

ISSUE 01 | NOVEMBER 2021

MIFA IN ACTION

MALAYSIA INDUSTRY FORWARD ASSOCIATION

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MIFA will play a significant role
in translating and
operationalizing the National
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- Prof. Tan Sri Dato' Wira
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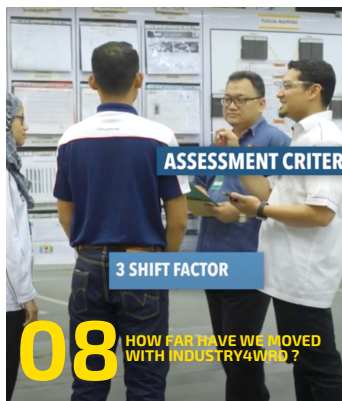
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Big data analytics describes the process of uncovering trends, patterns, and correlations in large amounts of raw data to help make data-informed decisions. These processes use familiar statistical analysis techniques—like clustering and regression—and apply them to more extensive datasets with the help of newer tools.

Harnessing the energy from the sun does sound like an excellent solution in transitioning our energy source from the conventional fossil fuel: it's clean, and the resources are abundant and free.



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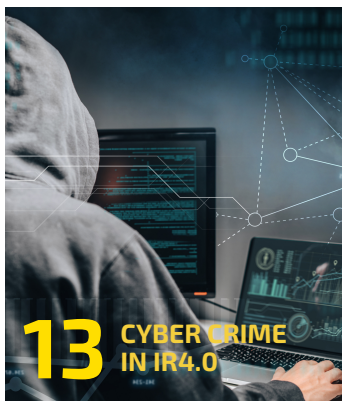
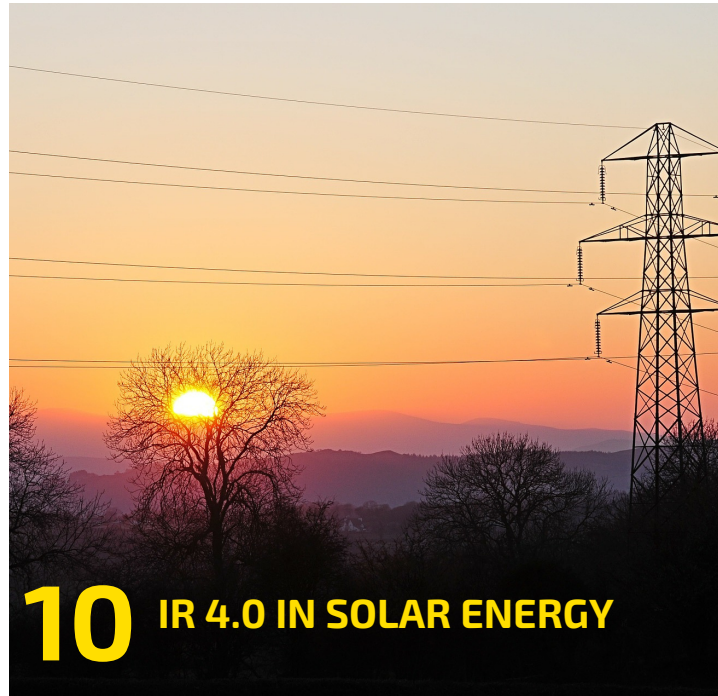
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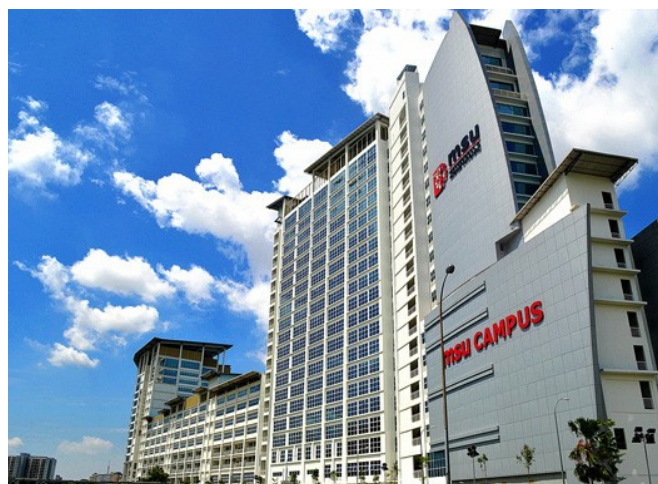


The security factor in digital business and Industry 4.0 itself has become part of determining the organization or company's security. To be exact, there are many organizations or companies that bankrupt due to cyber-attacks.

Blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain.



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Assalamualaikum WBT

First of all, heartiest congratulations to the President, EXCO and members of Malaysia Industry Forward Association (MIFA) on its inaugural e-newsletter.

As the Patron of MIFA, I trust that MIFA will play a significant role in translating and operationalizing the National Policy on Industry 4.0 (known as Industry4WRD). MIFA through the collaborative strengths of its members has the experience and capability to be the leading association that delivers all the 9 Pillars of Industry 4.0 and the digital transformation of the country.

MIFA's shall be the platform to promote the adoption, usage and governance of IR4.0 and be the thought leader to influence on the innovation, development and market deployment of technologies and applications within the IR4.0 ecosystems.

In addition, through MIFA's various initiatives, it shall provide its members a common community platform to collectively collaborates in generating new business opportunities and enhancing the professional standing and visibilities of its members nationally and globally. MIFA's shall also play a significant role to support the national vision to increase the national productivity in the manufacturing industry, elevate the contribution of manufacturing sector to the economy, strengthens Malaysia's innovation capacity and capability as reflected in Global Innovation Index ranking and increase the number of high-skilled workers in manufacturing sector.

To be a leading Association MIFA needs to remain agile and competitive to attract collaborative partners and members that will inevitably drives Malaysia industry forward and make Malaysia an attractive prospect for new innovative technologies that provides high value-added industries for the future.

As such, I am honoured to assist MIFA by sharing my leadership experience to further enhance MIFA's contribution to the nation.

Best regards

**PROF. TAN SRI DATO'
WIRA DR. MOHD
SHUKRI AB YAJID**



➔ CORE ACTIVITIES

MIFA has around 98 members currently from the sectors mentioned above to provide the local expertise in I4.0. Therefore, the consultation, solution, training, and research are under one umbrella in all 11 key pillars of I4.0 according to Industry4WRD Policy. MIFA is the only Association whose purpose of birth itself is to embark the nation on the I4.0 journey according to Industry4WRD Policy. MIFA is moving ahead with its following core activities: -

- ✓ Generate opportunities to meet and collaborate with other leading companies, thinkers, doers, and movers in the I4.0 & IR4.0 world.
- ✓ Form industry committees and working groups to identify and address areas of common concerns.
- ✓ Exercise thought leadership voice in driving forward the most important conversations on I4.0 & IR4.0 at industry events and in the press.
- ✓ Jumpstart business development opportunities, which includes partners and customers, suppliers, talent, and potential investors.
- ✓ Lead efforts to raise I4.0 & IR4.0 education among consumers, sales channels, and investors.

MIFA PRESIDENT

Ts. Muhammad Didi Hendra Shah bin Norharashid (CMILT)
Managing Director of Hadi Venture Sdn. Bhd. & IoT Sata Sdn. Bhd.

On 31st Oct 2018, the Ministry of International Trade & Industry (MITI) launched a National Policy on Industry 4.0 (I4.0) called INDUSTRY4WRD. It was a great initiative by the Govt. of Malaysia to embark the nation on the journey of the 4th Industrial Revolution (4IR). The Government agencies like SIRIM, MIMOS, MARII, MPC & MIDA played a valuable role in awareness.

According to the INDUSTRY4WRD Policy, an ecosystem needs to be established for providing a one-stop I4.0 platform. It should connect the related Government agencies, manufacturing sector, I4.0 solution & training providers, and researchers. This was when the MIFA was born on 6th June 2020.

Furthermore, the COVID-19 Pandemic taught us a big lesson to embark on new technologies for continuous manufacturing and services operations. It is our responsibility to boost our speed for awareness, education, research, and implementation. But, of course, we need strong Government support in this matter and all stakeholder cooperation to achieve national objectives to stand in line with developed countries.

Last but not least, I would like to congratulate all MIFA members on this very first official magazine of MIFA, which will give insights into I4.0 technology to the audience.

INTRODUCTION

OBJECTIVE

To be the leading community platform that provides outstanding members value relates to Malaysia Industry4WRD Policy. It will connect related stakeholders, entrepreneurs, researchers, and policymakers with a strong voice of influence on the innovation, development, and market deployment of I4.0 & IR4.0 technologies & applications while stimulating and spearheading a favorable business environment.

MISSION

- Advocating and shaping guidelines for the I4.0 & IR4.0 best practices and technology standards
- Generating new business opportunities, increasing collaborations with other members, and building professional standing
- Building a sense of community through events and education
- Enabling a network for collaboration and inspiration
- Developing a comprehensive digital library or knowledge bank with innovative and up to date content including successful implementation testimony and case studies.



AGRICULTURAL REVOLUTION



GHAZALI MUHIYUDDIN
MANAGING DIRECTOR
ADEANTE SDN BHD



What is Big Data? Big Data is a field that treats ways to analyze, systematically extract information from, or otherwise, deal with data sets that are too large or complex to be dealt with by traditional data-processing application software. Meanwhile, data analytics is the process of examining datasets to draw conclusions about the information they contain. Data analytic techniques enable you to take raw data and uncover patterns to extract valuable insights from it. Businesses and Governments depend on data a lot in their strategic planning especially long-term planning. The quality of Big Data and data analytics could make or break a company, or ensure the prosperity of a country continues or create a big problem for their population. With the world population expected to increase to 9.7 Billion from 7.8 billion currently, Malaysia shows a projection of 40.7 million population from 32.3 million currently. Based on our current Food Security situation, are we ready for population growth and can we produce our food ourselves? Or are we going to keep importing our food, knowing other parts of the world have increased population and reduced resources too? If we want to produce our own food, better strategic planning, especially on the use of land suitable for agriculture, should be carefully laid down.

