means of a number of forward-looking use cases. By enabling behavioral changes, such as allowing larger numbers of people to work from home or almost anywhere else (WFX) and by improving fleet management for efficient transport, 5G could both directly and indirectly support measures that improve the quality and management of water, air and soil, and also nurture other key parts of the environment like forests.

Here are just five ways 5G can make a difference to the world and its inhabitants:

1. Better-Managed Energy and Smarter Government Services

Smart energy management has long been recognized as one of the key benefits of smart cities. For example, commercial landlords can use the 5G-powered Internet of Things (IoT) to conserve energy when areas of buildings are unoccupied. Connecting devices that monitor and map usage allows energy companies to balance the consumption needs of businesses and consumers with the outputs of renewable energy sources like wind and solar power. Utilities can thus minimize the need to draw power from fossil-fueled power stations and ultimately plan for a virtually carbon-free future energy model.

Governments, meanwhile, are planning to use 5G IoT to efficiently and cost-effectively deliver core services like monitoring critical infrastructure, improving energy efficiency, managing road traffic and enhancing public safety. According to a report published last year by the Deloitte Center for Government Insights, carriers are working with port authorities and governments to test the ability of 5G-enabled networks to automate cargo handling, direct ship traffic and manage energy use at ports.

2. Less Pollution from Vehicles

While some government plans call for electric-powered vehicles to gradually replace those running on petroleum-based fuels, much can be done now to reduce emissions. 5G-connected vehicles can stream data back to their manufacturers from the vehicles' sensors on maintenance status—for example, identifying when brake pads are wearing thin and need replacing. Combining this data with data on usage patterns could

allow over-the-air software adjustments to optimize performance and fuel efficiency. In the future, sensors will interact over 5G with sensors in other cars and pieces of infrastructure. Known as Cv2x (cellular vehicle-to-everything) communication, this technology will help pave the way for fully autonomous vehicles. Even now, anonymized 5G data picked up by the T-Mobile network can highlight areas of slow-moving traffic in real time, allowing a connected car to suggest the best route, keep moving and save fuel, reducing emissions in the process.

Ride-hailing and ride-sharing apps, which became popular in the 4G era, are expected to develop a new cloud-based edge computing infrastructure using 5G. This low-latency connection could be used for intelligent driving assistance and to enhance safety by providing the driver with updates on road and traffic conditions. At the same time, an AI-powered personal assistant could improve the passenger experience with information services and streaming video.

3. Conserving Resources and Reducing Waste

According to the Environmental Protection Agency, household leaks in the U.S. waste around 900 billion gallons of water each year, equivalent to the yearly consumption of nearly 11 million homes. Smart water sensors connected to the 5G-enabled IoT can detect not only leaks, but also water pollution and contamination. The scale of 5G means that larger and more sensitive sensor networks can be deployed, conserving and optimizing water use for businesses and public organizations. On a wider scale, sensors can optimize agricultural water use, as well as the use of fertilizers and pesticides, by combining weather data with data on soil and crop conditions to help farmers deploy resources better, work more efficiently and reduce their impact on the environment.

Food waste also wastes the energy and water that went into producing it. Wastage of food products can be reduced not only on the farm by 5G agritech, but also along every stage of the supply chain through the use of 5G smart tags that make each item traceable as it moves via the factory to the consumer, matching market needs while ensuring quality. For example, tagging vegetables with the time and date of harvesting, and updating the tag with the actual storage temperature on their journey to the food store, would allow more meaningful expiration dates to be applied.

4. Emergency and Humanitarian Aid

The 5G-powered IoT allows sensors in areas vulnerable to flooding or wildfires to transmit early-warning data, potentially saving lives—and protecting property and the environment—by allowing mitigation measures to be triggered and coordinated. In the case of fire, 5G not only improves communication among firefighters and other agencies, but 5G-powered augmented reality tools like smart helmet visors can allow firefighters to see right into the heart of the fire, cutting through the smoke and flames. Video analytics data that travels on 5G networks reveals heat levels and the chemical composition of the gases being emitted by burning material, providing unprecedented insight to firefighters.

When natural disasters occur, or in areas of the world where conflicts are happening, supplementary 5G connectivity for emergency communications can be rapidly installed using drones, putting citizens and response teams back in touch with each other, as well as enabling humanitarian aid to be deployed more effectively.

5. Safeguarding Natural Habitats

Forests play a huge part both in conserving the environment and in making life healthier and more pleasant for the population. In addition to keeping forests and their indigenous wildlife safer from fire, IoT sensors can also monitor the health of trees, alerting to dangers from pollution, disease or lack of water. An early pilot for this kind of application is taking place in the iconic Sherwood Forest in England, where 5G is contributing to the preservation of forests while enriching the experience of visitors.

5G-connected water-quality monitors in rivers and streams, meanwhile, not only help ensure safer drinking water for communities, but also help protect aquatic life by alerting authorities to discharges containing unhealthy levels of nitrate.

Beyond the automotive and transportation industries, nationwide 5G lays the foundation for businesses to build what's next. From more efficient field operations to smarter cities, see what the 5G future could look like—and why choosing the right network provider matters.

Source: www.forbes.com

Verizon Shows Off 5G-Connected Robots at Barcelona Conference

A robot is pictured during the Mobile World Congress (MWC) in Barcelona, Spain, June 28, 2021. REUTERS/Albert Gea

Verizon showcased two robots on the stage of the Mobile World conference, saying that bots use 5G connectivity and mobile edge computing to communicate with each other.

Edge computing uses augmented reality and machine learning to analyse bulk data where it was gathered - whether factory floor, oil rig or office space - and requires fast data transfers of the kind that only high-speed 5G signals provide.

"When you have more than one robot on the floor, you run into a problem, as these are still just machines, and they can't naturally communicate with one another," Verizon's Chief Strategy Officer Rima Qureshi said at the event in Barcelona.

"5G will make h as factory floors more efficient through automation, with remote monitoring cutting costs and the need for plant infrastructure.

Rima Qureshi, EVP Chief Strategy Officer of Verizon, stands next to robots, as she gives a speech during the Mobile World Congress (MWC) in Barcelona, Spain, June 28, 2021. REUTERS/Albert Gea

As part of the demo, Qureshi beckoned at the stage's wings and two robots emerged: One dog-like robot called Gigi - after 5G - that walked stiffly on four legs, and a second boxy bot named Mekeal - a nod to mobile edge computing, or MEC - which rolled in on traction wheels.

To train the robots to become aware of their environment beyond a two-dimensional route that cannot account for elements beyond origin and destination points, Qureshi said engineers had jumped in front of them, sent other robots in their path and thrown boxes in their path.

"I'm happy to report that neither engineers nor robots were harmed in the process," Qureshi said.

The market for the global 5G in the cloud is expected to reach US$10.6 billion by 2028, growing at 79.2 per cent annually, Research and Markets stated in a recent report.

Verizon is also working on connected drones that could be deployed at locations hit by natural disasters, avoiding putting a human in danger and controlled by a single operator from hundreds of miles away, with live video and thermal imagery available to anyone in the world.

With 4G networks, drones were able to fly into US fire zones without on-site personnel and to send data, almost in real-time, to staff 4,000 miles away, but with 5G, Qureshi said, drones could stream panoramic video to multiple recipients, who could each focus on different aspects of the image simultaneously.

Source: www.channelnewsasia.com

Changi Airport to Use Autonomous Tractor to Transport Baggage to Aircraft

The EasyTract autonomous baggage tractor being tested at Changi Airport Terminal 3 on Aug 13, 2021. (Photo: Zhaki Abdullah)

From next month, an autonomous baggage tractor will join its manned counterparts in serving flights at Singapore's Changi Airport, as part of a trial of such driverless vehicles.

The driverless tractor, which has a maximum speed of 15kmh, will be able to pull up to four unit loading devices - containers used to load luggage onto aircraft - from the baggage handling area to the aircraft bay.

The TractEasy - jointly developed by aviation ground support equipment manufacturer TLD and driverless vehicle firm EasyMile - is equipped with a bevy of equipment such as lidar (light detection and ranging) sensors, cameras and antennas for GPS as well as 4G and Wi-Fi.

The TractEasy is currently configured to be able to pull up to six tons of baggage. (Photo: Zhaki Abdullah)

These allow its location to be tracked, with accuracy to within a centimeter, said Ms Juliette Chia, a senior associate with the Changi Airport Group's (CAG) airside transformation office.

In 2019, EasyMile was part of a self-driving shuttle bus trial on the National University of Singapore campus, together with transport operator ComfortDelGro and vehicle dealership InchCape.

A demonstration of the TractEasy was conducted for members of the media at Terminal 3 on Friday (Aug 13), ahead of its use to support live flights.

In October last year, the vehicle was first tried out at Terminal 4 - where flights have been suspended since May last year - to test its ability to follow mapped routes in an environment without other vehicles, said Ms Chia.

The tractor was subsequently tested in a "live" environment at Terminal 3, to test its ability to avoid moving obstacles.

"We've just completed the proof of concept, and we're moving towards live flight operations with our ground handling partners, mainly SATS, to see how this tractor can supplement existing live flight operations," said Ms Chia.

The TractEasy is currently configured to be able to pull up to six tons of baggage, said Ms Chia, adding that this can be increased in future.

She added that CAG hopes to add two other such driverless baggage tractors to the trial in October.

Ms Chia said that baggage tractors were chosen for the trial as they make up about half of all vehicles on the tarmac at Changi Airport. There are currently about 400 manned baggage tractors at Changi Airport.

Noting that a single flight is typically served by multiple baggage tractors, a fleet of three autonomous tractors would be a "meaningful number" to test their use in turning around flights, she said.

This is in line with CAG's vision of an airport of the future, where airside workers work in higher value-added jobs, supported by autonomous vehicles.

"Changi Airport believes that autonomous vehicle technology and robotics will play a big part in the airport of the future," said CAG executive vice president for airport management Tan Lye Teck.

"This trial will help us to understand the requirements for safe driverless transportation and help us understand how best to redesign operational processes accordingly," he added.

Source: www.channelnewsasia.com

Breakthrough Robotics System to Tackle the World's Most Hazardous Environments

A consortium of leading UK businesses and academics announces the launch of Connect-R – a world-first modular robot specifically designed to undertake missions and build emergency structures in the most hazardous environments on the planet.

Connect-R is an industrial-scale, self-building robotic structure for use in unsafe working conditions, where environmental radioactivity, a lack of a breathable atmosphere or concerns over structural integrity significantly increase the risks posed to human life.

Its self-building capability removes the need to deploy people in hazardous environments and promises to reduce the huge risks associated in nuclear decommissioning, oil and gas mining, and building structures in outer space.

Connect-R is built to withstand radioactivity, intense heat and cold, high pressure, high levels or acidity and alkalinity, and can operate in a complete vacuum, eliminating the cost of building and replacing fragile robots and drones.

The robotics system is made up of Meccano-like sections that use artificial intelligence to plan the build sequence and are controlled by a combination of hydraulics and electronics with in-built local-sensing.

The 'body' it builds is used to lay down infrastructure for further operations or to support compromised structures – such as the roofs of earthquake-damaged buildings or ageing nuclear material storage tanks.

Andy Barr with Connect-R

Each module is capable of extending from 1.5m to 2.5m, and building structures as big as entire buildings, factory floors or spacecraft.

The system also comprises a reconfigurable, smaller 'Multi-Task-bot', which assists the build by carrying and positioning system elements, as well as performing construction tasks and undertaking maintenance on the main modular structure.

Powered by sophisticated AI, this device autonomously assesses the environment and directs movement.

A major breakthrough in UK engineering and robotics, the project received £6m in funding from Innovate UK. This was the second largest investment ever made by the UK Government's innovation agency and formed part of 'Robots for a Safer World', a £93m challenge launched in 2017 as part of the UK's Industrial Strategy Challenge Fund (ISCF).

Three-years in development, Connect-R represents a significant step in the use of automated systems and is the first large-scale robotics system of its kind for use in accessing environments with limited entry points or operating around unstable structures.

A series of world-first engineering and technological developments were achieved as part of the project's development, including:

- Artificial Intelligence Path Planning: using symbolic planning to enable a service robot to work a previously unreachable area in a 3D space.
- Hydraulics: a new micro hydraulic component design to cope with intense loads relative to size and enable modular units to move in all directions
- Genderless connectivity: 'genderless' connections that interlock and connect modules across flat planes, as opposed to standard male and female ports
- Hydraulic Control Architecture: hydraulic circuits allow packaging of valve and control elements in small spaces.

Led by Barrnon, the project saw key figures from across the UK's community of academics and technologists come together to push the boundaries of robotics. Key personnel include Andy Barr (Barrnon), Dr Sara Bernardini (Royal Holloway), Philip Norman (ROSS Robotics), Dr Adam Stokes (Edinburgh Centre for Robotics), Dave Swan (Tharsus), Chris Vaissiere and Tim Evans (Jigsaw Structures) and Michael Hellebrand (RACE).

