

MIMOS

RETROSPECTIVE 2020



Braving the waves

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Braving the Waves

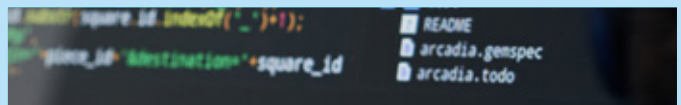
Needless to say, 2020 was all about novel coronavirus (COVID-19). It was one of the most challenging years for every corner of the world, with “new normal” became a popular catchphrase to describe the changes in human life and business due to the impact of COVID-19.

The new normal practices such as physical distancing, mask-wearing and remote working have intensified the need for technology to facilitate our daily tasks and to ensure the continuity of service.

Along with these unparalleled time challenges, came great opportunities. The pandemic has paved the way for digital transformation and has allowed MIMOS to support the acceleration of technology adoption across critical sectors.

This publication rounds up MIMOS’ research and development (R&D) and technology pursuits; commitments and contributions in driving digital transformation throughout the year. It is about braving the waves of the pandemic, the waves of changes and the waves of technological evolution.

We worked closely with Government ministries, agencies and Government-linked organisations, private companies, universities and research institutes to incorporate advanced technologies such as Artificial Intelligence (AI) and blockchain to improve the life of people and assist in the decision-making process – such as gauging public sentiment on the current situation and tracking of the vaccines supply chain.



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CEO's MESSAGE

Dr Iskandar Samad

“ It is important that we sharpen the focus of our R&D efforts while strengthening the market orientation of our pursuits if we are to more materially contribute to the nation. ”



Dear stakeholders,

I am pleased to present you the MIMOS Retrospective 2020.

The year 2020 was a challenging one for all of us. The COVID-19 pandemic has deeply affected all Malaysians; livelihoods have been disrupted, jobs lost, and some of us even lost loved ones. National GDP shrunk 5.6% for the full year, the biggest contraction since the Asian Financial Crisis. It is truly unprecedented to be enduring such a time. Regardless, I sincerely hope MIMOSians stay upbeat and resilient throughout this ordeal.

Fortunately, technology has at least helped with managing the pandemic. From online communications tools, to forecast modelling, new innovations in case testing, and rapid vaccine

development via mRNA technology; it is encouraging how quickly technology has been deployed to assist. MIMOS too has supported with a number of technology deployments, and I wish to take this opportunity to personally applaud and thank the relevant teams for their enthusiastic efforts throughout 2020.

Coincidentally, September last year marked my start as CEO, a role that I take with humility and with a deep passion to contribute as best as I can. I am optimistic that with the support of all MIMOSians, we can enhance MIMOS to be better and stronger, and with that, further the future science and technology agenda for the nation.

In my brief time here, I am encouraged by the breadth, depth and progress of our past research efforts. MIMOS

has covered a lot of ground in its 30+ years of existence, and today is credibly the national reference standard for a number of key technology areas.

That being said, it is important that we sharpen the focus of our R&D efforts while strengthening the market orientation of our pursuits if we are to more materially contribute to the nation. This will be a primary focus of our transformation programme starting next year.

“ Despite the pandemic, MIMOS continued to deliver on its key R&D obligations. ”



Supporting the government to combat COVID-19

MIMOS was quick to support the government in a range of technology initiatives as the pandemic took shape early on in the year. Among the early efforts was developing the Malaysia COVID-19 Information Hub to aggregate key statistics and gauge public sentiment around the ongoing pandemic, and MyTrace, a contact tracing Android and iOS app utilising Bluetooth technology. MIMOS also supported The Special Committee on COVID-19 Vaccine Supply (JKJAV) and helped conduct evaluation of technologies such as quarantine trackers and contact tracing.

A few key initiatives stand out. One of them was developing the Vaccine Management System (VMS) for KKM that employs blockchain-enabled traceability across the COVID-19 vaccine supply chain. The system is already in use today and can accommodate up to 10 million users and 600 vaccination centres, providing robust datasets that help eradicate the risk of vaccine wastage and fraud.

Building on the blockchain-enabled data trail in VMS, MIMOS also developed the digital health passport that provides a digitally signed QR-based certificate to confirm that a person has been vaccinated. The system is developed in compliance with WHO guidelines and will enable every individual to conveniently show proof of vaccination for verification by third parties right from their own MySejahtera application on their phones.

Another initiative was setting up the 'war room' data dashboard used by the COVID-19 Immunisation TaskForce (CITF) to track and manage the daily progress around the national vaccination programme. Cross-cutting datasets such as registrations, appointments, vaccine supply and vaccine distribution across different vaccination centres are consolidated and displayed to help decision makers make critical decisions around the programme on a daily basis.

Boosting public service delivery

Last year, we generated more than RM27 million in revenues through the implementation of various government-related ICT projects to improve public service delivery and support the development of local industries and the national economy.

Namely we deployed cloud technology, cybersecurity and AI for MyGovernment Online Services Portal (MyGOV), and further enhanced the Teleprimary Care and Oral Health Clinical Information System (TPC-OHCIS) by incorporating edge data caching to enable the system to function in limited connectivity situations.