Currently in Malaysia, a lot of people said we have an abundance of the land but is that a fact? Of the total land in Malaysia, 26.09% (7,839,000 Ha) is used for agriculture, which is lower than the global average which is 38.10%. 75% (5,879,250 Ha) of the agricultural land is used for Commercial Crops (Oil Palm, rubber, and coca) while only 16% (1,254,240Ha) is used for food production (paddy, fruits vegetable, and coconut). The size allocated to grow paddy hasn't changed since the last 30 years however the production increased 3 folds due to innovation. We used to produce more than we import but the situation has reversed currently due to favoring Palm Oil where the crop area increased to become the majority used of our fertile agriculture land. Basically, we are a mono-cropping nation which could be dangerous for our food sovereignty.

With the Industrial Revolution which started during the 18th century, agriculture also went through a new Agriculture revolution where innovations and inventions altered how the farming process worked. Labor-intensive activities were reduced which instigated the move of the previously farming population to the cities and participate in the Industrial Revolution. Industrial Revolution prospers and is now, in 2021, at its 4th reincarnation. Agriculture hasn't changed that much until now. There are multiple limitations for traditional farming even with the influence of the First Industrial Revolution which ignited the Agriculture Revolution circa the mid-18th Century. Some of the limitations are climate, Sun, water, pest control, fertilizers, etc. However, with the advance of Industrial Revolution 4.0, human civilization is leaping into a new era, the era of Big Data, Artificial Intelligence, Virtual Reality, and Automation. It will once again change how we operate our day-to-day tasks including Agriculture. With this new Industrial Revolution, the new Agriculture Revolution will ignite.



Now we can grow any crops indoors where we control every aspect of the growth of the crops. No longer do we need to depend on the duration of time when the Sun shines, worry if there's drought, or use a lot of pesticides just to avoid multiple pests. We can cut the harvesting time of certain crops to half should we want to. We can detect pest infestations before it consumes the whole farm and predicts the direction of the infestation so we can control and cut off the infestations before it spreads further. Going forward we don't even need humans to plant or harvest the crops and the process can be done without stopping to rest theoretically. Humans can just sit in an air-conditioned room, monitoring all these activities taking place just to ensure everything is going smoothly. This will effectively eliminate most of the intensive labor activities that could cost more time and money, which in turn will increase efficiency to levels we haven't seen before.

Now with all these advancements, should we stick to the old agriculture land planning practice or should we innovate and take a fresh look at how we plan our food production? Since some of the crops can be grown indoor and vertically to save a lot of space and increase efficiency while increasing the quality of the crops, isn't it high time we restructure our land allocation for food production to better use the available land that we can use? With the forest coverage has been decreasing for the past 4 decades, should we do all we can to preserve what little we have left for future generation? We should plan responsibly for the future. After all, it is all for our children.

With better strategic planning, a solid Agriculture Masterplan, we wouldn't have to be worried about the population increase projected in 2050, or even another 50 years. We wouldn't have to be worried about our Food Security, Safety, or Sovereignty. We will solve the problems before they materialized. However, we should take the first step of admitting our problems and weaknesses. We have the opportunity now to correct our mistakes before. Albert Einstein once brilliantly said, "We cannot solve our problems with the same thinking we used when we created them". So let us solve our problems, so our children won't have to.

MALAYSIA ROBOTICS



TS. SYED ZAINI PUTRA AL-JAMALULLAIL BIN SYED YUSOFF
DIRECTOR
T-ROBOT SDN BHD

MALAYSIA INDUSTRIAL ROBOTICS LANDSCAPE AND CHALLENGES

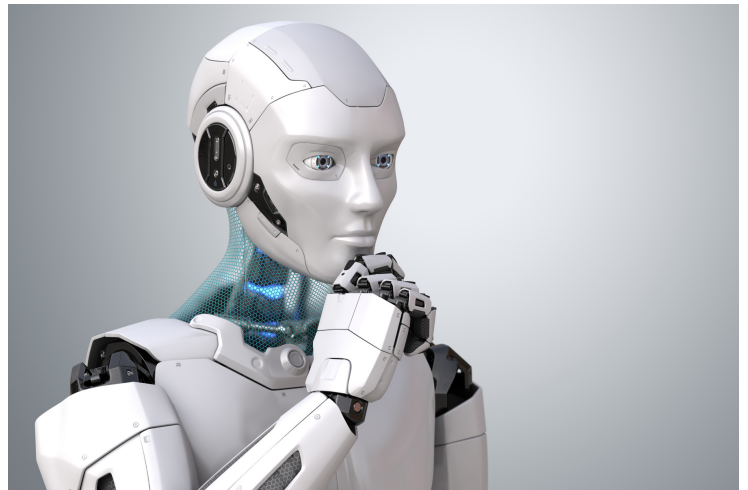
Malaysia has made remarkable progress in terms of its economic growth and competitiveness since it gained independence in 1957. The contributing factor can be attributed to the economic policies launched every 10-20 years, which have been laid down on the foundation of the global trend and economic phase of the country. Plotting through its vision of being a developed nation by 2050, Malaysia has proved significant achievements, specifically in the manufacturing and services factor, thanks to its series of Industrial Masterplans and New Economy Policy. The current global wave of the fourth industrial revolution on the other hand has also positively impacted Malaysia, especially the local industries. Increasing ease in manufacturing and services processes arising from autonomous mechanization makes mass customization possible and increases productivity. Looking to the distant future, Malaysia has proved its readiness to embrace the revolution as a developing country, as cited by the World Economic Forum where Malaysia is the 34th country in the international competitiveness ranking. The Malaysian government has been putting a massive emphasis on the development of science, technology, and innovation (STI) and productivity in general through various government policies. Robotics and automation, on the other hand, plays an integral role in these two aspects in the sense that; robotics is a product of science, technology, and innovation, especially in the wake of Industrial revolution 4.0, and robotics has been proven to be one of the main elements that provide a solution to the issues and challenges faced by the main industry in Malaysia, i.e. the manufacturing sector (productivity, labour and cost). Based on Malaysia market research, robotics and automation companies in Malaysia can be categorized as follows:

1. Robotics and automation developer
2. Robotics and automation component
3. Robotics and automation system integrator
4. Robotics and automation for service and edutainment
5. Robotics and automation software and services

Special characteristics of Malaysia robotics and automation consumer market and market potential :

- Highly skilled manpower for research and development, and engineering design activities.
- A mature engineering supporting industry for the outsourcing of parts and components, and engineering services.
- Attractive incentives for the manufacturing and assembly of high technology and specialised robotics and automation machine makers.
- A strategic gateway to the ASEAN market which has a combined population of more than 600 million people and total GDP of US\$2.31 trillion for 2013.
- Well-developed infrastructures including excellent land, sea and air connectivity, and integrated telecommunication systems.

Although there are numerous strategies that are typically used as market entry strategies into Malaysia such as exporting, franchising, licensing, and strategic alliance, most exporters find that using a local distributor or agent is the best first step for entering the Malaysian market. A local distributor is typically responsible for handling customs clearance, dealing with established wholesalers/retailers, marketing the product directly to major corporations or the government, and handling after-sales service. Exporters of services generally also benefit from the use of local partners.

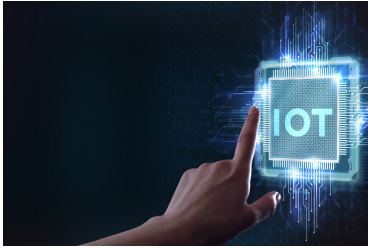


Challenges among SMEs

It is a big challenge to promote the adoption of robotics not only to the major companies that have readily utilized robots in their manufacturing process but also to the medium and small-scale companies. According to industry players for the robotics sector market in Malaysia, these companies generally are aware of the global trend of automation and of Malaysia's government policies and incentives to promote technological adoptions. However, only 30 percent of these companies have started to invest and leverage modern technology. Therefore, it is important to convince these SMEs of the tremendous possible improvement

INTERNET OF THINGS (IOT), CONSUMER IOT & INDUSTRIAL IOT

Industrial Internet of Things (IIoT)



The industrial internet of things (IIoT) can be referred to as the upgraded version of IoT or IoT application in industrial sectors such as manufacturing, textiles, healthcare, agriculture, and energy-related industries. With the incorporation of IIoT in the industry, significant improvement can be achieved in terms of their productivity, operational efficiency, reliability and revenues.

In IIoT, machines are equipped with interconnected sensors and intelligence, thus providing more automation. Machines are intelligent enough to communicate, share data with other machines known as (M2M) communication, or interact with humans as well.

IIoT is the combination of Information Technology (IT) and Operation Technology (OT). OT refers to the network of devices that control and monitor physical devices or Industrial processes, includes sensors, actuators, Programming Logic Controller (PLC), Distributed Control System (DCS), Supervisory Control and Data Acquisition (SCADA) and Human Machine Interface (HMI). On the other hand, IT generally refers to telecommunication equipment or software applications. Unlike the OT, IT does not generate the data from physical devices, but it processes, manipulates, recovers, store, transmits/receive and protect the data.