Andy Barr, founder and managing director at Barrnon, said: "It started as an idea, then became a concept, and now it's deployable in harsh radioactive environments. It's the culmination of lots of hard work from the team and many stakeholders.

"I am proud of it as it's a step-change in robotic accessibility."

The Connect-R project was built around Barrnon's experience in the removal and extraction of waste from highly radioactive environments, in addition to ROSS Robotics's expertise developing modular, reconfigurable robots in the large Hadron Collider at CERN, and which have previously inspected and analyzed contaminated zones at Chernobyl.

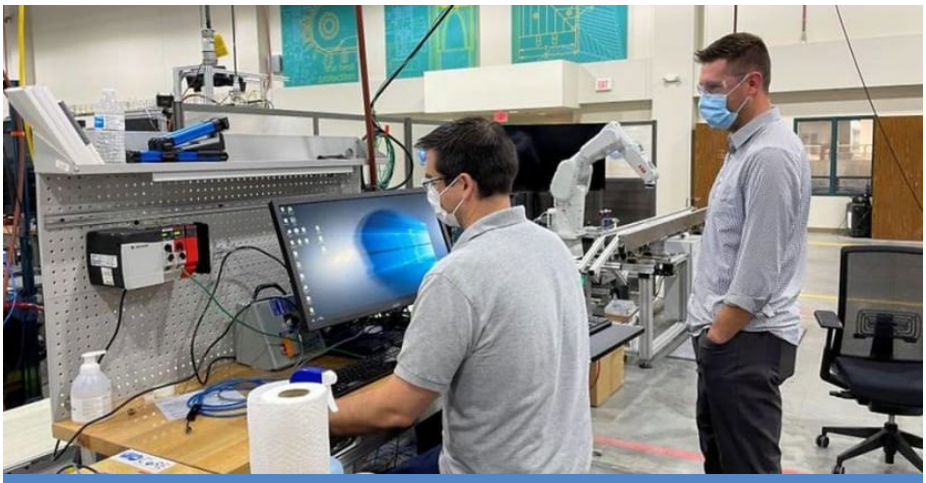
Tharsus, the UK's leading designer and manufacturer of commercial robots, acted as consultants, providing engineering and development support alongside Jigsaw Structures, which undertook design and analysis work.

Royal Holloway University of London led the AI element of Connect-R, while the University of Edinburgh's Centre for Robotics led the development of its control systems.

Website: Source: www.cwherald.com

Getting the Cap on the Bottle:

Inside P&G's Robot Ambitions



Researchers test new robots at Procter & Gamble's corporate engineering laboratory in Cincinnati, Ohio, U.S., May 27, 2021. Picture taken May 27, 2021. REUTERS/Timothy Aeppel

Procter & Gamble Co may be best known for laundry detergent and toothpaste, but its secret sauce is arguably figuring out how to do things like get two red bottles of Olay skin lotion into blister packs as cheaply and accurately as possible.

Procter & Gamble Co may be best known for laundry detergent and toothpaste, but its secret sauce is arguably figuring out how to do things like get two red bottles of Olay skin lotion into blister packs as cheaply and accurately as possible.

That task is currently done by hand at its factories.

But at one of the conglomerate's secretive robotics labs on the outskirts of Cincinnati, researchers have programmed a robot to do the job.

It's a surprisingly tricky maneuver for a machine. The robot arm plucks two bottles at a time from a box and lays them into the dimples with the labels facing forward so they're visible when the package is sealed.

"That's the key - getting the labels exactly oriented," said Mark Lewandowski, director of robotics innovation at P&G's global engineering center, pointing to the test line he's set up inside the facility. "We'll be rolling this out in the next month or two" to P&G's factories, he said.

Many companies make consumer goods. Yet it's ones who can make them the most eye-catching for consumers, and do it as cheaply as possible, that do best.

In that regard, P&G is a model and its use of high-speed automation and robots is a key to its success. P&G is the world's largest consumer-goods maker and dominates many of its businesses. For example, analysts estimate its Bounty brand accounts for 40per cent of all paper towels sold in the United States. Investors appreciate its steady profits and dividends. The company has raised its dividend 65 years in a row.

To be sure, P&G is mainly known as a branding expert, not a designer of factory machines. But developing key pieces of its own automation has helped it compete in businesses where shaving fractions of a penny off the cost of making each Pampers diaper and Gillette razor blade is essential.

And the pressure to cut costs is stronger than ever. Like other manufacturers, P&G is pushing through price increases to offset a surge in raw material and shipping costs.

"In commodity businesses like P&G's, price is everything," said David Autor, an economist at the Massachusetts Institute of Technology who studies the impact of automation. "For that kind of business, you need scale and efficiency," and that means staying on the cutting edge of production technology.

A plant wall with Procter & Gamble's logo is pictured at the entrance to the company's highly automated cleaning products factory in Tabler Station, West Virginia, U.S., May 28, 2021. Picture taken May 28, 2021. REUTERS/Timothy Aeppel

A robotic arm holds a sign for Procter & Gamble's CoRE Fabric and Home Care Robotics Laboratory in Cincinnati, Ohio, U.S., May 27, 2021. Picture taken May 27, 2021. REUTERS/Timothy Aeppel

GETTING IT INTO A BOX

Lewandowski's lab, tucked in a nondescript brick building surrounded by suburban shopping plazas, works on robots that could end up in a factory at any one of P&G's six main business units. The robot that handles Olay bottles, for example, was developed as part of a larger challenge of creating machines and grippers that can handle bottles and tubes of many shapes and sizes and get them into increasingly complex packaging.

"Everyone talks about the Amazon challenge - the gripping and picking," said Lewandowski, referring to the online retailing giant. But for P&G, it isn't enough to just get a bottle into a box.

Consumer products designers are constantly dreaming up new shapes and sizes of containers, sometimes adding features like pour spouts or clamp-down lids, to help products stand out on grocery shelves. That can mean costly adjustments to machinery every time a line switches to a new product.

The COVID-19 pandemic has sped up the development of some new automated systems. At many P&G factories, Lewandowski noted, clusters of hourly workers come together - often shoulder to shoulder - to assemble special assortments or the cardboard displays that highlight products at the end of grocery aisles.

"People are still the ultimate machine" for that job, he said. But over the past year, he's found ways to automate more of it - in part to aid social distancing. This push to automate this hand work is likely to continue beyond the pandemic, he noted, because P&G's factories are struggling to find workers willing to do these jobs in tight labor markets.

NOT FOR EVERY JOB

In addition to Lewandowski's lab, P&G operates a network of separate research centers that focus on automation problems unique to each business.

A few miles away, for instance, is a research center devoted to the fabric and homecare business. This lab, with a huge vintage advertising photo of a woman hanging up laundry on a clothesline in the entry, has existed for three decades. But only in the last five years has it created a section that focuses on pure robotics rather than more generic automated machinery.

Roger Williams, the lab's technical director, estimates that only 20per cent of the automation in P&G's factories involves true robots, which are slower than "fixed automation" such as machines that squirt detergent into a bottle or fasten caps. But that is up from 10per cent a decade ago.

Williams said he always has a "hit list" of 15 projects on the floor of his lab, each aimed at determining the feasibility of using robots for a given task. He was recently asked, for instance, to determine if a robot could stuff bags of powdered detergent into boxes - a relatively new type of packaging for their Tide brand.

"That one didn't move forward," he said. While it was possible, the cost to install and program the robots didn't justify the investment for a relatively small-volume item.

FLEXIBILITY AND AGILITY

Another project, still underway, is aimed at finding a way to move a new bottle cap type onto the detergent-bottle filling assembly line. That is typically done with an "unscrambler," a mechanism that shakes and turns piles of caps until they are oriented to feed into the filling machine. The new caps can't go through that because they include a delicate device that could be damaged.

"We're working on a robot that will pick up 40 caps at a time and index them into the final system," he said.

At one of the company's newest plants, in Tablers Station, West Virginia, robots dot the production floor. On a recent day, fast-moving arms were plucking pink Pantene hair conditioner tubes and placing them onto a line to be filled.

"We're always looking for places where we need flexibility and agility," said Jim Utter, a project manager at the plant. One of the big opportunities he sees is adding more mobile robots, which could be used to move bundles of parts between different parts of the plant. The newest models can find their way around unexpected obstacles, rather than relying on fixed tracks.

"That's essential in place like this, where everything is always moving," he said.

Source: www.channelnewsasia.com

The Robot Apocalypse Is Hard To Find In America's Small and Mid-Sized Factories

When researchers from the Massachusetts Institute of Technology visited Rich Gent's machine shop here to see how automation was spreading to America's small and medium-sized factories, they expected to find robots.

A worker operates one of the metal cutting machines at Gent Machine Co.'s factory in Cleveland, Ohio, U.S., May 26, 2021. REUTERS/Timothy Aeppel

When researchers from the Massachusetts Institute of Technology visited Rich Gent's machine shop here to see how automation was spreading to America's small and medium-sized factories, they expected to find robots.

They did not.

"In big factories - when you're making the same thing over and over, day after day, robots make total sense," said Gent, who with his brother runs Gent Machine Co, a 55-employee company founded by his great-grandfather, "but not for us."

Even as some analysts warn that robots are about to displace millions of blue-collar jobs in the U.S. industrial heartland, the reality at smaller operations like Gent is far different.

Among the 34 companies with 500 employees or fewer in Ohio, Massachusetts and Arizona that the MIT researchers visited in their project, only one had bought robots in large numbers in the last five years - and that was an Ohio company that had been acquired by a Japanese multinational which pumped in money for the new automation.

A worker operates one of the metal cutting machines at Gent Machine Co.'s factory in Cleveland, Ohio, U.S., May 26, 2021. REUTERS/Timothy Aeppel

In all the other Ohio plants they studied, they found only a single robot purchased in the last five years. In Massachusetts they found a company that had bought two, while in Arizona they found three companies that had added a handful.

Anna Waldman-Brown, a PhD student who worked on the report with MIT Professor Suzanne Berger, said she was "surprised" by the lack of the machines.

"We had a roboticist on our research team, because we expected to find robots," she said. Instead, at one company, she said managers showed them a computer they had recently installed in a corner of the factory - which allowed workers to note their daily production figures on a spreadsheet, rather than jot down that information in paper notebooks.

"The bulk of the machines we saw were from before the 1990s," she said, adding that many had installed new computer controllers to upgrade the older machines - a common practice in these tight-fisted operations. Most had also bought other types of advanced machinery - such as computer-guided cutting machines and inspection systems. But not robots.

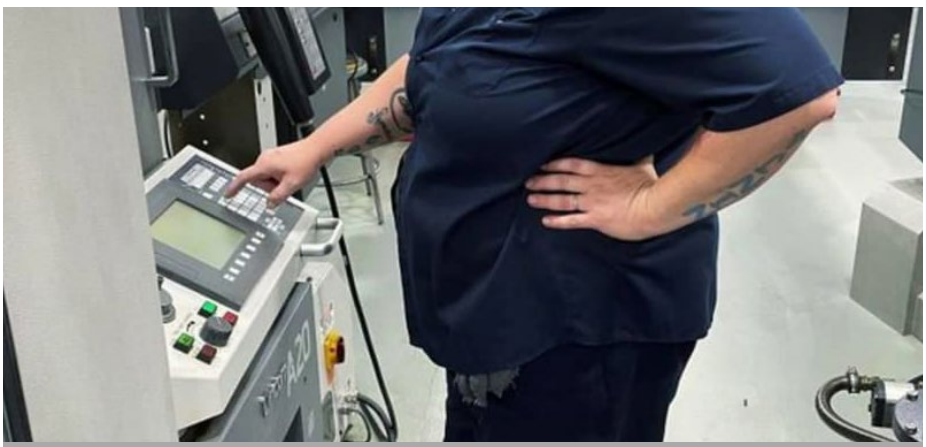
Robots are just one type of factory automation, which encompasses a wide range of machines used to move and manufacture goods - including conveyor belts and labeling machines.

Nick Pinkston, CEO of Volition, a San Francisco company that makes software used by robotics engineers to automate factories, said smaller firms lack the cash to take risks on new robots. "They think of capital payback periods of as little as three months, or six - and it all depends on the contract" with the consumer who is ordering parts to be made by the machine.

This is bad news for the U.S. economy. Automation is a key to boosting productivity, which keeps U.S. operations competitive. Since 2005, U.S. labor productivity has grown at an average annual rate of only 1.3per cent - below the post-World War 2 trend of well over 2per cent - and the average has dipped even more since 2010.

Researchers have found that larger firms are more productive on average and pay higher wages than their smaller counterparts, a divergence attributed at least in part to the ability of industry giants to invest heavily in cutting-edge technologies.