The merging of IT and OT in IIoT gives businesses more prominent framework integration in gathering Real-time data, automation, optimising processes, and decision-making. It also provides superior perceivability of industrial operations such as farming, healthcare, textile, manufacturing, transportation, and other utilities.



MUHAMMAD ALI AKBAR
CO-FOUNDER & CTO
IOT SATA SDN BHD

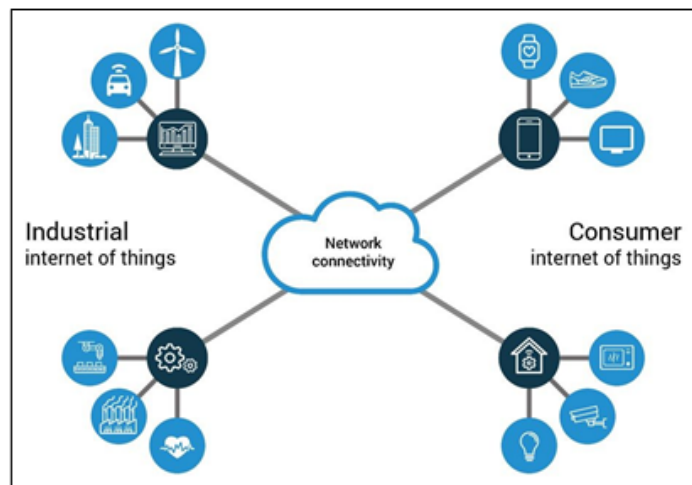
WHAT IS THE DIFFERENCE BETWEEN INTERNET OF THINGS (IOT), CONSUMER IOT & INDUSTRIAL IOT?

Internet of Things (IoT):

Internet of Things (IoT) indicates an ample number of “things”, or it can be defined as the solid representation of devices connected over the internet and are constantly compiling and distributing the data or information with each other. Adding sensors to all unintelligent devices will enumerate a sense of digital brilliance in them. IoT integrates the digital and physical world, which revolutionizes the universe to become smarter, reactive, and intelligent compared to previous generations. The truth is that any device with an on and off button can be a part of IoT.

IoT is a massive network of connected things and people, which collect and share data about the environment we live in. These devices are more intelligent enough and can work independently without human assistance.

The Internet of Things (IoT) has become a popular topic in discussions. However, many of us are confused about their difference in the IoT, Consumer IoT, or Industrial Internet of Things (IIoT). In brief, if the application is consumer-based, it will be referred to as Consumer IoT. On the other hand, if the application is industrial-based, it will be considered Industrial IoT.



Consumer IoT

Smart refrigerators, earphones, smart washing machines, smart wearables, and many more household devices are the major applications of Consumer IoT. These are few basic examples of “things”, but in real-world scenarios, IoT devices transform the current homes into smart homes that regulate the heating and lighting according to the need. In smart microwaves that can cook your food in precise time, self-driving cars that can detect objects on the road with the help of smart sensors, wearable smartwatches that can count the number of footsteps that we take in a day, or it can also measure the heart rate. Furthermore, nowadays, there are even footballs using IoT, which can record the distance and the force of the ball. This information can be used for training purposes. The built-in sensors in all the smart devices or machines can compile data and perform the action in specified scenarios.

TECHNOLOGY NOW INDUSTRY 4.0



DR. MAZLAN ABBAS
CEO OF FAVORIOT

WHERE ARE YOU IN THE DISRUPTIVE ERA OF IR 4.0?

There must be a reason why IR 4.0 has the term "Revolution". It's because "revolution" comes with a sudden and disruptive change. Otherwise, it can be called "evolution" since this process is slow and gradual change. A revolution normally happens when various factors come together and ready to burst. The same thing technology revolution, a single technology will not make such a big impact. A single technology can cause a "ripple". However, when we bring many of this "technology ripples" together, it can become bigger ripple or waves. Finally it becomes a tsunami that no one or organisation can stop.

This is exactly what happens with IR 4.0 – the effect of many technologies emerged and fused together. We are seeing technology like IoT become more matured due to several technologies ripples. It has been supported by the power of computing power and miniaturisation of electronic devices. Furthermore, the network has becoming pervasive – not only in the LAN but also the WAN which includes the newly IoT specific network such as LPWAN.

Other technologies in IR 4.0 also play a very important role such as Artificial Intelligence and Big Data Analytics. With the increased amount of data from IT systems and IoT sensors, it now make sense to use machine or deep learning algorithm to generate better insights of the data. Robotics and drones are now more feasible when they have better sensors, AI and communications capabilities.

We are also seeing Blockchain enter many other applications and no longer seen as the technology for Bitcoin or Cryptocurrency. With its secured data and smart contract, it has become a killer app in ensuring issuing of Digital Certificates and payment systems to be automated without the need of too many manual tasks in between.

WHERE ARE YOU IN THE INDUSTRIAL REVOLUTION?



What's the fastest way to evaluate whether your business and operations are in the Era of IR 1.0, 2.0, 3.0 or 4.0? Although you can go through the complex process of IR 4.0 Readiness Assessment, there's a simpler way to gauge in which IR your business is currently in.

My definition of the Industrial Revolution Era is the following (based on technology usage).

- 1) IR 1.0 – When you are using manual and some physical tools
- 2) IR 2.0 – When you used machines which are powered by electrical
- 3) IR 3.0 – The start of digitalization when you use the computer, Internet, and some IT databases.
- 4) IR 4.0 – When you start to use technologies such as IoT, Blockchain, AR/VR, Artificial Intelligence, Robotics, Drones, Big Data Analytics, 3D Printing among others.

As an example in a Classroom, if you use whiteboard or blackboard, then you are in the Era of IR 1.0, but if you start to use Projectors, you are in IR 2.0, in Era IR 3.0, you might be using Online classes. But when you start to use Virtual or Augmented Reality as teaching tools, most likely you are now in IR 4.0.

You can choose any applications scenario and try to match in which Era are you currently operate.

The technology ripples of IR 4.0 has caused a huge tsunami that disrupts many businesses. New products and services has emerged including new business models which we have never imagined. The question is not about should we wait for the tsunami to hit us but actually when we should be surfing the big waves together?

TECHNOLOGY NOW INDUSTRY4WRD



DR. ZULHASNI BIN ABDUL RAHIM
UNIVERSITY TECHNOLOGY MALAYSIA
NATIONAL TRIZ INNOVATION EXPERT

HOW FAR HAVE WE MOVED WITH INDUSTRY4WRD ?



Industry 4.0 aids in the shaping of smart future manufacturing through a variety of methods, one of which is the implementation of the Industry4WRD RA Program, which is influenced by the National Policy on Industry 4.0. The study depicts the current state of readiness for SMEs to move to Industry4WRD. The National Policy on Industry 4.0 intends to revolutionize the manufacturing industry and related services in Malaysia. Finance, infrastructure, law, skills and talent, and innovation are among the strategies aimed at drawing stakeholders to new technologies and processes while also enhancing Malaysia's appeal as a preferred manufacturing destination. Since the official national programme launched in October 2018, how far have we moved forward with Industry4WRD?

The Industry4WRD Readiness Assessment (RA) programme has become the heart of the initiation for transforming SMEs towards an Industry 4.0 culture. The Industry4WRD RA has uncovered the true meaning of the Industry 4.0 status of readiness profiles, such as conventional, newcomer, learner, experienced and leader. If the outcome shows that the profiles of SMEs are majority under the profile of learner, experienced and leader, then we are mature enough in the adoption of Industry 4.0 culture. On the other hand, if the majority of the SMEs are under newcomer and conventional readiness profiles, then we still need a lot of effort to be done. This indicator will be our signal to strategize the action plan of the Industry4WRD program, which is the intervention program.

The next big question is how big the impact is created by the Industry4WRD RA program on our Malaysian SMEs which costs around RM210 to RM43 million. In terms of numbers, the Ministry of International Trade and Industry (MITI) has achieved beyond the targeted number of 500 SMEs that completed the RA program. Furthermore, a short independent study has been carried out to analyse the effectiveness of Industry4WRD RA for SMEs. The study showed that the level of understanding of Industry4WRD has increased from 18% (before the program) to 60% (after the program). The overall findings showed the majority of the SMEs have a good and excellent level of understanding of Industry4WRD shift factors (Technology, Process and People).

In conclusion, the Industry4WRD programme has had a positive impact on our Malaysian SME movement towards an Industry 4.0 culture. We still have a lot of room in working together and achieve a higher Industry4WRD RA profile for all types of industrial sectors and at all states in Malaysia. Furthermore, we also need to re-strategize the Industry4WRD programme as a stepping stone in the process of economic recovery post-pandemic COVID 19.

By Sustainable Industrial Revolution and Innovation (SIRI) Sdn. Bhd.

SIRI is among the fast emerging professional services networks in the world. SIRI supports organisations and individuals in creating the value they're achieving, by execution beyond quality and advisory services.

TECHNOLOGY NOW

BIG DATA



MAHADIR YUNUS
CEO/CO-FOUNDER
KRENOVATOR SDN BHD

BIG DATA

Big data analytics describes the process of uncovering trends, patterns, and correlations in large amounts of raw data to help make data-informed decisions. These processes use familiar statistical analysis techniques—like clustering and regression—and apply them to more extensive datasets with the help of newer tools. Big data has been a buzzword since the early 2000s when software and hardware capabilities made it possible for organizations to handle large amounts of unstructured data. Since then, new technologies—from Amazon to smartphones—have contributed even more to the substantial amounts of data available to organizations. With the explosion of data, early innovation projects like Hadoop, Spark, and NoSQL databases were created for the storage and processing of big data. This field continues to evolve as data engineers look for ways to integrate the vast amounts of complex information created by sensors, networks, transactions, smart devices, web usage, and more. In this article, I will share big data advantages for businesses.