Yet small and medium-sized manufacturers remain a backbone of U.S. industry, often churning out parts needed to keep assembly lines rolling at big manufacturers. If they fall behind on technology, it could weigh on the entire sector. These small and medium-sized manufacturers are also a key source of relatively good jobs - accounting for 43per cent of all manufacturing workers.



A worker operates one of the metal cutting machines at Gent Machine Co.'s factory in Cleveland, Ohio, U.S., May 26, 2021. REUTERS/Timothy Aeppel

LIMITATIONS OF ROBOTS

One barrier for smaller companies is finding the skilled workers needed to run robots. "There's a lot of amazing software that's making robots easier to program and repurpose - but not nearly enough people to do that work," said Ryan Kelly, who heads a group that promotes new technology to manufacturers inside the Association for Manufacturing Technology.

To be sure, robots are spreading to more corners of the industrial economy, just not as quickly as the MIT researchers and many others expected. Last year, for the first time, most of the robots ordered by companies in North America were not destined for automotive factories - a shift partly attributed to the development of cheaper and more flexible machines. Those are the type of machines especially needed in smaller operations.

And it seems certain robots will take over more jobs as they become more capable and affordable. One example: their rapid spread in e-commerce warehouses in recent years.

A worker operates one of the metal cutting machines at Gent Machine Co.'s factory in Cleveland, Ohio, U.S., May 26, 2021. REUTERS/Timothy Aeppel

Carmakers and other big companies still buy most robots, said Jeff Burnstein, president of the Association for Advancing Automation, a trade group in Ann Arbor, Michigan. "But there's a lot more in small and medium-size companies than ever before."

Michael Tamasi, owner of AccuRounds in Avon, Massachusetts, is a small manufacturer who recently bought a robot attached to a computer-controlled cutting machine.

"We're getting another machine delivered in September - and hope to attach a robot arm to that one to load and unload it," he said. But there are some tasks where the technology remains too rigid or simply not capable of getting the job done.

For instance, Tamasi recently looked at buying a robot to polish metal parts. But the complexity of the shape made it impossible. "And it was kind of slow," he said. "When you think of robots, you think better, faster, cheaper - but this was kind of the opposite." And he still needed a worker to load and unload the machine.

For a company like Cleveland's Gent, which makes parts for things like refrigerators, auto airbags and hydraulic pumps, the main barrier to getting robots is the cost and uncertainty over whether the investment will pay off, which in turn hinges on the plans and attitudes of customers.

General view of metal cutting machines inside Gent Machine Co.'s 55-employee factory in Cleveland, Ohio, U.S., May 26, 2021. REUTERS/Timothy Aeppel

And big customers can be fickle. Eight years ago, Gent landed a contract to supply fasteners used to put together battery packs for Tesla Inc - and the electric-car maker soon became its largest customer. But Gent never got assurances from Tesla that the business would continue for long enough to justify buying the robots it could have used to make the fasteners.

"If we'd known Tesla would go on that long, we definitely would have automated our assembly process," said Gent, who said they looked at automating the line twice over the years.

But he does not regret his caution. Earlier this year, Tesla notified Gent that it was pulling the business. "We're not bitter," said Gent. "It's just how it works."

Gent does spend heavily on new equipment, relative to its small size - about US$500,000 a year from 2011 to 2019. One purchase was a US$1.6 million computer-controlled cutting machine that cut the cycle time to make the Tesla parts down from 38 seconds to 7 seconds - a major gain in productivity that flowed straight to Gent's bottom line.

"We found another part to make on the machine," said Gent.

Source: www.channelnewsasia.com

Pivot Bio, a Start-Up Using Microbes to Replace Synthetic Fertiliser, Raises US$430m

Pivot Bio's products use microbes to create and feed nitrogen to corn and wheat crops. PHOTO: REUTERS

A start-up born in the lab of University of California, Berkeley, is aiming to replace synthetic fertilisers that contribute to greenhouse gases and so-called 'dead zones' in the ocean.

Pivot Bio's products use microbes to create and feed nitrogen to corn and wheat crops. It is said to have raised US$430 million in a funding round led by Silicon Valley venture capital firm DCVC and Singapore's Temasek Holdings, bringing total funding to US$600 million.

The company's valuation is now near US$2 billion.

"Our pitch to growers today is, instead of spending a dollar on nitrogen fertiliser, spend a dollar on Pivot's nitrogen," said Karsten Temme, Pivot Bio's co-founder and CEO about how their products are already cost competitive.

He said that while synthetic fertilisers have to be separately applied during the growth of the crop, adding to extra labour costs, Pivot's liquid product is applied with the seed at the time of planting and the microbes do the work from there.

That's helped Pivot triple its sales this year, with US corn and wheat farmers using it on millions of acres of fields, said Temme. He declined to give the exact number of acres covered but said this year the acreage was four times larger than last year.

Pivot Bio says its products take microbes that naturally occur in crop soils and use them to convert atmospheric nitrogen into ammonia and feed it to plants, a process that synthetic nitrogen has shut off.

What makes identifying that microbe possible today is cheaper, faster computing power, said Matt Ocko, Co-Managing Partner of DCVC, which was one of the first investors in Pivot Bio. "We don't fund raw science bubbling away on a bench top. We need to see the commercialisation path," said Ocko, who has several other deep tech investments that have also been made possible with computing developments.

While synthetic nitrogen was also a breakthrough in science and a profitable business when it was developed over a century ago, it came at a cost to the water, air, and soil, said Ocko.

According to the International Fertiliser Association's 2017 report, about half of the world's synthetic nitrogen is used for fertilising corn, wheat and rice, a roughly US$60 billion market.

Pivot is developing a fertiliser product for rice as well.

Crunching numbers from a US Environmental Protection Agency report, Pivot Bio says 7 per cent of greenhouse gases are produced by synthetic nitrogen fertiliser, when considering manufacturing and nitrous oxide emissions from the fertilisers on the farm. Its run-offs have also harmed water supplies.

The new funding will help Pivot Bio expand to other countries as well as continue to improve the efficiency of the liquid microbe products, said Temme.

Source: www.straitimes.com

How Artificial Intelligence Can Help Save Us from Air Pollution

Researchers find AI may outperform traditional models, which could give more advance warning of bad air days, and reduce harmful exposures and hospital visits.

As air quality plummets across the U.S. this summer, researchers have a glimmer of good news.

Artificial intelligence may soon provide advanced warning of future pollution events, which could help hospitals prepare for the uptick in pollution-related illnesses, or even reduce people's exposure entirely.

A spike in air pollution often leads to a spike in hospital admissions, as it can exacerbate asthma and other pre-existing respiratory conditions, cause upper respiratory tract infections, or increase the likelihood of stroke. But it's currently impossible to prepare for these spikes due to the constraints of existing air quality forecasts, which are only accurate up to three days in advance, Yunsoo Choi, associate professor of atmospheric chemistry from the University of Houston, told EHN.

In that short amount of time, one of the only things we can do to protect ourselves is to limit time spent outdoors.

Related: Measuring Houston's environmental injustice from space

But now, through the use of artificial intelligence (AI) technology, Choi and the University of Houston's Air Quality Forecasting and Modeling Lab created a new model that can predict ozone pollution up to 14 days ahead of time.

While ozone in the upper atmosphere shields us from the sun's ultraviolet radiation, ozone at ground-level is a harmful pollutant that irritates our lungs. Since it is formed in the atmosphere on hot, sunny days, we will see unprecedented spikes in ozone due to climate change, similar to what we witnessed across the U.S. during the country's most recent heat wave.

These models could give local governments more opportunities to control pollution emission sources.

"Having a model that runs faster allows [local governments] to explore a greater variety of scenarios of how they can improve [air quality]," Sherri Hunt, the Principal Associate National Program Director for the Air, Climate and Energy Research Program at the Environmental Protection Agency (EPA), told EHN. Hunt was not involved in this study. For example, if researchers determine the future high ozone event will be caused by cars, then policymakers can suggest ways to minimize the number of cars on the road.

In addition, with Choi's AI model, "we could decide how we're going to staff the emergency room" during bad air events, Hunt said.

Artificial intelligence to improve air quality forecasting

Traditional air quality forecasts are created by numerical models, which are essentially sophisticated calculators. They solve many lines of mathematical equations to determine how much pollution will be produced, and how it will be transported across an area at a given point in time.

Yunsoo Choi, left, associate professor in the Department of Earth and Atmospheric Sciences at the University of Houston, and Ph.D. student Alqamah Sayeed developed a new model to better predict ozone levels. (University of Houston)

These equations aren't solved only once. They have to be solved for each hour the model forecasts into the future, which takes a lot of time and computational power.

"In order to forecast two or three days... that takes a few hours" even with a supercomputer, said Choi.

AI models predict ozone without these time-consuming calculations. Instead, researchers "train" the model by providing past air quality data, which the model uses to learn how ozone behaves under different sets of meteorological conditions.

Based on the patterns observed, the model makes an educated guess of how much ozone might be present in the future. It only takes minutes and is more accurate than its predecessors.

The researchers demonstrated this by modelling ozone pollution in South Korea in 2017 after training the AI model on data collected up to three years prior. They then compared their results to the Community Multi-scale Air Quality Model (CMAQ), which is a commonly used numerical model developed by the EPA. Using CMAQ, the model›s average accuracy peaked at 77% on day one of predictions and decreased rapidly over the following 14 days. When Choi used artificial intelligence, however, the average accuracy on the first day of predictions was 90%. While this value decreased trailed off over the two weeks, it still performed better than CMAQ did on day one.

Air pollution strain on hospitals

The highly accurate 14-day forecasts of Choi's AI model, combined with its faster computational time, could alleviate stress on our public health system. "We can see real increases in emergency department visits and other cardiovascular and respiratory impacts" following an air pollution event, said Hunt.

For example, one recent study that looked at Medicare patients concluded that exposure to ozone, among other pollutants, might contribute to thousands of additional hospital admissions each year.

Hospitals "have to show that there's a need if they're going to increase their number of beds or their number of providers in a particular area," explained Hunt.

Knowing how pollution levels could change two weeks in advance could help hospital administrators make their case more efficiently.

Climate change and ozone

There's also the matter of climate change, which can influence the amount of ozone produced in the atmosphere due to the uptick of hot, stagnant weather.

But it's hard to update the equations and parameters that numerical models use to calculate pollutant concentrations, said Choi, who has worked with these types of models in the past. "It's not easy to adjust to new types of [weather] phenomena" like heat waves.

On the other hand, however, AI models are much more adaptable. They learn from their mistakes and adjust their predictions accordingly. They can also be retrained with new data to improve their forecasts.

Artificial intelligence limits

AI technology has limitations. For one, researchers might see that the model is producing the right answer, but they "don't know if the model is getting those things right for the right reasons," said Hunt.

However, "by using [numerical modelling] we can know the all the details of what happened—what kind of chemical or physical properties are critical" in creating high pollution events, said Choi. A combination of both models will likely need to be used in the future.

It's just going to take some time. "Within EPA, I don't know anyone, any of our research scientists, who are using AI techniques," said Hunt.

The agency is, however, funding academic researchers who are focused on improving AI models and integrating them with the technology that exists today.

"Once that work is done that can potentially be brought back to the agency," said Hunt. "We want to use [models] to inform actions to make more people breathe clean air, so if we can make a better tool then that's going to benefit us in a variety of different ways."

Credit: Hornbeam Arts/flickr

Source: www.dailyclimate.org

Researchers Employ Artificial Intelligence Models For Image-Based Detection of COVID-19

Medical imaging has long been a vital tool for the diagnosis and prognostic assessments of many diseases. In recent years, the use of artificial intelligence models has been used in conjunction with this imaging to augment their diagnostic capabilities.

By using these models, some features can be extracted from images that may reveal disease characteristics not identified by the naked eye. The power to process data in this intelligent manner can have a big impact on the medical field, especially with the current growth in imaging features and the need for high precision in medical decisions.

There is a huge demand for rapid and accurate detection of COVID-19 infection. The primary detection method has been using reverse transcription-polymerase chain reaction (RT-PCR) on samples collected from nasal or throat swabs. However, this method is subject to inaccuracies due to sampling errors, low viral load, and the method's sensitivity limitations. This is an especially significant issue for patients who are in the early stages of infection.

An additional diagnostic tool for COVID-19 can come from images of the lungs. For diagnosing lung diseases, chest X-rays or CT scans are the primary resources, and they can be used to distinguish COVID-19 from other types of lung injuries, as well as to assess the severity of lung involvement in COVID-19. These types of images can enhance the diagnostic capabilities for COVID-19 patients, especially if they are coupled with artificial intelligence models.

Through a multi-institute collaborative effort, researchers from the Terasaki Institute for Biomedical Innovation (TIBI) have designed and validated an image-based detection of COVID-19 with the aid of artificial intelligence models. To accomplish this, they began by using a model to automatically collect imaging data from the lung lobes. This data was then analyzed to yield features as potential diagnostic biomarkers for COVID-19.