Cost optimization

One of the most significant benefits of Big Data tools like Hadoop and Spark is that these offer cost advantages to businesses when it comes to storing, processing, and analyzing large amounts of data. Not just that, Big Data tools can also identify efficient and cost-savvy ways of doing business. The logistics industry presents an excellent example to highlight the cost-reduction benefit of Big Data. Usually, the cost of product returns is 1.5 times greater than that of actual shipping costs. Big Data Analytics allows companies to minimize product return costs by predicting the likelihood of product returns. They can estimate which products are most likely to be returned, thereby allowing companies to take suitable measures to reduce losses on returns.



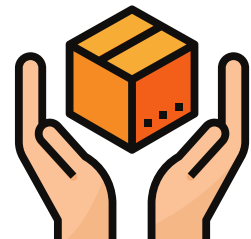
Customer Understanding

Big has the ability to understand customers better, and from your business accordingly. Having a vague idea of what your customers want is one thing; however, stepping into their shoes and understanding how they interact with your online interfaces is indispensable. Through the use of big data analytics, companies can allow for better customer personalization and trust, and can also understand what motivates them. This ultimately enhances customer experience and allows companies to remain in tune with their users' needs and desires. For example, Amazon used big data to reveal which products were performing better. Through viewing factual product patterns, they were then able to confidently tailor recommendations for specific customers. This use of big data allows businesses to obtain higher levels of customer satisfaction.



Product Innovation

Companies can use optimization models to forecast quality and yield, predict demand, account for changes in production processes, ascertain return-on-investment (ROI) for every component in the production process, and employ mass customization strategies. Big data analytics can therefore strengthen decision-making and generate higher ROI as well as excellent performance. Through predictive analytics and modeling, your organization can anticipate the product's market performance pre-and post-launch in near real-time, decide on the optimal distribution chains, and optimize marketing strategies to accelerate customer acquisition at the lowest cost possible. Besides, modeling tools can aid to optimize media planning to help the organization accomplish its marketing goals. Firms into marketing analytics and in-house quantitative marketing teams can analyze the effects of marketing across channels and media. Organizations can thus assess marketing performance and adjust their marketing strategies in real-time to exceed their marketing goals.



TECHNOLOGY NOW SOLAR ENERGY



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IR 4.0 IN SOLAR ENERGY - TAKING BACK THE POWER

Clean, but unreliable



Harnessing the energy from the sun does sound like an excellent solution in transitioning our energy source from the conventional fossil fuel: it's clean, and the resources are abundant and free.

However, working with Mother Nature poses one major problem: you can never control when the sun is going to shine. The demand for electricity consumption may persist throughout the day but the solar energy supply highly depends on the uncertain availability of sunshine. Integration of such unpredictable and uncontrollable power supply only leads to the electricity grid provider's ultimate nightmare: grid instability.

Due to its intermittency nature, solar energy has been long labeled as unreliable. Nonetheless, the advent of the Industrial Revolution 4.0 (IR 4.0) has brought along a new wave of application in the solar industry and may provide bright solutions not only in tackling the reliability issue, but also providing various improvements in the sector.



Taking Back Control

Energy storage system (ESS) technology has already existed for some time now to tackle energy's intermittent supply issue, but it is one dimensional in nature; it only stores the energy when the supply is available and discharges whenever consumption is required.

Therefore, the safest bet at the moment is to have the biggest storage capacity possible with the hope that we will have ample supply at the situation whenever we need it the most, which is indeed not cost-effective.

A fitting analogy to best describes the integration of IR 4.0 is like furnishing a thinking brain to a normally monotonous system. For instance, by introducing artificial intelligence (AI), simulation, internet of things (IoT), and big data analytics into the existing solar PV with an ESS system, we can combine the user's consumption trend and historical weather data to define a more accurate supply and demand model, analyze the situation and recommend necessary actions or adjustments.

Besides that, the system might also be able to provide precise predictions of the upcoming scenarios for us to plan better, make data-driven basis decisions, and adapt more appropriately to the forecast.

While we may argue that control system technology has already been vastly applied in the energy systems in general, however, we can never deny the fact that the system is bound by the limitation of human's capability: the system can only function to what it is programmed to do, whenever it's needed. IR 4.0 provides just beyond that, the capability of continuous self-learning, highly adaptive, and most importantly, less prone to human error.

Tackling conventional issues

IR 4.0 implementation does provide solutions in solving electricity bill-related issues. For example, since energy storage system can no longer be viewed as unidimensional, you now have the control to decide the best time to use or store energy, depending on various factors such as corresponding to demand-supply management in shaving the peak demand to avoid maximum demand charges, weather data predictions and even electricity tariff fluctuations (for applications with time-based tariff).

Another breakthrough of IR 4.0 can be found in the solar power plant management itself, where the operation and maintenance of the plant is no longer conducted in conventional methods. For instance, drone inspection is a perfect replacement for the normally tedious, exhaustive, and time-consuming task of manual inspection. Besides, the utilization of automated cleaning machines will not only help in physical PV modules cleaning but also make the decision on the right time to perform cleaning exercises. Predictive modeling can help in anticipating breakdowns and reduce downtime, and prominently increase system performance.

IR 4.0 application also breathes new changes in view of the security system in the solar industry. From as simple as an IoT-based monitoring system for a solar power plant to protect against theft and vandalism, to the introduction of a pilot run of the Peer to Peer (P2P) energy trading by SEDA Malaysia via blockchain platform, the possibilities of IR 4.0 in providing a more secured environment is definitely broad.

STRATEGIC ENGAGEMENT FOR IR4.0 : LECEISTER CITY CASE STUDY



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Introduction

In a typical association, a third to half of the workforce is disconnected. Participation is poor, turnover is high, and gainfulness or adequacy is average. An understanding of human nature combined with behaviors that are learnable can create an engaged organization, which is vital especially when we are embarking on Industry 4.0. Basically, the key today in VUCA world is workforce engagement.

The Engagement Sensation

Engagement is very similar to intrinsic motivation (IM). The assumption here is that engagement cannot be "made to happen". Table 1 below highlights those differences:-

Table 1 : Motivation vs Engagement

KEY ELEMENTS	MOTIVATION	ENGAGEMENT
Goal	Initiate, focus on activity	Learning & increased skill, knowledge
Responsibility	Management	Individual, Team
Activity	Planned, Triggered	Ongoing, Continuous
Assumption	Human biological core	Humans seek meaning-self realization
Control	Top Down,	Self-determination
View towards Worker	Employee	Partner
Philosophy	Reductionist, Linear, Atomistic	Holistic, Systemic, Complex

Leicester City Case Study : Engagement Excellence Model

Leicester City winning the English Premier League title in the 2015/2016 season is presumably the best underdog story in the historical backdrop of soccer games. The table below (Table 2) represents Leicester City Engagement Matrix which summarizes the chronology of its debut. The team is really onto it since the very beginning where they simply just trying their best to outperform other teams. During this Normal situation, it's merely a kind of day-to-day operation for Leicester. However, when the thing gets tough, Leicester's approach is more focussed and they start treating each and every team differently. Their "business" has changed from "Operational" to "Tactical" in order to meet the course.

Table 2 : Leicester City Engagement Matrix

Situation	Principles	Decision
Normal	No Harm Done – Keep Trying	Business As Usual (Operational)
Tricky	Face 1 by 1 – Focussed	Business As Usual (Tactical)
Complex	Do or Die – Calculative yet Simple	Strategic Moved

When they entering the end of the season their situation has dramatically changed from Tricky to Complex mainly because of the intensity of the league itself. The playing field has totally changed. Leicester needs to incorporate Strategic Move in every remaining game. Their slogan has to turn into "Do or Die". A simple plan which is to avoid any defeat was established. A very calculative strategic moves towards their opponent threats.

Conclusion

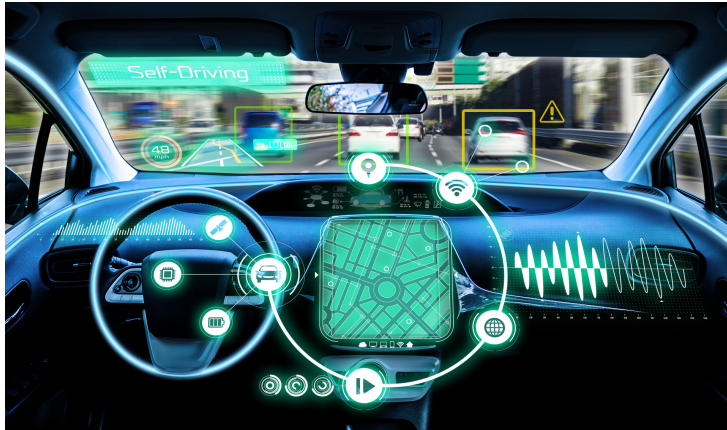
Consequences of execution and engagement are liable to the circumstances in which it is grasped. One methodology and structure can't fit in all situations. Strategic execution and engagement exist when the value chains of different businesses present opportunities for cross-business skills transfer, cost-sharing, or even brand sharing. VUCA world and IR 4.0 have to change the norm (not to be left out of the CoViD -19 pandemic). Rapid changes required Strategic Engagement - Execution is Impact on Action !

AUTONOMOUS VEHICLE ON IR4.0



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Introduction



Autonomous vehicles (AV) can provide more efficient logistics and passenger transfer methods. Furthermore, smart sensors along with the implementation of cognitive computing and the Internet of Things (IoT) represent an AV as a Cyber-Physical System (CPS), within which information from all related perspectives is closely monitored and synchronized between the physical devices and the cyber computational space. By utilizing advanced information analytics, AVs will be able to perform more efficiently, collaboratively, and resiliently. Thus, it is possible to integrate AV into Industry 4.0 systems. Competence and know-how about AV as well as self-driving algorithms gained presents a base for urban mobility studies. CPS can be abstracted into sensing, computing, and actuation modules.

According to the report from McKinsey & Company, fully automated vehicles are unlikely to be commercially available before 2020. The implementation of AV combining the application of Transport as a Service (TaaS) has become more realistic and meaningful. The readiness of these technologies empowers researchers to help industries to increase their productivity and create more benefits. Since the term Industry 4.0 was first pushed by the German government, it has been applied to a larger scope of technical elements and brought more connections between the virtual world and the physical one. Industry 4.0 describes a set of concepts that can drive the next industrial revolution. The potential of adopting the AV into the industrial area is promising for accommodating most technical concerns in the following areas:

- **Cost-efficient:** instead of traditional fuels, energy like electricity can reduce the cost and increase the effectiveness of manufacturing. Unmanned methods can also help to cut down expenses of employers' payments.
- **Digitalization:** using cloud computing to deal with big data captured by sensors from AV help factories to keep control of all information and stay on track of the current status.
- **Safety/Liability:** real-time tracking and monitoring system ensures safety during the vehicle operation. The avoidance of human intervention ensures better technology acceptance and a sustainable customer relationship.
- **Flexibility/Scalability:** involving more partners in this ecosystem brings more robustness and lowers the risk of dependency on a certain component, reaching continuously different levels of investments and making the market more competitive.
- **Environment-friendly:** the reduction of the emissions of waste/pollution protects the living environment and adds satisfaction to surrounding residences. Clean energy also contributes to the whole production life circle thus completes the supply chain.

INDUSTRY 4.0 IN TERMS OF SELF-DRIVING VEHICLES

Self-driving vehicles are also foreseen to become a part of Industry 4.0. European technology platform Manufacture is developing a vision for 2030, where production logistics is integrated through self-driving mobile platforms both indoors and outdoors by artificial intelligence (AI), see Fig. 1. Several initiatives are started in the world to integrate automated shuttles into an industrial environment. However, most of the trials are still in the early stages.

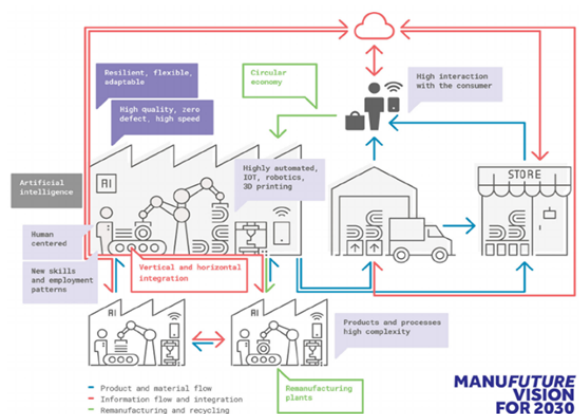


Fig. 1. Manufacture technology platform vision for 2030.

With many national/regional schemes implemented, the autonomous vehicle market is getting more and more crowded these years. The year 2017 and 2018 have witnessed many players increasing their involvement in this global competition, and huge investments from all over the world chasing the same goal and trying to get a share from the market. A successful application of using AV as a service in the industry needs to take certain criteria into consideration (see Fig. 2).

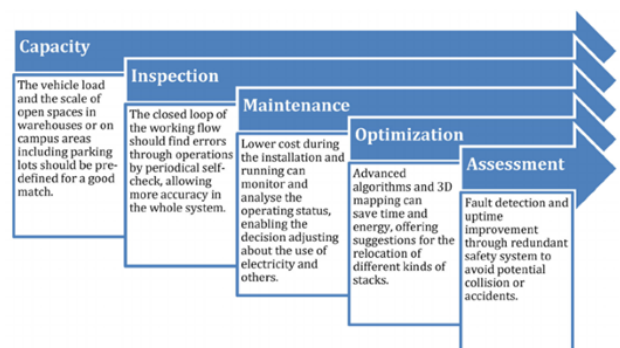


Fig. 2. Criteria for using autonomous vehicles as a service for industry.

AUTONOMOUS VEHICLE ON IR4.0

The navigation technology doesn't require much-fixed installation of infrastructure. It can be tailored to specific requirements in a cost-effective method, even for industrial applications, from individual steps in a process to complex material flows. The advanced technology of the self-driving platform creates significant competitive advantages while guaranteeing high flexibility in operational procedures at the same time. Safety systems and an integrated system are a prerequisite for a safe and efficient human-machine interaction (HMI). The unmanned operation is feasible in many industrial fields, for either individual or defined fleet operations. The automated vehicles are not tied to shift patterns, thus substantially increasing cost-effectiveness, while bringing reductions in daily operational damage. Despite highly autonomous functions, the whole range of models can also be easily operated using conventional manual controlling mode and can well cope with potential technical issues like power cut-off, network failure, etc. Autonomous multi-agent systems, which optimize the planning and scheduling of industrial processes using the example of courier and express services are presented in, where the multi-agent-based approach is used for the optimization and synchronization of logistics and production processes in Industry 4.0 applications. Another research approach that nowadays receives attention in the industry is cellular transport systems. The idea of cellular transport systems is embodied by dedicated (cellular) material handling entities. Cellular transport systems can be represented by autonomous conveying modules or transport vehicles. They are built upon a controlling architecture consisting of several small, self-organizing, intelligent units, which act and decide autonomously.

AUTOMATED VEHICLES IN INDUSTRY 4.0

The proposed concept is integrating autonomous shuttle vehicles with multi-agent-based workflow. The AI-supported smart planning and scheduling of production involve self-driving vehicles in the process to serve intelligent resource transportation. In industry, performance indicators and energy efficiency are the most important factors to automate production. These factors can be improved by smart production planning and scheduling service, which has all information from the production. It is important that all the equipment is connected to the cloud and provides real-time information about energy consumption, productivity, and capacity. In case of the lack of this functionality, a monitoring system can be added also for older equipment as discussed in detail. By extending the production planning and scheduling with a self-driving vehicle, much higher flexibility and efficiency can be achieved.

Figure 3 is presenting the integration concept where production cells are physical units located all over the industrial area of the factory. One or more autonomous vehicles (AV 1, AV n) are serving the production units based on resource requests and guided commands from a cloud-based planning and scheduling system. In the concept, several types of AV can be applied for different purposes. Last-mile shuttle buses like transporting humans, universal mobile robot-like is for transporting goods and materials. The latter is also applied for different purposes in addition to transportation. For example, road cleaning or snow blowing during the idle time or securing the factory area in the nighttime.

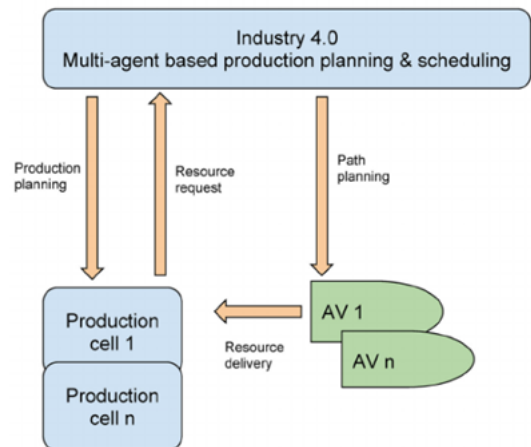


Fig. 3. Integration and production planning and scheduling with autonomous vehicles.

CONCLUSIONS

Soon, self-driving vehicles will take their place in everyday life and industry. Requirements from industry 4.0 are specified and the very first attempts of integration self-driving vehicles are reviewed in the paper. The smart city testbed is a real-life environment where self-driving cars, delivery robots, and smart infrastructure objects are placed. It can be a base for the Vehicle-to-everything (V2X) platform, a vehicular communication system that incorporates other more specific types of communication as Vehicle to infrastructure (V2I), Vehicle-to-vehicle (V2V) and Vehicle to pedestrian (V2P), V2D (Vehicle-to-device), V2G (Vehicle-to-grid), or any other entity that may affect the vehicle.

CYBER CRIME IN THE IR4.0



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SECURITY, MOE

At the early emergence of the Industrial Revolution (IR4.0), there were many questions about Malaysia's readiness in adapting to the development in order to be advanced in line with other countries.

However, the COVID-19 pandemic that is now sweeping the country indirectly creates a new norm environment that upholds the development of IR4.0, at the same time, accelerates the digital transformation agenda in Malaysia.

It then 100 percent changes the way of working, learning, even communication among each other. In other words, the transformation that happens now is far different from that experienced by previous people.

Cloud service, big data, blockchain, even artificial intelligence (AI) now showing their functions, even become the government's choice especially in managing the public service efficiency.

When we are getting along with IR4.0 changes and digital transformation that taking place during this pandemic, the country is shocked by the cyber threat issue from the hacker groups such as Anonymous Malaysia and from other countries.

Indirectly, this issue should be addressed as it involves a threat to the country's strategic information that also has implications for the country's security and sovereignty.