These diagnostic biomarkers using the artificial intelligence model were subsequently used to differentiate COVID-19 patients from both pneumonia and healthy patients. The entire model was developed with a cohort of 704 chest X-rays and then independently validated with 1597 cases from multiple sources comprised of healthy, pneumonia, and COVID-19 patients. The results showed excellent performance by the model in classifying diagnoses of the various patients.

This highly advanced artificial intelligence model further helps our ability to precisely detect COVID-19 patients. In addition, such a model can be applied for diagnosis of other diseases using different imaging modalities."

Samad Ahadian, Ph.D, Study Lead Researcher, Terasaki Institute for Biomedical Innovation

The use of computer modeling with data extracted from medical images shows great promise in enabling precision medicine and can revolutionize medical practice in the clinic. Developing methodologies to capture entire sets of information while suppressing irrelevant features enhances the reliability of artificial intelligence models.

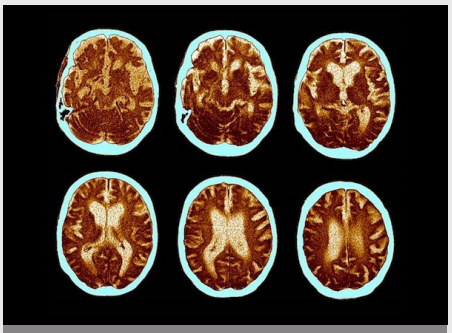
The proposed approach would be a step towards applying them in precision medicine and can provide an efficient, inexpensive, and non-invasive way to strengthen the diagnostic capabilities of imaging.

"Artificial intelligence-driven models with diagnostic and predictive capabilities are a powerful tool that are an important part of our research platforms here at the institute," said Ali Khademhosseini, Ph.D., Director and CEO of TIBI. "This will carry over into countless applications in the biomedical field and in the clinic."

Source: www.news-medical.net

Artificial Intelligence Could Identify Dementia Years Before It First Appears

The AI uses algorithms to detect patterns in brain scans that are at times even missed by neurologitcal experts.



Researchers will test whether it works in a clinical setting, alongside conventional ways of diagnosing dementia. (Photo: Getty)

As supercomputers take on the mighty challenge of accelerating research in the complexities of life sciences, Artificial Intelligence (AI) is not far behind. Researchers are testing a system based on AI to detect neurological disorders like dementia in just one brain scan.

As researchers begin the trial of the system, currently it takes several scans and tests to diagnose dementia. An earlier diagnosis of the disorder could be life-saving and enhance treatment strategies. The team of researchers from the University of Cambridge are hopeful that the AI system will be tested in a "real-world" clinical setting on about 500 patients, in its first year of trial.

The system uses algorithms to detect patterns in brain scans that are at times even missed by neurological experts. According to a report in BBC, the AI has been able to diagnose dementia in pre-clinical tests and that too years before symptoms develop at a time when there is no sign of damage to the brain.

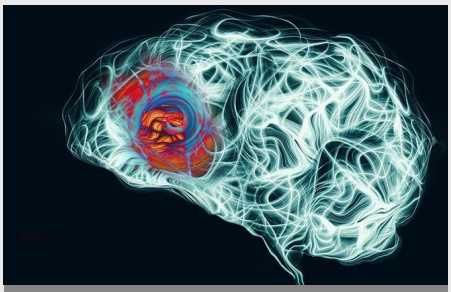
Professor Kourtzi of Cambridge University, who is part of the study told BBC, "If we intervene early, the treatments can kick in early and slow down the progression of the disease and at the same time avoid more damage. And it›s likely that symptoms occur much later in life or may never occur.»

As part of the trial, researchers will test whether it works in a clinical setting, alongside conventional ways of diagnosing dementia. The researchers conducting the trial at Addenbrooke's Hospital in the UK will send the reports to participant's doctors for clinical advice.

"These sets of diseases are really devastating for people. So when I am delivering this information to a patient, anything I can do to be more confident about the diagnosis, to give them more information about the likely progression of the disease to help them plan their lives is a great thing to be able to do," BBC quoted neurologist Dr Tim Rittman, who is leading the study as saying. So far doctors and neurologists have depended upon brain scans and MRIs to identify neurological disorders, however, the new system under development could significantly boost their abilities in identifying the issues and devise an early treatment strategy.

"AI has been shown to improve the diagnostic potential of brain scans compared to a clinical reading of the scans, but there is so much heterogeneity between individuals that it is completely infeasible for a single scan, biomarker or clinical test to be that certain in a single assessment," Professor Clive Ballard, a dementia expert at the University of Exeter told The Guardian.

The clinical trial underway by the Cambridge team is not the first to use the advances of AI, Cambridge-1, one of the world's fastest AI supercomputers, has also begun operations in the UK as it looks for new medical breakthroughs with its unique ability to process digital biology, genomics, quantum computing and artificial intelligence.



The AI has been able to diagnose dementia in pre-clinical tests. (Photo: Getty)

In its first attempt, Cambridge-1 is working with AstraZeneca, GSK, Guy's and St Thomas' NHS foundation trust, King's College London and Oxford Nanopore in developing a deeper understanding of diseases like dementia, look for new drugs, design and run simulations and enhance knowledge around variations in human genomes.

Source: www.indiatoday.in

The Evolution of Artificial Intelligence: Past, Present & Future

Everything about the evolution of artificial intelligence

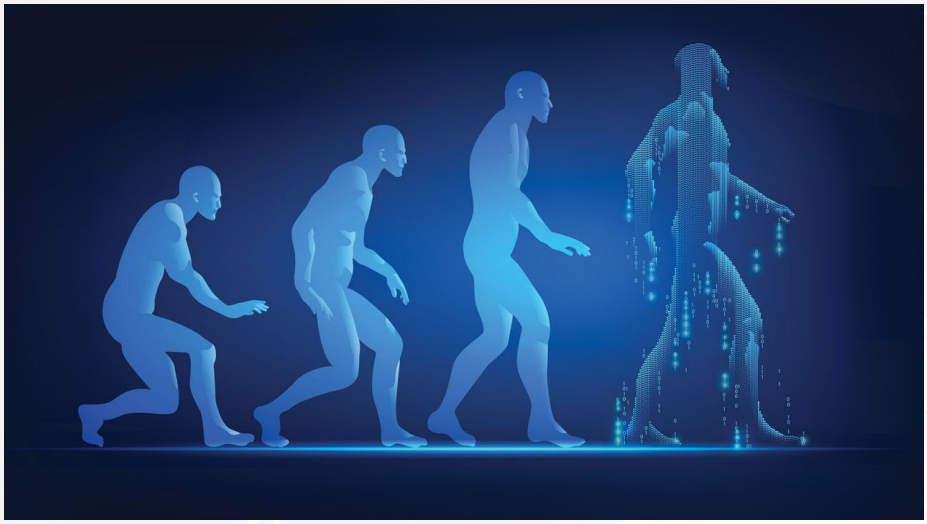
Artificial Intelligence has grown into a formidable tool in recent years allowing robots to think and act like humans. Furthermore, it has attracted the attention of IT firms all around the world and is seen as the next major technological revolution following the growth of mobile and cloud platforms. It's even been dubbed the "4th industrial revolution" by some. Researchers have developed software that uses Darwinian evolution ideas, such as "survival of the fittest," to construct AI algorithms that improve generation to generation with no need for human intervention. The computer was able to recreate decades of AI research in only a few days, and its creators believe that one day it will be able to find new AI techniques.

In this article, we will learn about how AI is evolving day by day.

History of Artificial Intelligence

Despite artificial intelligence has been present for millennia, it was not until the 1950s that it's real potential was investigated. A generation of scientists, physicists, and intellectuals had the idea of AI, but it wasn't until Alan Turing, a British polymath, proposed that people solve problems and make decisions using available information and also a reason.

The difficulty of computers was the major stumbling block to expansion. They needed to adapt fundamentally before they could expand any further. Machines could execute orders but not store them. Until 1974, financing was also a problem.



By 1974, computers had become extremely popular. They were now quicker, less expensive, and capable of storing more data.

AI Research Today

AI research is ongoing and expanding in today's world. AI research has grown at a pace of 12.9 percent annually over the last five years, as per Alice Bonasio, a technology journalist.

China is expected to overtake the United States as the world's leading source of AI technology in the next 4 years, having overtaken the United States' second position in 2004 and is rapidly closing in on Europe's top rank.

In the area of artificial intelligence development, Europe is the largest and most diverse continent, with significant levels of international collaboration. India is the 3rd largest country in AI research output, behind China and the USA.

AI in the Present

Artificial intelligence is being utilized for so many things and has so much promise that it's difficult to imagine our future without it, related to business.

Artificial intelligence technologies are boosting productivity like never seen before, from workflow management solutions to trend forecasts and even the way companies' buy advertisements.

Artificial Intelligence can gather and organize vast volumes of data in order to draw inferences and estimates that are outside of the human ability to comprehend manually. It also improves organizational efficiency while lowering the risk of a mistake, and it identifies unusual patterns, such as spam and frauds, instantaneously to alert organizations about suspicious behavior, among other things. AI has grown in importance and sophistication to the point that a Japanese investment firm became the first to propose an AI Board Member for its ability to forecast market trends faster than humans.

Artificial intelligence will indeed be and is already being used in many aspects of life, such as self-driving cars in the coming years, more precise weather forecasting, and earlier health diagnoses, to mention a few.

AI in the Future

It has been suggested that we are on the verge of the 4th Industrial Revolution, which will be unlike any of the previous three. From steam and water power through electricity and manufacturing process, computerization, and now, the question of what it is to be human is being challenged.

Smarter technology in our factories and workplaces, as well as linked equipment that will communicate, view the entire production process, and make autonomous choices, are just a few of the methods the Industrial Revolution will lead to business improvements. One of the most significant benefits of the 4th Industrial Revolution is the ability to improve the world's populace's quality of life and increase income levels. As robots, humans, and smart devices work on improving supply chains and warehousing, our businesses and organizations are becoming "smarter" and more productive.

AI in Different Industries

Artificial intelligence (AI) may help you enhance the value of your company in a variety of ways. It may help you optimize your operations, increase total revenue, and focus your staff on more essential duties if applied correctly. As a result, AI is being utilized in a variety of industries throughout the world, including health care, finance, manufacturing, and others.

Health Care

AI is proven to be an uplift in the healthcare business. It's enhancing nearly every area of the industry, from data security to robot-assisted operations. AI is finally providing this sector, which has been harmed by inefficient procedures and growing prices, a much-needed facelift.

Automotive

Self-driving vehicles are certainly something you've heard of, and they're a hint that the future is almost here. It's no longer science fiction; the autonomous car is already a reality. As per recent projections, by 2040, roughly 33 million automobiles with self-driving capability are projected to be on the road.

Finance

According to experts, the banking industry and AI are a perfect combination. Real-time data transmission, accuracy, and large-scale data processing are the most important elements driving the financial sector. Because AI is ideal for these tasks, the banking industry is recognizing its effectiveness and precision and incorporating machine learning, statistical arbitrage, adaptive cognition, chatbot, and automation into its business operations.

Transportation and Travel

From recommending the best route for drivers to arranging travel reservations remotely, AI has now become a gigantic trend in this business. End consumers are finding it easier to navigate thanks to artificial intelligence. Furthermore, travel businesses that integrate AI into their systems profit from smartphone usage.

E-Commerce

Have you ever come upon a picture of clothing that you were hunting for on one website but couldn't find on another? Well, that is done by AI. It's due to the machine learning techniques that businesses employ to develop strong client connections. These technologies not only personalize customers' experiences but also assist businesses in increasing sales.

Conclusion

In the early twenty-first century, no place has had a larger influence on AI than the workplace. Machine-learning techniques are resulting in productivity gains that have never been observed before. AI is transforming the way we do business, from workflow management solutions to trend forecasts and even the way businesses buy advertising. AI research has so much promise that it's becoming difficult to envisage a world without it. Be its self-driving vehicles, more precise weather predictions, or space travel, AI will be prevalent in everyday life by 2030.

Source: www.analyticsinsight.net

Keysight Launches Scienlab Battery Pack Test System with High Voltage Silicon Carbide Technology

Next generation test system delivers greater power in less space

Keysight Technologies, Inc. (NYSE: KEYS), a leading technology company that helps enterprises, service providers and governments accelerate innovation to connect and secure the world, whose primary manufacturing and order fulfilment location is in Penang, Malaysia, announced the Scienlab SL1700A Series, the next generation battery pack test system for high voltage battery packs - up to 1500 V for automotive and industrial application.

Customers need vast labs with multiple test channels to develop batteries, but space and power supplies are limited. Keysight's SL1700A Series utilizes new high voltage silicon carbide (SiC) technology to achieve higher efficiency and energy recovery capabilities, which is crucial to reduce overall lab costs. It provides high power in a small footprint and is modular and upgradable to address future power needs.