TYPE OF CYBER CRIMES IN THE IR4.0 ERA

Generally, cyber security is known as a force to secure information from cyber-attack. Cyber-attack itself is an action purposely done by a person or a group of people to interfere the confidentiality, integrity, and data availability. There are 4 types of Cyber Crimes in the IR4.0 Era as follow:

1. Denial of Service (DDoS)

This attack will cripple computer networks, manipulates systems, and applications. When the system is cyber-attacked by the DDoS category, the significant effect is that computer operation becomes heavy and does not function well.

2. Scareware

Scareware is a malware tactic that manipulates users into believing they need to download or buy malicious, sometimes useless, software. Most often initiated using a pop-up ad, scareware uses social engineering to take advantage of a user's fear, coaxing them into installing fake anti-virus software. The type of scareware software that is often found is a pop-up warning from the system.

3. Botnets and Zombies

Robot Network (botnet) will attack a computer device that is connected with the central network. The hacker's botnet victim is usually called a zombie because its existence is under the hacker's control. The botnet that steals the data will increase its performance from time to time, making it hard to detect.

4. Malware and Virus

This attack is usually pinned through e-mails, websites, applications to the hardware that is connected to the system device. The virus then will ruin the data that is targeted by the hacker. The data can be hidden or eliminated permanently.

WHAT IS THE IMPORTANCE OF CYBER SECURITY FOR INDUSTRY 4.0?



From the four types of cyber-attacks above, it can be concluded that cyber security is a vital aspect of security in Industry 4.0. Whether the branch of technology is big or small, cyber security is the most important in the digital era and Industry 4.0.

The security factor in digital business and Industry 4.0 itself has become part of determining the organization or company's security. To be exact, there are many organizations or companies that bankrupt due to cyber-attacks.

The targets and threats becoming diverse, starting with selling, recruiting, banking to financial transactions. Besides that, the susceptible devices toward the cyber-attack effect are real in various ways. Among them, hardware, servers, and customer data.

Conclusion

Industry 4.0 emergence becomes the new attraction to the cybercriminals to make cyber threats in order to get free money by hacking organizations' websites or companies and then asking for ransom as profit.

If this happens to your organization or company, the first step to take is to upgrade the security system so it will not happen again in the future. Do not forget, also use an online storage system to back up data, adds an SSL certificate, and rent a trusted server that is able to cover more negative traffics made by the cybercriminals.

BLOCKCHAIN TECHNOLOGY



EFFENDY ZULKIFLY
CEO BLOCKWORQ SDN BHD

BLOCKCHAIN TECHNOLOGY AND THE TOP BLOCKCHAIN USE CASES AND INDUSTRY APPLICATIONS

Learn the basics of blockchain technology and why it can enhance trust in both record keeping and financial transactions. Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system.

A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. Each block in the chain contains several transactions, and every time a new transaction occurs on the blockchain, a record of that transaction is added to every participant's ledger. The decentralized database managed by multiple participants is known as Distributed Ledger Technology (DLT).

Blockchain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash. This means if one block in one chain was changed, it would be immediately apparent it had been tampered with. If hackers wanted to corrupt a blockchain system, they would have to change every block in the chain, across all the distributed versions of the chain.

Blockchains such as Bitcoin and Ethereum are constantly and continually growing as blocks are being added to the chain, which significantly adds to the security of the ledger.

There have been many attempts to create digital money in the past, but they have always failed. The prevailing issue is trust. If someone creates a new currency called the X dollar, how can we trust that they won't give themselves a million X dollars, or steal your X dollars for themselves?

Bitcoin was designed to solve this problem by using a specific type of database called a blockchain. Most normal databases, such as an SQL database, have someone in charge who can change the entries (e.g. giving themselves a million X dollars). Blockchain is different because nobody is in charge; it's run by the people who use it. What's more, bitcoins can't be faked, hacked, or double-spent – so people that own this money can trust that it has some value.

Blockchain is the technology that underpins the cryptocurrency Bitcoin, but Bitcoin is not the only version of a blockchain distributed ledger system in the market. There are several other cryptocurrencies with their own blockchain and distributed ledger architectures.

Meanwhile, the decentralization of the technology has also led to several schisms or forks within the Bitcoin network, creating offshoots of the ledger where some miners use a blockchain with one set of rules, and others use a blockchain with another set of rules.

Top blockchain use cases

Blockchain is "a general-purpose technology, which means it is applicable across sectors," said Christos Makridis, a research professor at Arizona State University, senior adviser at Gallup, a digital fellow at Stanford University's Digital Economy Lab, and CTO at arts and education technology startup Living Opera. "For example, financial services can use it to write smart contracts between consumers and their banking institution. Similarly, healthcare can use it to write smart contracts between insurers and hospitals, as well as between patients and hospitals. The possibilities are endless."

Blockchain use cases continue to expand. Here are some common commercial applications:

1. **Smart contracts.** The primary function of computer programs called "smart contracts" is to automate the execution of contract terms when conditions warrant them. The computer code follows a relatively simple command of "when/if _then_ ___" to ensure that all parties receive the benefits or penalties as the contract stipulates and actions require. Smart contracts are useful to and used by, most industries today for a variety of uses traditionally governed by paper contracts. The blockchain also makes a permanent record of every action and reaction in the transaction.
2. **Cybersecurity.** Blockchains are highly secure because of their permanency, transparency, and distributed nature. With blockchain storage, there's no central entity to attack and no centralized database to breach. Because blockchains are decentralized, including those privately owned, and the data stored in each block is unchangeable, criminals can't access the information. "Essentially, the intruder needs keys to many different locations versus just one," Makridis noted. "The computing requirements for the intruder grow exponentially."
3. **IoT.** Two primary IoT uses of blockchains are in the supply chain sector and for asset tracking and inventory management. A third use is in recording measurements made by machines whether those sensors are in the Arctic, the Amazon jungle, a manufacturing plant, or on a NASA drone surveying Mars. "Whether it be reports of chemical data regarding oil grades or tracking shipments of electronics across the world through various ports of entry, the blockchain can be utilized anywhere there is data interacting with the real world," explained Aaron Rafferty, CEO of cryptocurrency investment firm R.F. Capital.
4. **Cryptocurrencies.** The blockchain concept was originally developed to manage digital currencies such as bitcoin. While the two technologies still compete against each other in alternative transactions, they've also been separated so blockchains could serve other purposes. Given the anonymity of crypto coins, blockchain is the only way to document transactions with accuracy and privacy for the parties involved.
5. **NFTs.** Nonfungible tokens are units of data certified to be unique and not interchangeable. In short, they are digital assets. According to Rafferty, NFTs are revolutionizing the digital art and collectibles world. "We are using decentralization and the ethereum blockchain to create a music live stream network where artists and streamers can connect with fans directly, sell their NFTs, receive contributions from fans, and trade in their rewards and contributions for crypto tokens," said Shantal Anderson, founder, and CEO of music and pop culture streaming network Reel Mood.

BLOCKCHAIN TECHNOLOGY

Real-world industry blockchain applications

Most industries can use blockchain but the applications that offer the most value are based on optimizing and reducing the friction associated with engaging in normal business practices. Running a business more efficiently is just one part of the benefits that can be gained from blockchain applications. Specifically, the need to preserve data integrity and the ability to build new revenue or business models are the top drivers for more than half of all respondents, blockchain practice.

Here are some notable applications of blockchain in the public and private sectors, including government, healthcare, financial and banking services, supply chains, and media.

Healthcare

The possibilities for blockchain use in healthcare seem endless. There are a number of potential use cases: managing electronic medical record data, protecting healthcare data, safeguarding genomics information, and tracking disease and outbreaks. Precision medicine is medicine matched to a patient's genomics to improve results and lessen or eliminate side effects. It also encompasses genomic-based medicines that are so badly needed as infectious agents become increasingly resistant to antibiotics. Blockchain allows healthcare providers and researchers to develop groundbreaking drugs and therapies based on genomic profiles.

Government

There are many blockchain use cases in various government agencies, including voting applications and personal identification security. Blockchains can't be forged nor the data within them manipulated. They can hold digital IDs, certificates of any kind, even passports on their immutable ledger. This data can be accessed and viewed at any time in a completely transparent manner, which will bolster international travel industries. Similarly, voting on-chain in a truly decentralized and transparent manner eliminates the middleman and any question of voting manipulation or fraud.

Financial services

Blockchain is used in many types of financial applications. Trade finance, for example, is riddled with multiple steps and concurrent processes that can dramatically elongate transaction timelines. With blockchain, he added, the entire process is simplified with a bidirectional data flow. This streamlines the trade finance transaction for each participant and dramatically reduces the time to close from 10 to 12 weeks to approximately one week.

Banking

Business-to-business enterprise clients that have contractually driven, multiparty cash flow distributions use blockchain to help them automate contract-related calculations and processing. Still considered to be far from a mature technology, blockchain is already used in many real-world banking applications, including contract management, real-time transparency, calculations and reporting, inventory management, procurement, funds traceability, lending, and borrowing, digitizing assets, cryptocurrencies, reconciliation, and settlements [for securities and commodity trades], and secure land registries.

Supply chain management

Before the COVID-19 pandemic disrupted supply chains worldwide, supply chains were the hottest blockchain application and now even more so. Blockchain is a good fit because complex global supply chains have no central authority and lack visibility. Companies involved in a supply chain can benefit from transparency, commercial confidentiality of data, and an immutable record of transactions. For these reasons, the Netherlands-based market intelligence platform Blockdata's analysis found that traceability and provenance supply chains were the most popular blockchain use case among the world's biggest brands in 2020.

Media and entertainment

Media and entertainment is a rich arena for blockchain use, and the applications are as imaginative as the industry. A company can mint tickets to a football game or concert to a major artist tour on-chain and set parameters so that, every time the ticket is resold on the second-hand market, the team or artist collects royalties on those transactions set at a percentage that they determine during the minting process."

Another example of a successful use case is EY and Microsoft's blockchain-based product for gaming rights and royalties' management, which provides a financial system of record, from contract creation to payment reconciliation. Microsoft plans to use the expanded blockchain functions to enable its Xbox gaming partners and its network of artists, musicians, writers, and other content creators to gain increased visibility into tracking, management, and payment processing for royalty contracts.

Living Opera is conducting R&D into blockchain applications to match opera songs with visual art to enhance the overall experience for the end-user. Moreover, because smart contracts are simply lines of code, we are also exploring ways of embedding an interactive component into the art.

BLOCKCHAIN TECHNOLOGY

Halal Industry

Over 1.7 billion Muslims around the world, an Islamic economy that is expected to reach USD 4 trillion by 2020, as well as technology readiness for potentially 30% to 40% of the Muslim population, there is great potential for the emerging Digital Islamic Economy. Through blockchain technology, a halal network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work.

It is not stored centrally but distributed on many servers throughout the world as cryptographic proof. This technology could enforce end-to-end halal assurance and alignment based on specific halal market requirements, supported by automated smart contracts in its process execution and control.

A halal blockchain could provide full transparency of all halal supply chain transactions that have ever been executed. The blockchain has complete information about the addresses and their supply chain path right from the source to the point of consumer purchase, giving the much-needed assurance for Muslims that the "halal-ness" of the food on their table can be traced back through all the locations of the halal supply chains that began with the original halal farm or livestock farm, including the identity of the farmers or livestock breeders. Blockchains inject trust into a halal supply chain and value chain of a brand owner who would be better able to guarantee halal integrity. They could also be integrated into wide sustainability and corporate responsibility systems to extend the brand market beyond Muslim consumers.

Time is ripe for blockchain

Today, companies are zeroing in on how to use blockchains to generate new revenue streams and create rather than suffer disruption. Currently, the best blockchain use cases are those where companies can create or leverage the inherent Metcalfe effect of the blockchain but do so without the need or requirement to move substantial chunks of their market with them. This creates a more manageable shift that the company can control -- an opportunity to be an early adopter driving disruption, rather than being disrupted.

Malaysia Blockchain and the ecosystem

In January 2019, Malaysia's Minister of Finance announced harsh regulations against unauthorized ICOs and the exchange of digital goods that could result in a 10-year jail term or a US\$2.4 million fine. The order recognized digital currencies and tokens as securities by the Securities Commission Malaysia. This was primarily seen as a negative move against the crypto and blockchain (the underlying technology fuelling cryptocurrencies) industries.

Later, in June 2019, the Securities Commission announced that it had conditionally approved three cryptocurrency exchanges. This suggests that the Southeast Asian nation is increasing its openness to technology.

In 2021, the Ministry of Science, Technology, and Innovation of Malaysia announced officially that Blockchain Technology is the foundational technology for National Fourth Industrial Revolution (4IR) Policy. National Roadmap of Blockchain Technology also had been designed by MOSTI with the support and collaboration with industry players in the blockchain technology ecosystem.

Keeping pace with global innovation

Malaysia's willingness to adopt the tech was evidenced at a recent event in Putrajaya, Malaysia, officiated by the Ministry of Entrepreneur Development (MED). The minister's attendance signals an early sign of governmental support and commitment towards recognizing blockchain businesses and technology.

In his official address, the minister pointed out the importance of moving as fast as was possible to keep up with the global innovation scene and become a top investment destination. MED aims to create and develop innovation-driven entrepreneurs adopting frameworks that would result in exponential growth and would incorporate the latest 4IR technologies such as AI, IoT, big data, and blockchain.

This was in line with Dasar Keusahawanan Nasional (DKN) 2030, a government initiative to develop core competencies and upskill the workforce against a landscape of growing digital transformation.

Creating new growth sectors

Currently working on a plan of action that would pioneer new growth sectors via strategic investments, the government's focus would be on industries such as automotive, aerospace, fintech, big data analytics, and tech-driven agriculture, amongst others. These were necessary building blocks pivotal to realizing the DKN 2030 objectives. Ultimately, this will catalyze the creation of more innovation-driven products and services that are market-oriented. In this area, blockchain technology plays an integral role in the fintech and agricultural industries. The minister welcomed a strong push by the private sector which the ministry aims to facilitate as fast as possible.

Blockchain as a catalyst

There is a pressing need to overhaul the government's bureaucratic processes and go paperless. The adoption of blockchain enables this, following in the footsteps of the Emirates and Indonesia. According to Crypto Valley Malaysia's statistics, once digital strategies such as blockchain were in place, the projected growth of 15-20% in GDP could be expected.

Supporting blockchain entrepreneurship

Malaysia's digital transformation will land global investors in Malaysia, putting the spotlight on the large number of great projects that the region has. To capitalize on innovations, citizens will need to be brave entrepreneurs, not followers. Malaysia has been identified as a top destination for investment, one of the most successful nations for start-ups. By using this as a starting point, local entrepreneurs can prove they can do more in terms of adopting blockchain.

CENTRE FOR UNMANNED TECHNOLOGIES (CUTE)



ASSOC. PROF. DR. ZULKIFLI ZAINAL ABIDIN
DIRECTOR OF CENTRE FOR UNMANNED
TECHNOLOGIES (CUTE)
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

Program Industry@University 4IR Competence Centre at Centre for Unmanned Technologies (CUTE) is focusing on IR4.0 (Autonomous Robots). The goal is to support the Malaysian government's interest in producing skilled workers for the Autonomous Robots and the other IR4.0 pillars that are linked into it, by providing the relevant training, expertise, and solutions.



CUTE is designed to advance scientific study and development through human-robot collaboration. The main function of this centre is to bridge the gap between researchers, industries and communities by developing technologies that nurture the next generation of scientists and engineers towards humanizing innovations. The partnership results in an exceptional centre for research and training. Through the integration of education and research, CUTE is unique amongst other centres in that: a) it involves the partnership between researchers, industries and communities; b) the innovations from the researches provide actual solutions to the society, and c) it exists to exploit multi-disciplinary knowledge to produce high-quality human capital.

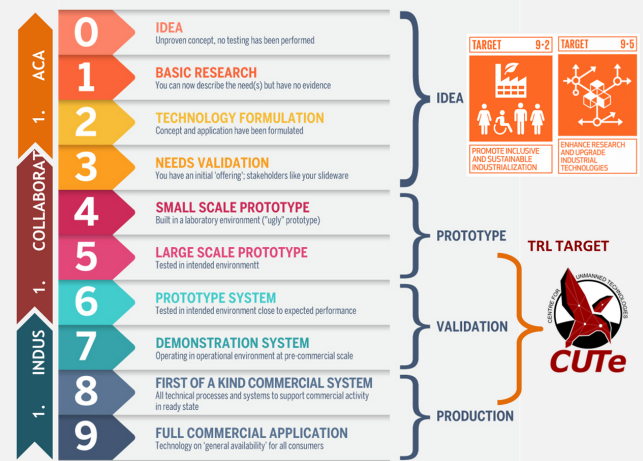
For the past 3 years of establishment, the researchers have successfully collaborated with 20 partners from industries and other associations, obtained approximately RM5 million research grants and consultancy projects (Hidrokinetik Technologies Sdn Bhd, Prostrain Technologies Sdn Bhd, Delloyd R&D Sdn Bhd, CREST, JABIL, SIRIM, Petrosains Altus Oil & Gas Malaysia, NRA Technology Sdn Bhd, Lestari Aero Industries Sdn Bhd, JUWARA Resources & Trading (M) Sdn Bhd and many more.), producing more than 156 journals and publications, accomplished the transfer of knowledge through IIUM Roboteam programs, and produced high-quality innovations that are applicable and usable by the people.

An important goal to be achieved is the adaptation of results of research and development work to practical applications and the transfer of technology for improving the innovativeness of the economy and the citizens' living standards. Academic, interdisciplinary expertise and discipline-based research are key to developing innovative programs that keep the university at the forefront as a research and scholarly institution. In order to produce the highest quality scholarly work and advance in research and innovation, researchers must have a platform that is focused on the set of objectives with highly dedicated team members. With the remarkable track records of industry collaborations and funding, while actively engaged with communities, this centre will help the team to be more visible and viable towards IIUM's vision and mission.



OBJECTIVE OF THE CENTRE

1. To work with collaborating partners to solve problems of primary importance to the human-robot operations.
2. To provide researchers with the world-class multi-disciplinary knowledge that will allow them to become the next generation of technical leaders with life-long learning passion.
3. To conduct research projects pertaining to humanity, security, safety, and sustainability.
4. To make sure the research does not stay in the labs and papers.



Through our knowledge and expertise, we hope to use the centre as a platform to share the related knowledge, expertise, and facilities with the industry and society. While the centre aims to work towards research to benefit humanity, security, safety, and sustainability, we also aim that our research will not be left laid in the lab and on papers but instead will be made visible to the world in order to serve for the benefit of IIUM and ummah.