"Our next generation battery pack test systems based on high voltage SiC technology, provide more power and higher voltages in less space, when compared to similar systems," said Michael Schugt, managing technology director of Keysight's Automotive & Energy Solutions group. "When combined with the solutions energy efficiency, it allows our customers to design new batteries in their lab with greater flexibility."

SL1700A Series Scienlab Battery Test System – Pack Level – Up to 270 kW

A battery pack is a complex system involving high voltages and currents, electrical and mechanical components, cooling system and a battery management system (BMS). All components require thorough testing to draw conclusions about the durability, range, efficiency and heating of the pack. Keysight's SL1700A Series addresses these requirements and offers the following key features:

- A small footprint to deliver high power and more output in a reduced space.
- High energy recovery capabilities, reducing energy consumption and lowering lab running costs.
- Synchronized control of all components in the test environment, including climate chamber, conditioning of the device under test (DUT) and BMS.
- Recorded measured values to use as a variable during the remainder of the test sequence.
- Direct evaluation of data using practical analysis tools: post-processing is not necessary.

About Keysight Technologies

Keysight delivers advanced design and validation solutions that help accelerate innovation to connect and secure the world. Keysight's dedication to speed and precision extends to software-driven insights and analytics that bring tomorrow's technology products to market faster across the development lifecycle, in design simulation, prototype validation, automated software testing, manufacturing analysis, and network performance optimization and visibility in enterprise, service provider and cloud environments. Our customers span the worldwide communications and industrial ecosystems, aerospace and defense, automotive, energy, semiconductor and general electronics. Keysight generated revenues of $4.2B in fiscal year 2020. For more information about Keysight Technologies (NYSE: KEYS), visit us at www.keysight.com.

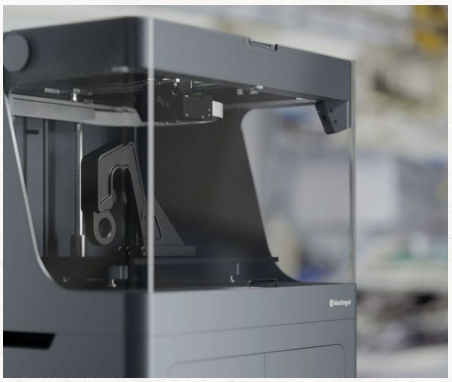
Konica Minolta Launches Markforged 3D Printers

Konica Minolta Business Solutions New Zealand has announced that the Markforged range of additive manufacturing platforms (3D printers) is now available to its customers.

Partnering with Markforged to make 3D printing accessible to customers in New Zealand is the next step for the business in growing its local presence, Konica Minolta says.

The Markforged range is being offered in response to market demand and opportunities in the region with the X7 carbon fiber 3D printer and Mark Two continuous fiber composite 3D printer available for demonstration in Konica Minolta New Zealand's recently launched Auckland showroom.

Markforged 3D solutions are purpose-built to integrate quickly and seamlessly into a customer's manufacturing ecosystem. They are used to print repeatable, production-quality parts using materials curated for durability and strength providing businesses with speed to market advantages, new opportunities, and idea protection. Through Konica Minolta New Zealand, local customers will benefit from on-the-ground support and local inventory of consumables.



"Konica Minolta has been building momentum in New Zealand and has seen great success since its official showroom opening in May," says Eric Holtsmark, managing director, Konica Minolta New Zealand.

"Introducing new solutions is the next logical step and 3D printing has enormous potential.

"It's an exciting time in the 3D printing market as materials are evolving and Konica Minolta is helping the industry to grow with leading technology that addresses the needs of many industries including manufacturing, defense, aerospace, and healthcare," he says.

"Markforged is a strong partner with some of the most advanced 3D printing systems in the world, which will deliver significant benefits and opportunities for Konica Minolta New Zealand customers."

Richard Elving, director, Asia-Pacific sales and channel, Markforged, adds, "Markforged is excited to see Konica Minolta build on our partnership with the expansion into New Zealand.

"Together, through 3D printing innovations, we can help New Zealand organizations overcome supply chain limitations and solve their challenges.

"Our technology assists the world's biggest manufacturers in creating digital supply chains through the creation of robust production parts within their own organization," he says.

To support the launch, Konica Minolta New Zealand has appointed Alicia Rayer to the role of additive manufacturing specialist. She will consult with customers to provide 3D solutions that meet their needs.

Alicia previously worked for AML3D where she was APAC sales and business director and business development manager. Before this, Alicia was general manager and additive manufacturing specialist at Precision 3D Printing.

Holtsmark says, "Alicia brings with her invaluable sales experience and in-depth technical knowledge of 3D printing to add value to customers and the region.

"This will ensure that Konica Minolta hits the ground running with Markforged in New Zealand, giving customers access to Alicia's expertise and consulting advice from day one," he says.

Rayer adds, "I am passionate about the 3D and additive manufacturing world and excited to be a part of Konica Minolta New Zealand's expansion with Markforged.

"The sky really is the limit for opportunities in the 3D market, and Konica Minolta New Zealand is setting up an exciting path that will see the growth of industry 4.0 increase."

Source: channellife.co

BECKHOFF

Interview with David Chia, Chairman of the Smart Automation Industry Group in the Singapore Manufacturing Federation and Managing Director of Beckhoff Automation

Mr. David Chia is currently the Managing Director of Beckhoff Automation, responsible for the sales and business development in Southeast Asia. He has started his career in the Industrial Automation and Controls industry more than 20 years ago and had multiple function experiences with the market leaders from Germany and the US.

David works actively with the local business associations to push the envelope on industrial developments. He is Chairman for Smart Automation Industry Group in the Singapore Manufacturing Federation (SMF), Assistant Secretary in the Singapore Industrial Automation Association, and a member of the Singapore Standards Tech Comm that looks into the standards for smart manufacturing. He is also Chief Expert for the Industrial Controls trade in the Worldskills Singapore competition. Since 2019, he has been appointed as Head of OPC Hub ASEAN by OPC Foundation to promote, educate and implement OPC technologies specific to Industry 4.0.

Given his knowledge and expertise in the field, he often works with educational institutions to share his passion for technology and the marvels of what engineering brings. David believes in the importance of growing the ecosystem as we all benefit through collaboration, cooperation and healthy competition.

This interview was conducted in May, 2021.

1. Congratulations David on your recent appointment as the Chairman of the Smart Automation Industry Group at the Singapore Manufacturing Federation. Perhaps you would like to share a bit about your roles and responsibilities as the Chairman and what is the vision that you have undertaking this steering role?

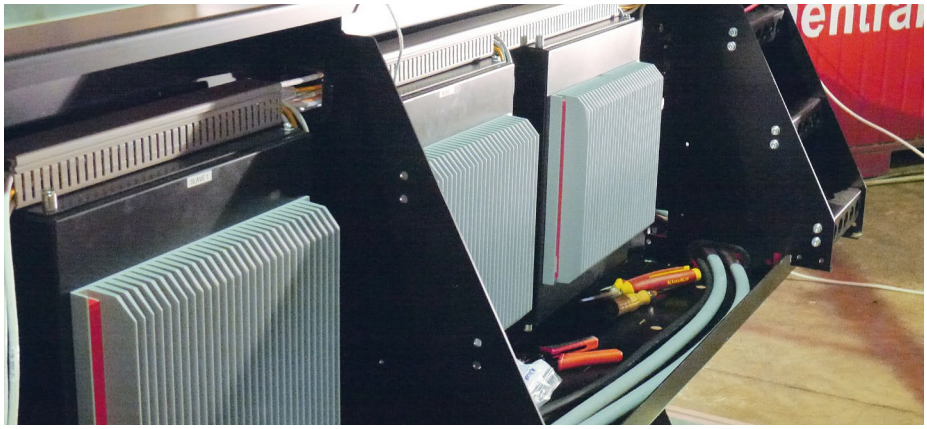
The Singapore Manufacturing Federation (SMF) was established since 1932 and has a member base of about 5,000 members comprising SMEs, MNCs, and Affiliate members, across a wide spectrum of industries in the manufacturing sector.

These members are divided into 10 Industry Groups, and one of these Industry Groups is the Smart Automation Industry Group.

Smart Automation represents the product, technology, and solution enablers among our members, where our solutions cut horizontally across multiple industries, and vertically within the different manufacturing processes and disciplines.

As the Chairman, I act as the link between our members and the federation at large, to foster closer links between members, to generate business opportunities among ourselves, and to promote and/or create solutions that are class-leading towards Industry 4.0.

Pre-Covid, we also have activities like overseas missions, trade fairs, and business matching, so my role is to get our members involved and also advocate for relevant activities for our Industry Group.



I also bridge our group over to external parties, particularly with the interaction of government agencies and other trade associations and chambers (TACs). I am constantly looking at ways how we can match demand to supply, and match ideas to knowledge creations.

This will help us to create a vibrant and active eco-system where we can cooperate, collaborate and sometimes compete, but all in good faith.

2. Smart Automation Industry Group had changed its name from Automation Technology Industry Group (ATIG) during the earlier years citing the shift to focus on Digital Manufacturing, how far ahead is Singapore compared to its peers in the region in digitalizing manufacturing processes?

We changed our name to represent the "Smart" in almost everything from smart manufacturing to the smart building to smart city and smart nation. In particular, we think it's appropriate to signify a bold step into Industry 4.0.

The pace so far is varied; while there are companies who are early adopters and ran multiple pilots in a trial-and-error approach, there are also many taking a wait-and-see approach.

However, many useful initiatives were rolled out, with the Economic Development Board (EDB) partnering with TUV SUD to come up with a Smart Industry Readiness Index (SIRI) which I see as a condensed version of Germany's Reference Architecture Model Industry 4.0 (RAMI 4.0).

The Industrial Transformation Asia Pacific exhibition series was also started, allowing the showcase of leading technologies, success stories, and best practices from other developed countries and leading automation companies like Siemens, Beckhoff, Schneider, and ABB, just to mention a few.

Personally, I would see that Singapore is perhaps 1 or 2 steps ahead in the region, but also 1 or 2 steps behind that of Germany.

Factory to one of the SMF member's companies, Makino Pte Ltd. Photo by Singapore Manufacturing Federation (SMF)

Together with Singapore Logistics Association (SLA), event on "Meeting the Makers and Movers". Photo by Singapore Manufacturing Federation (SMF)

3. Digitalization in manufacturing had always been deemed as a big overhaul of manufacturing processes and complicating for smaller manufacturers with massive costs, how could we encourage the local SMEs to think otherwise? What incentives (if any) are there they could actually tap on to assist them?

Any transformation journey must have a strong WHY followed by a clear HOW and accelerated by SUPPORT that comes in to share the risk associated with any change.

WHY. Our manufacturers must recognize that change is necessary if one does not want to be overtaken and made obsolete. It is about survival here.

HOW. There are several model factories set up across multiple institutions to showcase "Industry 4.0", e.g. at SIMTech, ARTC, and Singapore Polytechnic, many of whom also provide consultancy to assist the companies. There is also an Industry 4.0 Human Capital Initiative (IHCI) program dedicated to equipping companies with people management and job redesign skills required for successful transformation.

SUPPORT. There are many schemes administered by Enterprise Singapore (ESG), including Productivity Solution Grant, Enterprise Development Grant, and even SkillsFuture Enterprise Credit of $10,000 which can be used to offset different program and training courses.

A few years ago, the common remarks were "what's in it for me?", "let others do it first", "what's the business case?" and "this is only for big companies". Many established family businesses were also more concerned about succession than transformation.

In the past 1½ years, COVID-19 has clearly shown disturbances that we thought not possible. Shortage of skilled workers, restrictions of workers on the shop floor, supply chain disruption, etc. In a way, it is a wake-up call to many who are still sitting on the fence.

4. Digitalizing in the manufacturing industry is a necessity nowadays and no longer a choice, is this true? What are the consequences for companies not willing to commit to it now or the next 5 years?

The purpose of Industry 4.0 in Singapore is to maintain the relevance of manufacturing to our country; both essential manufacturings to serve the basic needs of the country, and high-tech manufacturing to keep our relevance on the world map.

From a GDP perspective, it helps to "balance the basket" when we go through the economic cycles.

Companies who change will likely transform, survive and thrive while companies don't get left behind. It is still a choice for the business owners, but I do question them "why not?" especially when aids are readily available today.

5. Smart Manufacturing is promoted very aggressively to manufacturers in Singapore but we do not really see much adoption of it yet in local factories, how far are we away from seeing a full-fledged Smart Manufacturing facility here? And what are the factors hindering the progress?

The key here is letting the manufacturers see the WHY, but with COVID-19 unveiling all the disturbance and disruption, my take is, the adoption pace towards transformation will only speed up from now onwards.

BLACK & VEATCH

Digitalization Advances Southeast Asia's Energy Transition

By Narsingh Chaudhary and Harry Harji

Narsingh Chaudhary, Black & Veatch's Executive Vice President & Managing Director, Asia Power Business.

Harry Harji, Associate Vice President for Black & Veatch's management consulting business in Asia

Southeast Asia economies are racing to diversify their energy portfolios to balance energy security and sustainability obligations while meeting the power demands of their growing economies and populations.

One factor driving the increase in renewable energy is corporate power purchase agreements (PPAs). Under the agreements, businesses purchase electricity directly from power producers.

According to the *Black & Veatch Strategic Directions: Electric Industry Asia 2021 report*, respondents anticipate that data centers (50 percent), banking (43 percent), and large IT companies (40 percent) will be the most vocal in demanding renewable sources of electricity.

Respondents believe government policy, regulation, and socio-economic factors will drive investments more than the technology itself. This suggests the possibility that large commercial and industrial users — driven by sustainability commitments — will demand more renewable generation and, where possible, build their solutions.

Distributed energy resources (DER) such as microgrids will offer large users, like technology company Amazon, the reliability and resilience of supply they require alongside direct control in meeting environmental targets.

Amazon is investing in a 62-megawatt (MW) utility-scale solar energy project in Singapore. When completed, the Amazon project will be among the largest aggregated movable solar energy systems designed and installed in Singapore and will contribute net-new renewable energy to the national electricity grid. The 80,000 megawatt-hours (MWh) of clean energy generated annually will power Amazon's offices, data centers, and fulfillment facilities in Singapore. Amazon is targeting to power its operations with 100 percent renewable energy by 2030.

In addition to corporate sustainability commitments, the rise in consumer awareness about environmental impacts is another factor driving the increase in renewable energy. More regional consumers are expecting their power providers to progressively and proactively tackle climate change, further deepening the need for reliable, resilient energy supplies.

Key survey findings include:

#1: Much more investment in microgrids and other DER

The most significant investment growth in new capacity over the next three to five years is expected in renewable energy. Solar (land), energy storage, solar (floating), wind (offshore), and microgrids represent the top five categories. (Figure 1)

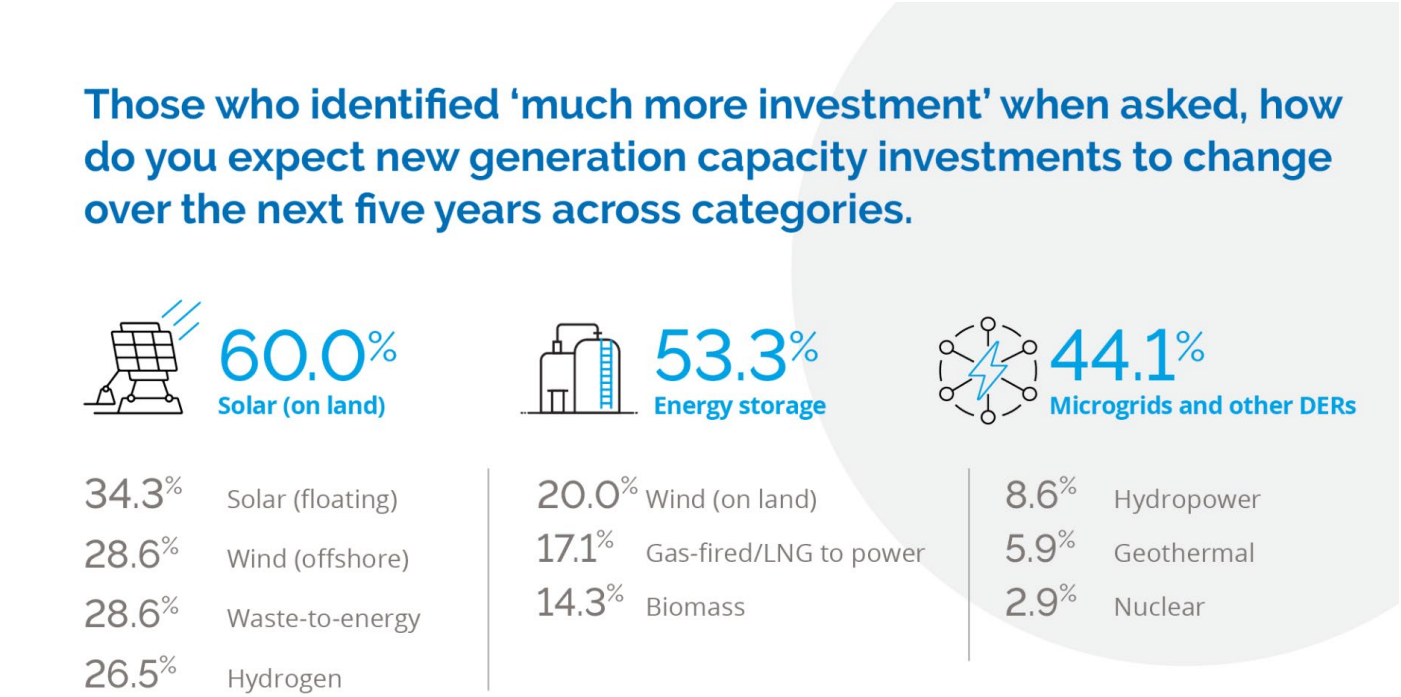


Figure 1

Of all generation technology categories, survey findings suggest a significant investment jump in microgrids and other DERs over the next three to five years. Respondents ranked microgrids third in terms of receiving "much more investment," reflecting the category's potential for use both by large users as well as remote and island communities throughout Asia that lack connection to the reliable, resilient and sustainable supply. "Much more investment" in microgrids and DERs ranks just behind solar and energy storage — which are likely components of many microgrid solutions, particularly in Southeast Asia's sunny and archipelagic locations.

Opportunity: Introducing greater levels of renewable energy and DERs — such as microgrids — will increase the complexity of grid management and operation throughout Asia. Higher penetration of variable generation will require increased grid flexibility to respond to sudden increases and decreases of supply due to changes in season, weather, and time of day.

#2: Mindset change post-pandemic

Variable load and supply have highlighted the challenges facing future grid management. Lockdowns due to the COVID-19 pandemic — where load curves shifted from industry and offices to people's homes — have changed the way Asia's power industry views operations, asset management, and its workforce.

Respondents see the biggest threats to reliable grid operations and performance as network capacity investment not keeping pace with demand (41 percent); underinvestment in more reliable transmission networks (38 percent); and introduction of too much intermittent renewable energy (32 percent). Also prominent and tied for fourth are not enough energy storage capacity and natural disasters (29 percent). (Figure 2)

Opportunity: Better grid flexibility could be achieved by deploying BESS, increasing the capacities of existing transmission systems, and integrating and upgrading flexible generation such as gas-fired facilities. Hydrogen could be another energy storage option that complements BESS, as it provides long-duration storage that cannot be addressed by other energy storage technologies. Renewable energy generation assets could be built or repurposed to power electrolysis to create hydrogen. Informed and rigorous investment prioritization will be required to deliver integrated grid solutions that target system gaps with the right opportunities.

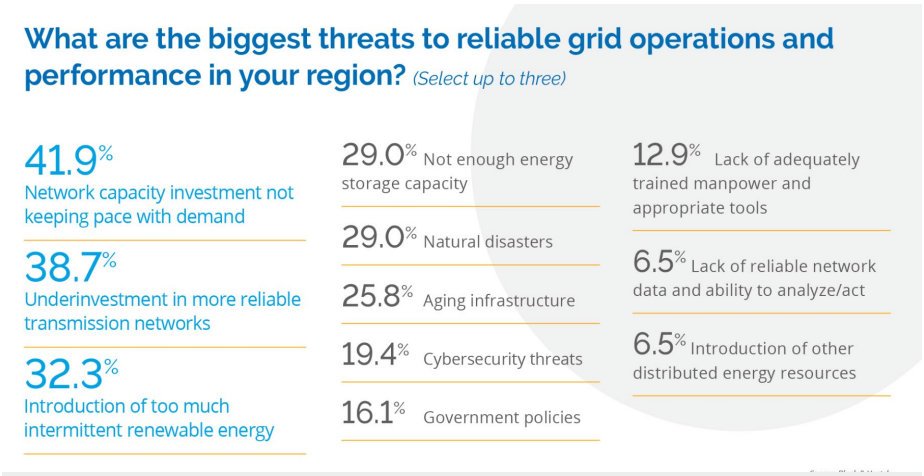


Figure 2

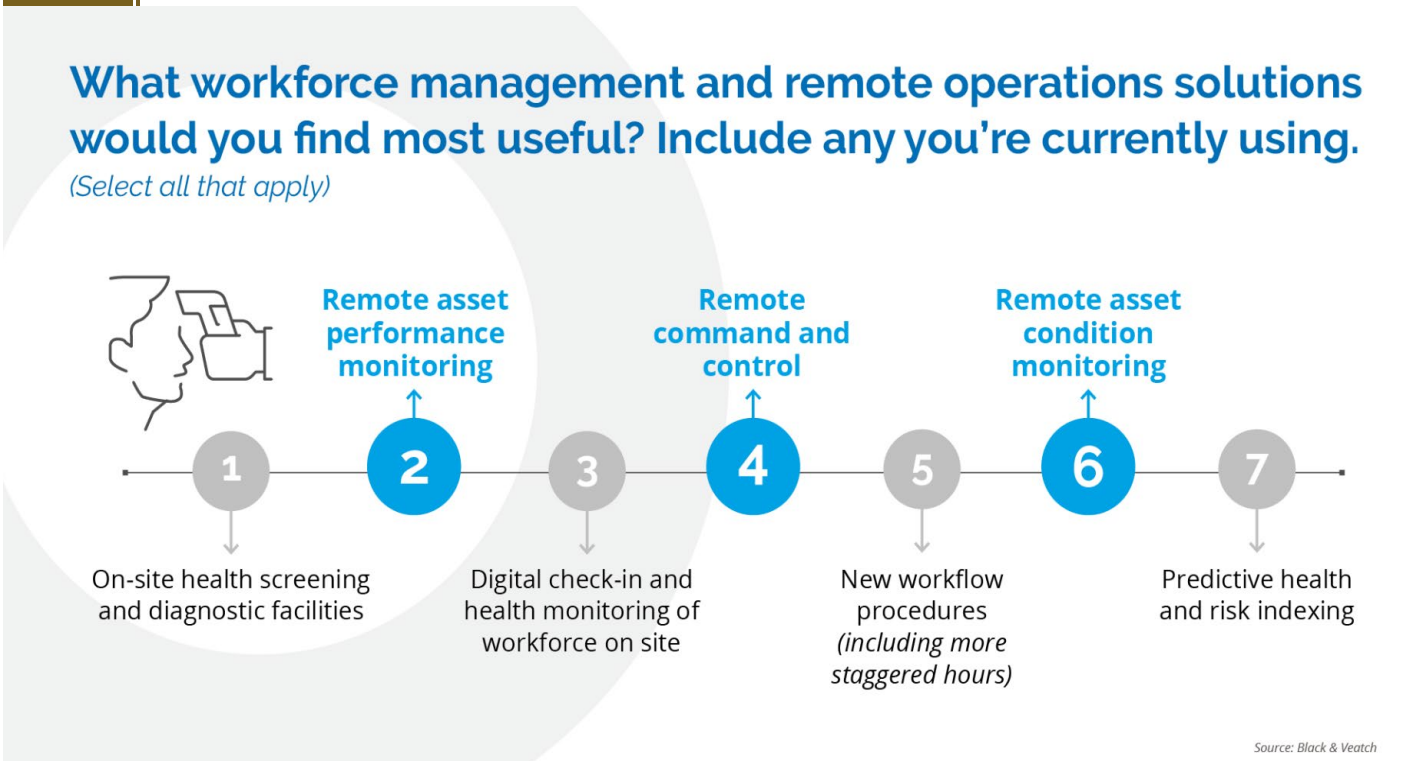


Figure 3

#3: Existing assets, digital systems to receive investment boost

Our industry's changing mindset to asset management and operations will see short-term investment reprioritized to existing assets and channeled to the replacement of existing units, conversion of analog systems to digital systems, and increased remote monitoring and diagnostics. (Figure 3)

In the face of specific COVID-19 restrictions, both remote asset management performance monitoring, and remote command and control also feature as two of the top five solutions respondents would find most useful in managing through the pandemic; others were related to health and workflow management.

Opportunities: While the power sector had started assessing digital solutions before the global health crisis, survey findings suggest that the pandemic is likely to accelerate the digital transformation of Asia's power sector.

Digitization enhances grid resilience

Adopting digital transformation strategies that address core challenges of grid stabilization, peak load management, system flexibility, and reliability in a holistic manner will be critical to balance changing consumer expectations, unpredictable load patterns, and increasing use of DERs.

Digital applications can optimize the impact of individual technologies to enhance grid performance. For example, data collected by smart sensors are particularly useful for renewable energy applications. With wind and sunlight affecting power generation production, sensors and smart grids ensure that renewable energy plants are operating to their optimal potential.