NO	TRAINING TITLE	DAY(S)	PRICE (RM)
PROGRAMMING LANGUAGES			
1.	JAVA	3	2,500
2.	PYTHON	3	2,500
3.	JSON	3	2,500
4.	NODE-RED	3	2,500
5.	R LANGUAGE	3	2,500
6.	FLUTTER PROGRAMMING	2	2,700
7.	JAVASCRIPT	5	2,600
8.	HTML5	2	1,500
9.	CSS3	2	1,500
10.	TYPESCRIPT	3	1,800
11.	JAVA – Entry level Java Programmer: JAVA SE7 Fundamentals	5	3,400
12.	JAVA – Professional Programmer: JAVA SE7 Fundamentals	5	3,400
13.	JAVA - Servlet & Java server Pages (JSP) Developer	5	3,400
14.	PHP – Beginner to Intermediate	5	2,600
15.	PHP – Oriented Programming (OOP)	5	2,600
16.	PHP 7 Programming	5	2,600
17.	COLDFUSION – Beginner to Intermediate	5	2,600
18.	COLDFUSION - Advanced	5	2,600
19.	C# - Programming C# with Microsoft Visual Studio	5	2,600
20.	R Programming	4	2,200
21.	Secure Programming	5	2,600
22.	Unit Testing Programming	5	2,600
23.	LUCEE	5	2,600
ROBOTICS AND AUTOMATION TRAININGS			
24.	PROGRAMMABLE LOGIC CONTROLLER - SIEMENS	3	3,900
25.	PROGRAMMABLE LOGIC CONTROLLER - MITSUBISHI	3	3,900
26.	PROGRAMMABLE LOGIC CONTROLLER - OMRON	3	3,900
27.	PROGRAMMABLE LOGIC CONTROLLER - PANASONIC	3	3,900
28.	PROGRAMMABLE LOGIC CONTROLLER – SCHNEIDER ELECTRIC	3	3,900
29.	PROGRAMMABLE LOGIC CONTROLLER - ABB	3	3,900
30.	INDUSTRIAL HMI	2	2,600
31.	SCADA SYSTEM	5	6,500
32.	ADVANCE PLC, HMI & SCADA SYSTEM	10	11,700
33.	ROBOTIC AUTOMATION	5	6,500
34.	ROBOT OPERATING SYSTEM (ROS)	3	4,700
35.	ARM CONTROLLER & IOT PROGRAMMING	3	3,500
36.	SCARA ROBOT (SELECTIVE COMPLIANCE ARTICULATED ROBOT ARM)	3	5,800
37.	PLC & IOT (PROGRAMMABLE LOGIC CONTROLLER)	3	3,500
38.	LINEAR ROBOT	2	4,500
39..	AUTONOMOUS MOBILE ROBOT	3	4,500
40.	MOBILE ROBOT DEVELOPMENT	3	5,700

INDUSTRY 4.0 – IOT & IIOT TRAINING

41. FUNDAMENTAL OF INDUSTRY 4.0 & INTERNET OF THINGS (IOT)	3	3,500
42. IOT FOR SMART AGRICULTURE	3	3,500
43. IOT FOR SMART CITIES	3	3,500
44. LORA-WAN TRAINING	3	3,500
45. IOT WITH RASPBERRY PI (NODE-RED)	3	3,500
46. IOT WITH RASPBERRY PI (PYTHON)	3	3,500
47. IOT WITH RASPBERRY PI & FAVORIOT	3	3,500
48. BASIC INDUSTRIAL INTERNET OF THINGS (IIOT)	3	3,500
49. ADVANCE INDUSTRIAL INTERNET OF THINGS (IIOT)	5	4,850
50. BASIC INDUSTRIAL INTERNET OF THINGS (IIOT) WITH SIMATIC GATEWAY – CERTIFICATION FROM SIEMENS	3	4,600
51. ADVANCE INDUSTRIAL INTERNET OF THINGS (IIOT) WITH SIMATIC GATEWAY – CERTIFICATION FROM SIEMENS	5	6,500
52. ARDUINO & IOT PROGRAMMING	3	2,700
53. RIG : IOT ALL IN ONE	3	4,500

INDUSTRY 4.0 - CLOUD COMPUTING & BIG DATA TRAININGS

54. CLOUD COMPUTING FOUNDATION	3	3,500
55. DATA SCIENCE FOUNDATION	3	3,500
56. BIG DATA ANALTICS WITH MONGODB ATLAS CLOUD	5	4,800
57. BIG DATA ANALYTICS WITH AWS CLOUD	5	4,800
58. BIG DATA ANALYTICS WITH HADOOP TECHNOLOGY	5	4,800
59. DATA MINING AND WEKA SOFTWARE TOOL	3	4,800
60. BASIC ARTIFICIAL INTELLIGENCE TRAINING	3	3,500
61. MASTERING ARTIFICIAL INTELLIGENCE & DEEP LEARNING	5	4,800
62. ANDROID PROGRAMMING AUGMENTED REALITY (AR)	5	4,800
63. ANDROID APPS	3	2,700
64. MACHINE LEARNING	3	3,700
65. CLOUD COMPUTING	3	3,700
66. BLOCK CHAIN	2	4,500
67. MYSQL DATABASE ADMINISTRATOR	3	1,800
68. MYSQL QUERYING	3	1,800
69. DATABASE DESIGN	3	1,800

DATA ANALYSIS

70. GOOGLE ANALYTICS	3	1,800
71. BUSINESS INTELLIGENCE (BI)	3	2,600
72. MICROSOFT EXCEL DASHBOARD	5	2,600
73. WIRESHARK	2	1,800

WEB SERVICE

74. JAVA	3	2,200
75. PHP	3	1,800

DISTRIBUTED VERSION CONTROL

76. GITN	3	1,800
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MOBILE APPS

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78. CROSS-PLATFORM: REACT NATIVE	5	2,600
79. UI FRAMEWORK: IONIC FRAMEWORK	5	2,600
80. UI FRAMEWORK: FLUTTER FRAMEWORK	5	2,600
81. NATIVE: JAVA FOR ANDROID	5	2,600
82. NATIVE: SWIFT FOR IOS	5	2,600

UI FRAMEWORK

82. ANGULAR JS	5	2,600
83. NODE JS	5	2,600
84. VUE JS	5	2,600
85. EXT JS	5	2,600
86. REACT JS	5	2,600
87. METEOR JS	5	2,600
89. BOOTSTRAP	3	1,800
90. JQUERY - MOBILE	4	2,200
91. JQUERY	3	1,800
92. FOUNDATION	5	2,600

FRAMEWORK

93. PHP - Laravel Framework	5	2,600
94. PHP - CodeIgniter Framework	5	2,600
95. PHP - Yii Framework	5	2,600
96. PHP - Slim Framework	5	2,600
97. JAVA - Struts Framework	5	3,400
98. JAVA - Liferay Framework	5	3,400
99. COLDFUSION - Railo Framework	5	3,400

SERVER

100. INSTALLING & CONFIGURE WINDOWS SERVER	5	2,600
101. ADMINISTERED WINDOWS SERVER	5	2,600
102. CONFIGURING, MANAGING & MAINTAINING WINDOWS SERVER	5	2,600
103. UBUNTU QUANTEL QUATZEL	5	2,600
104. VMWARE VIRTUALIZATION	5	2,600
105. RED HAT SYSTEM ADMINISTRATION I (RH124)	5	2,600
106. RED HAT SYSTEM ADMINISTRATION II (RH134)	5	2,600
107. CENTOS FUNDAMENTALS	5	2,600
108. CENTOS SYSTEM ADMINISTRATOR	5	2,600

ENGINEERING (USING LABVIEW)

109. FUNDAMENTALS OF G PROGRAMMING USING LABVIEW	3	1,800
110. BUILDING YOUR OWN DATA ACQUISITION SYSTEM	3	1,800
111. IOT SYSTEM DEVELOPMENT USING LABVIEW	3	1,800

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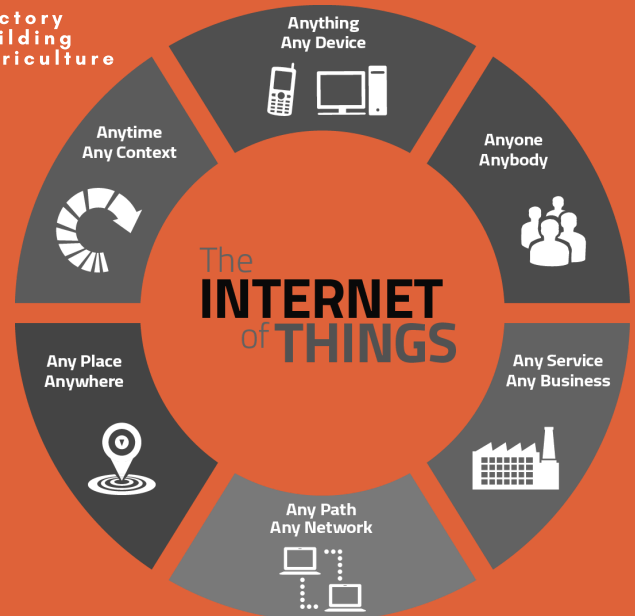
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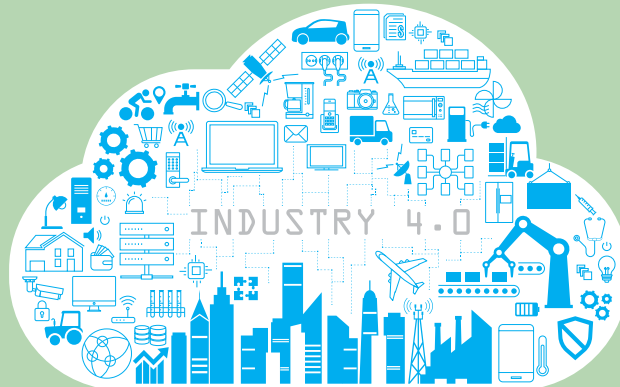
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