Operationally, the adoption of predictive asset maintenance monitors equipment performance in real-time, forecasting and optimizing maintenance schedules. Such advances will help mitigate costly outages and other equipment failures across entire systems and extend the equipment lifecycles. Further still, prescriptive analytics will enable autonomous management, where machines act on the information the artificial intelligence (AI) has extracted, offering even further operational savings long term.

These roll up to asset performance management (APM) solutions in which the health, performance, and optimization of multiple critical generations, transmission, or distribution assets can be managed. The APM approach will minimize failures and improve synergies in the operation of power facilities, ultimately reducing the cost of energy production over time.

Digitization will enable the holistic management of DER assets across different capacities and installations. For example, insights can help identify the weakest link in the distributed energy portfolio.

From a transmission network perspective, Flexible Alternating Current Transmission Systems (FACTS) can help to re-route power flow from congested parts of the grid to less congested portions. Transmission technologies with greater situational awareness of local weather conditions, such as Dynamic Line Ratings, can offer near real-time updates on the available capacity of critical bulk power pathways.

Digitizing improves project bankability

With financing at the core of Asia's energy transition success, improving the bankability of infrastructure projects is critical to achieving grid resilience and modernization.

Digitizing power assets will make it easier for investors to assess the planning, returns, and risk allocation of projects. Data analytics across complex grids will provide insights that will help investors visualize risks, such as grid stabilization, peak load management, resiliency, and reliability, across many inter-dependent factors that determine financial success.

Digitizing power systems will support investments in decarbonized grids and enable a more efficient and flexible grid operation. This will, in turn, reduce the cost to investors, operators, and ultimately consumers.

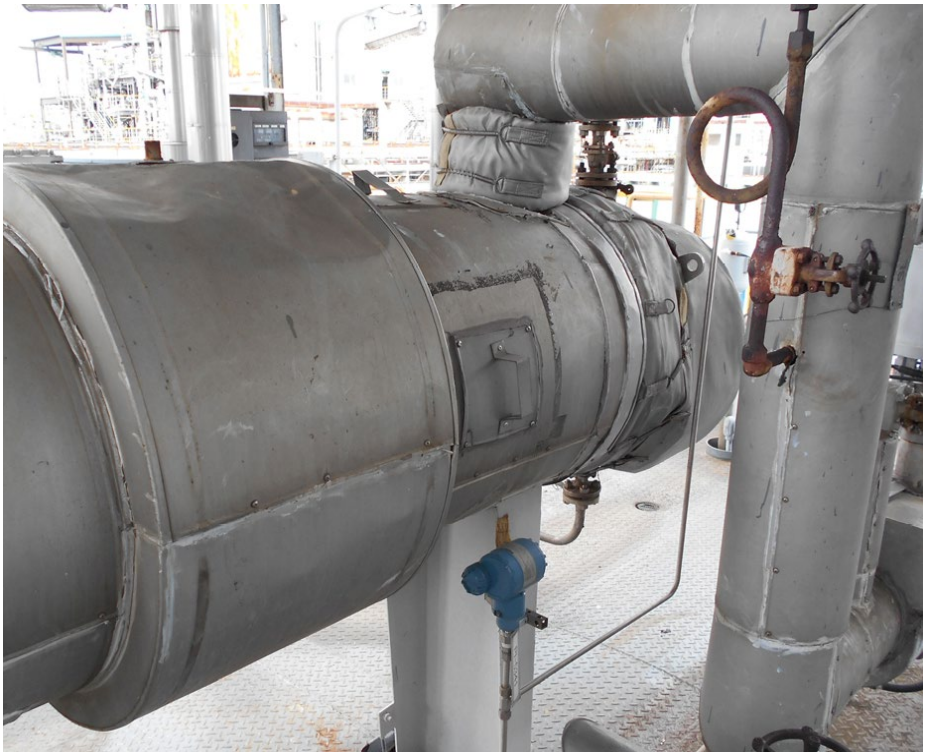
Next steps

Factors that will accelerate digital transformation include wide-scale development, integration, and adoption of the Internet of Things; and next-generation 5G connectivity. The progress of Southeast Asia's energy transition will be influenced by the speed and scale of digitalization.

Digitizing the grid will require an integrated strategy and execution across generation, transmission, and distribution, as well as prioritized planning that factors both capital and operational expenditures. Southeast Asia's power industry will need to collaborate with partners who are familiar with every aspect of the lifecycle of generation, transmission, and distribution assets. Such partners will need to be experts in integrating these assets to create a stable, efficiently functioning whole. Additionally, partners who offer holistic infrastructure consulting capabilities will be able to understand how a change in one piece of the business can impact assets, costs, technologies, the workforce, and customers.

Narsingh Chaudhary is Black & Veatch's Executive Vice President & Managing Director, Asia Power Business. Harry Harji is Associate Vice President for Black & Veatch's management consulting business in Asia.

Digital Transformation Helps Toagosei Singapore Improve Operation Efficiency and Enhance Plant Safety



RESULTS

- Improved operational efficiency with digitalization of work processes and reduced manual processes
- Mitigation of fouling risk in heat exchanger resulted in 1200 tons of steam savings per year
- Improved water chiller's internal monitoring system led to optimized water supply processing, resulting in savings of 35,000kWh energy per year
- Seamless wireless CCTV integration enabled 24/7 video monitoring of critical workplace areas, ensuring personnel safety

APPLICATION

Energy efficiency in waste heat recovery exchanger and chiller system, and safety monitoring for critical plant area.

CUSTOMER

Toagosei Singapore Pte Ltd is a chemical plant that manufactures organic industrial chemicals, synthetic resins, chemical fertilizers and acrylic acid esters.

CHALLENGE

Singapore's Energy Conservation Act requires companies to take steps towards better managing their energy consumption and improving energy efficiency. To comply with the act, Toagosei needed to add new pressure and temperature monitoring points to the existing heat exchangers in their plant. However, there are limited cabling infrastructure and a restricted number of input/output (I/O) ports for the Distributed Control System (DCS) in the plant. Manual recording using analog gauges was not an option due to likely human error.

Additionally, it was discovered that the existing chiller system consumed 40% of the overall plant electricity. As the chiller system was designed to have higher load than the actual requirement, resulting in poor energy efficiency.

Toagosei also wanted to ensure that manual handling tasks (i.e. lorry filling/ discharging, power charging) in the plant are implemented in accordance with proper safety practices to help ensure worker safety.

Rosemount 648 Wireless Temperature Transmitter

"By leveraging Emerson's Digital Transformation technology and solutions, we are able to achieve operation excellence with improved energy consumption and workforce safety."

Ivan Goh
General Manager, Toagosei Singapore Pte Ltd

Rosemount 2051 Wireless Pressure Transmitter

CHEMICAL SOLUTION

Rosemount™ 2051 Wireless Pressure Transmitters and 648 Wireless Temperature Transmitters were deployed at the inlet/outlet shell of the 15 heat exchangers to gather data and manage fouling. Wireless transmitters eliminated the need for cables and DCS I/O ports. Data from the wireless transmitters is sent to the Emerson Wireless Gateway at a one-minute interval and sent to the DCS using Ethernet communication.

To monitor the chiller system's efficiency, Rosemount 648 Wireless Temperature Transmitters were installed to monitor the temperature of evaporator and condenser approach. A high evaporator approach temperature could indicate an unbalanced chiller system, such as lack of refrigerant or uneven refrigerant distribution due to a faulty mechanism, while a high condenser approach temperature could indicate fouling or change in chemical properties of the refrigerant fluid. The chiller system's pump was also monitored with Rosemount 2051 Wireless Pressure Transmitters.

CCTVs were also integrated seamlessly with the additional Wi-Fi® backhaul feature of two existing Emerson Wireless Gateways and Cisco® Wireless Access Points. As a result, site activities can be monitored in critical areas and personnel safety can be monitored live from the plant's control room.

The Convergence: Artificial Intelligence and IoT

Artificial Intelligence of Things (AIoT) is the next key step for IoT – transforming the process of analyzing data and turning it into action.

IoT will help with a new generation of AI enablement due to the aggregation nature of IoT. At its core, IoT is gathering massive amounts of data. And as that data is processed through the data-hungry algorithms of AI, the analytical and action parts of IoT will be greatly enhanced.

AIoT for Intelligent Data Analytics

IoT is key for collecting relevant, intelligent data and communicating it to be processed, analyzed, and made actionable. The role of AI within IoT is to streamline making sense out of all the data collected. It will open new channels for IoT Applications, as it will be incredibly efficient to analyze data coming from thousands of endpoints.

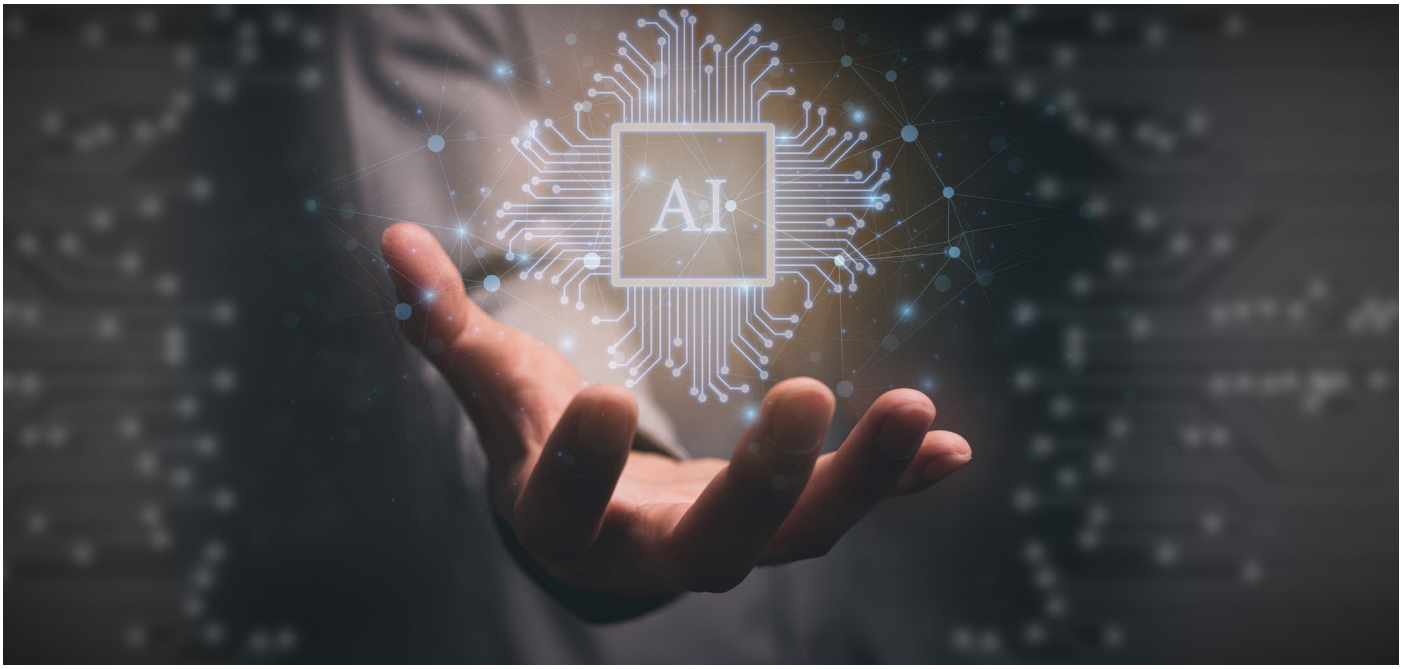
The ability for AI to analyze vast quantities of data will lead to many benefits, including increased operational efficiency, increased safety, risk mitigation, and utility automation.

The ability to analyze vast quantities of data will lead to many benefits, including:

Increase operational efficiency: The ability of artificial intelligence to predict circumstances based on trends through historical data can increase efficiency for many verticals, including fleet, assets, logistics, and manufacturing.

Boost safety: AIoT can increase safety in several ways. For example, using computer vision on a manufacturing floor to monitor employees or using virtual or augmented reality in hazardous situations. Artificial vision is leveraged in fleet management solutions to monitor driver behavior and use real-time alerts to prevent accidents, such as falling asleep behind the wheel.

Illustration: © IoT for All



Mitigate downtime: In manufacturing, unplanned downtime due to machine or equipment failure is one of the leading causes of revenue loss. With artificial intelligence analyzing data generated through IoT sensors on machine equipment, predictive maintenance can mitigate the risk of unplanned downtime and allow manufacturers to plan for machine maintenance.

Utility automation: In homes, smart buildings, and smart cities, utilities can be managed via AIoT based on trends. Not only does this create ease for consumers and citizens, but it can also increase safety, aid in traffic management, and bolster sustainability.

Convergence of 5G, Edge, and AIoT

One of the most encouraging running themes in this new era of IoT is how emerging technologies work strongly together instead of competitively. 5G has incredible speed and low latency, but in mission-critical communications – such as robotics and autonomous vehicles – the need for lower latency is further supported through edge computing.

Artificial intelligence can run more efficiently when closer to the edge rather than being sent to the cloud for computation. Automation through AI in those mission-critical communications will be utilized to the full potential when leveraging edge computing.

Cloud Is Sticking Around

Much like how 5G, the edge, and AIoT can work in support of each other, cloud computing will not be replaced by edge computing. The cloud still provides flexible, agile, and anywhere data access for organizations big and small.

The decision between cloud and edge depends on the individual Applications. Distributed computing allows organizations to pick and choose between the different options. Some Applications might pull together a hybrid cloud approach (public and private) and tie in some edge computing while also leveraging a local data center.

Building the Right Solution

The pitfall to having so many different options in computing and analytics is that it can be difficult to decide which options are optimized for your business case. That's why working with an expert strategic partner can not only help you make the best decisions but streamline the process to bring your solution to market faster.

DID YOU KNOW?

Very Slow Oregon Robot Sets a Running Record

It was slow but it still made history.

Cassie, a robot invented at Oregon State University in Corvallis, has set a record as the first two-legged robot to use machine learning to control its running gait on outdoor terrain, the university said.

Using a single charge and untethered, Cassie ran 5 km or 3.1 miles outdoors in a leisurely 53 minutes. That equates to about a 17-minute mile and compares to world-record time of about 12-1/2 minutes for the entire distance.

The robot fell twice as a pack of students trailed it past buildings, homes and country fields. Making distinct clomping sounds as its metal plates hit the ground, Cassie consists of two red "legs" with a motor and controls where a person's abdomen would be, and nothing above.

Such robots could be used in the future to deliver packages or help people in their homes. Part of the breakthrough is that Cassie learned how to balance dynamically, performing subtle adjustments to stay upright while moving, the university said.

Cassie was developed with a US$1 million grant from the U.S. Department of Defense. The robot was produced by Agility Robotics, a company spun out of the university.

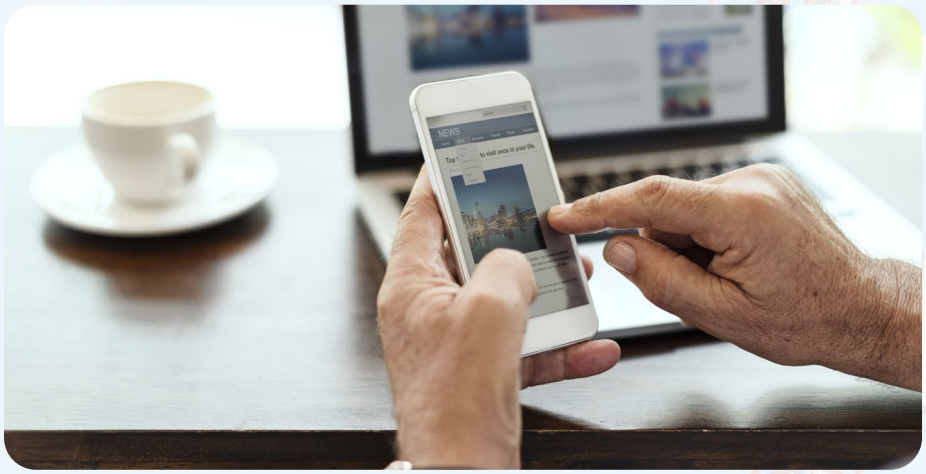
Source: www.channelnewsasia.com

Nokia Appoints Datuk Mohd Rauf Nasir to Lead Its Business in Malaysia

Nokia has appointed Datuk Mohd Rauf Nasir as Managing Director for Malaysia, Maldives and Sri Lanka, effective 1 August 2021. Based in Kuala Lumpur, Datuk Rauf will oversee Nokia's business and operations for the countries in his new role.

Datuk Rauf has more than 30 years of experience in Malaysia's telecommunications and IT sectors. Before joining Nokia, Datuk Rauf was the Country President of Motorola Solutions Malaysia, where he helped grow the company's business of mission-critical communications in the areas of public safety, oil & gas, transportation, and enterprise.

Prior to that, Datuk Rauf held various senior positions at IBM, managing an array of sectors that included the public sector, healthcare, and defense. His last role in IBM was the General Manager of the Communications Sector, focusing on key segments such as telecommunications, utility, and media.

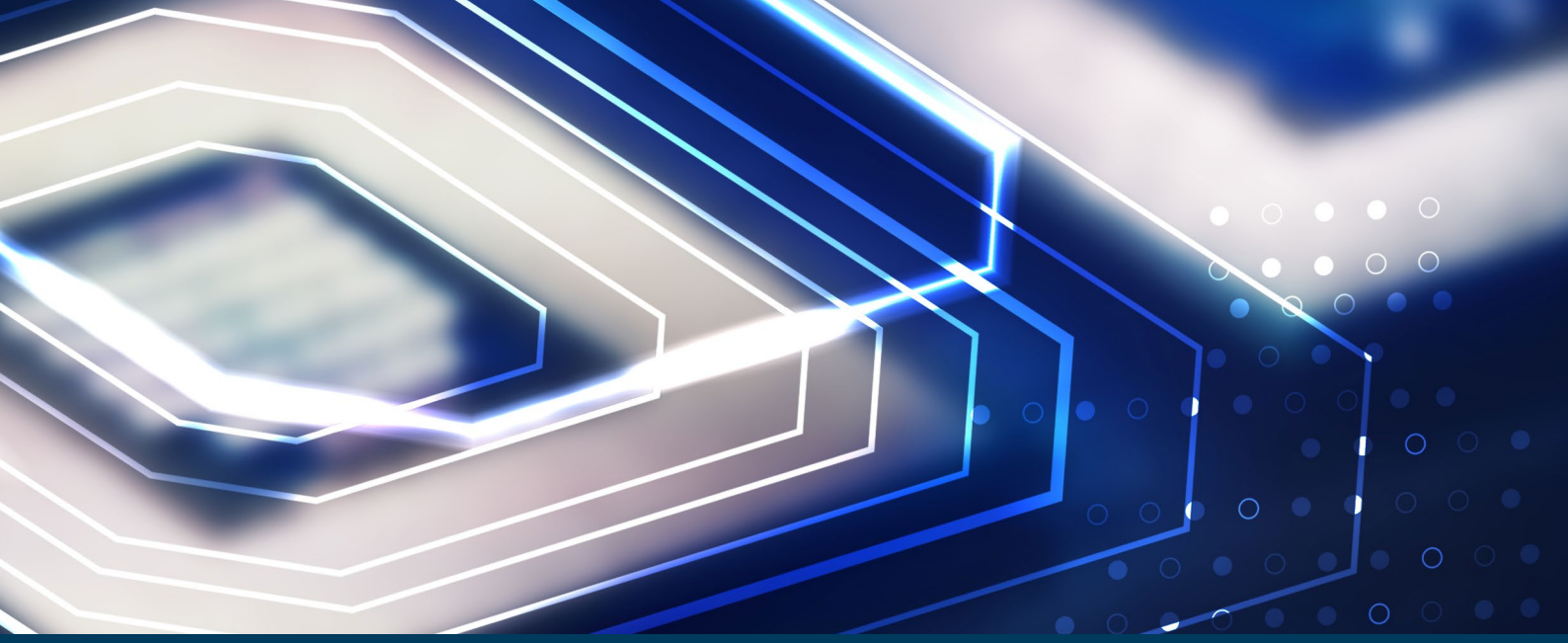


Datuk Rauf's rich and extensive experience in Malaysia will be instrumental in Nokia's continued drive to expand its business in the region. His role is especially crucial for leading Nokia's delivery of innovation and key solutions in the region from the company's unique portfolio, including high-speed private wireless networks and 5G.

Commenting on his new role, Datuk Mohd Rauf Nasir said, Malaysia is a key market for Nokia and we will continue to work with industry stakeholders in the nation to advance its holistic digital transformation. As a global technology leader, Nokia is poised to strongly contribute to national technology advancements such as 5G. I look forward to working with our operator and enterprise customers – as well as with the government – to strengthen local ecosystems, especially in empowering Malaysia's society and economy to accelerate the transition towards Industry 4.0.

About Nokia

At Nokia, we create technology that helps the world act together. As a trusted partner for critical networks, we are committed to innovation and technology leadership across mobile, fixed and cloud networks. We create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs. Adhering to the highest standards of integrity and security, we help build the capabilities needed for a more productive, sustainable and inclusive world.



ADVERTISERS INDEX

Page	Advertisers	Website
IBC	Automate Asia Magazine	www.asiaautomate.com
5	EMAX 2022	www.emaxasia.com
55	Harting Singapore Pte Ltd	www.HARTING.com/SG
33	Igus Malaysia Sdn Bhd	www.igus-asean.com
7	PMAX 2022	www.penang-expo.com
PFIC	Beckhoff Automation Pte Ltd	www.beckhoff.com.sg
IFC	Becker Asia Pacific Pte Ltd	www.beckerasia.com.sg
OBC	Phoenix Contact (SEA) Pte Ltd	www.phoenixcontact.com.sg

INTERNATIONAL SALES OFFICES

MALAYSIA | FBI Publications (M) Sdn Bhd
Unit 9-3, Jalan PJU 5/6, Dataran Sunway,
Kota Damansara, 47810 Petaling Jaya,
Selangor.
Tel: (+603) 6151 9178
E-mail: my@fireworksbi.com

SINGAPORE | Fireworks Trade Media Pte Ltd (HQ)
1 Scotts Road, #24-10, Shaw Centre
Singapore 228208
Tel: (+65) 6100 9101
Sales Hotline: (+65) 8389 1277
Fax: (+65) 3152 0253
E-mail: sg@asiafireworks.com

INDONESIA | Fireworks Business Information
Rukan CBD Palm City Blok B1 nomor 18 Taman Surya,
Jalan Paradise Boulevard Selatan, Kel. Kalideres,
Kec. Kalideres, Kota Adm. Jakarta Barat,
Prov. DKI Jakarta
Tel: (+6621) 1028 / 2605 1029
E-mail: info@fireworksbi.com

THAILAND | FBI Publications (Thailand)
Promphan 2 office & Residence, 8th Floor (Office Zone, Room
807) 1 Soi Lat Phrao 3, Lat Phrao Road, Jompol, Chatuchak,
Bangkok 10900
Tel: (+66) 2513 1418
Fax: (+66) 2513 1419
E-mail: info@fireworksbi.com

Philippines | Fireworks Trade Exhibitions and Conferences Philippines, Inc
U1207 12/F The Trade & Financial Tower, 32nd St.
cor. 7th Ave. Bonifacio Global City, Taguig City
Tel: (+63) 2 7902 0900
Sales Hotline: (+63) 2 927 704 0888
Email: phil@fireworksbi.com

AUTOMATE
ASIA MAGAZINE

SEA's Leading Automation+ Manufacturing Transformation Magazine

- Reach Out To Qualified Leaders & Key Decision Makers
- South East Asia Circulations
- Quarterly Publications

SUBSCRIBE NOW!

We cover industries such as:

- Industry 4.0
- Robotics
- Test, Measurement & Instrumentation
- Software, Network & Cyber Security
- Process Automation & Controls

A Publication of: FBI

+603-6151 9178

my@fireworksbi.com

www.asiaautomate.com

FBI PUBLICATION (M) SDN BHD
Unit 9-3, Jalan PJU 5/6, Dataran Sunway,
47810 Petaling jaya, Selangor, Malaysia

SCAN FOR MORE DETAILS

ROBUST PROTECTION

Against harsh operating environment e.g. electrical surges, overcurrent and mechanical shocks, vibrations, dusty, humid and cyclic temperature conditions.

IP67 TRIO POWER
Power supplies with robust standard functionality

CONTINUOUS POWER

Ensuring seamless operations with best-in-class power supplies, power buffering, backup and redundancy.

QUINT UPS
Ensures superior system availability

PUTTING TOGETHER

THE FOUNDATION OF A RELIABLE CONTROL SYSTEM SHOULD BE BUILT ON THESE FOUR ELEMENTS TO ENSURE TRUE POWER RELIABILITY.

TRUE POWER RELIABILITY

ENERGY EFFICIENT

Energy savings, environmentally friendly selection of reliable products with high MTBF results in long lifetime expectancy.

UNO TRIO QUINT POWER
Leading technology and high-quality power supplies

INTELLIGENT MONITORING

Via smart connected solutions with preventive and predictive service and maintenance.

IMPULSECHECK IPCH
Intelligent assistance system for surge protection

PHOENIX CONTACT SOUTHEAST ASIA

UNRIVALLED POWER
ENDLESS POSSIBILITIES

marketing@phoenixcontact.com.sg

www.phoe.co/power-reliability