Additionally, we continued our work on Malaysian Health Data Warehouse (MyHDW), that utilises big data analytics and enhanced security features to ensure data confidentiality. This resulted in 22 patents filed with Intellectual Property Corporation of Malaysia (MyIPO).

Last year also saw MIMOS expanding its private sector ICT development efforts by further expanding on our work from 2019 with P&G to utilise data analytics

and blockchain to develop a sustainable palm oil traceability platform.

Delivering on R&D commitments

Despite the pandemic, MIMOS continued to deliver on its key R&D obligations.

MIMOS projects under the Eleventh Malaysia Plan (RMK11) concluded the year with 14 projects brought to a final close, 58 patents filed, and 55 IPs commercialised. A total of 49 STI papers were published and presented in Tier-I journals and conferences, respectively.



We also teamed up with relevant industries to implement 23 proof-of-concept (PoC) projects using emerging technologies across deep learning, blockchain, IOT, cloud, nanoelectronics, big data analytics, wireless communications and data security.

To engage broader stakeholders, MIMOS hosted a series of seven online seminars in various technology topics ranging from smart manufacturing, photonics,



graphene, wearable techs, video content analysis, 3D digital development and blockchain. The talk series received positive feedback not only from local but also international audiences.

MIMOS also provided various technical services in Semiconductor Wafer Fabrication, Integrated Circuit Design, Failure Analysis, Wafer Testing, Reliability, Materials Analysis and Industrial Design.

Under our talent development programme, we conducted a series of training to improve technical skills for some 681 participants in E&E, which involved industry members, lecturers and university graduates. We also trained 116 graduates under MIMOS CODE-8 (Centre of Domain Expertise Acceleration in Information and Communication Technology) and SLIM programmes.

Driving national policies

2020 saw MIMOS driving the formulation of two key national roadmaps; the National Blockchain Technology Roadmap 2021-2025 and the National E&E Roadmap 2021-2030.

The roadmaps are aimed at providing an overarching framework for national technology development, through identifying appropriate policies, guiding resource allocation and development activities, and anchoring sizeable incubation programmes to accelerate technology adoption through use of locally developed technologies.

We look forward to how MIMOS can further participate in the execution of these two roadmaps over the next 5-10 years.

Appreciation

On behalf of all MIMOSians and the management team, I would like to express my sincere gratitude to the Ministry of Finance Ministry and the Ministry of Science, Technology and Innovation Ministry for the confidence placed in our organisation and for their endless support throughout the years. I would also like to thank MIMOS' partners and look forward to strong and continuing collaborations in the future.

Although COVID-19 will remain a challenge in 2021, I trust this will not hamper our determination to work passionately towards furthering the nation's Science, Technology and Innovation agenda. I encourage all MIMOSians to recommit to the journey ahead, together we will hopefully bring MIMOS to new heights.

Sincerely,

Dr Iskandar Samad

President and Chief Executive Officer
MIMOS Berhad



HIGHLIGHTS

Despite the pandemic challenges, 2020 has created opportunities for MIMOS. The health crisis has paved the way for digital transformation, with technology fundamentally changing how businesses are run. MIMOS put greater focus on developing better solutions for tackling the COVID-19 and supporting key industries through the application of new technologies – with Blockchain dominating the scenes. MIMOS also continued to assist in moving up the Electrical and Electronic (E&E) value chain through its wide-ranging technological capabilities and boosting the E&E talent pool.

RESPONDING TO COVID-19

Vaccine Traceability System

Since the outbreak of COVID-19, various measures have been taken by governments around the world to accelerate the COVID-19 vaccine's development. In Malaysia, one of the efforts by the Government to combat the virus is acquiring COVID-19 vaccines and ensure at least 80 per cent of the population are inoculated by February 2022 to achieve herd immunity.

On 14 October 2020, the Special Committee for Ensuring Access to COVID-19 Vaccine Supply (JKJAV) was established which is co-chaired by the Minister of Health (MOH) and the Minister of Science, Technology and Innovation (MOSTI). One of the roles played by JKJAV is to ensure timely access to the supply of COVID-19 vaccines for the country.

Crucial to the smooth running of the immunisation exercise in the country is the availability of a platform to track and trace the vaccines. To cap off the year, MOSTI in collaboration with MOH initiated the Vaccine Management System (VMS) for tracking and tracing the vaccine supply chain using Blockchain technology developed by MIMOS.

The system, which is integrated with Pharmacy Information System and MySejahtera, enables the pharmacist, medical practitioners and relevant officers to track and trace the vaccine movements throughout the supply chain from the manufacturers until it arrives at distribution centres and reaches the patients.





The traceability is based on the serialised number to identify the recipient of the vaccine or its sets. The system can be used not only for the COVID-19 vaccines but also for other types of vaccines in Malaysia.

The adoption of Blockchain and other cutting-edge technologies allows the system to have a proper security setting while protecting personal data. The technologies facilitate data sharing, ensures data integrity and visibility across the supply chain, and subsequently empower regulatory compliance.

Verification and validation process are also implemented at every stage to strengthen the security of the next product chain, thus ensuring the safety of consumers and people in general.

VMS allows the creation of a digital health certificate for citizens as evidence of their immunisation for the convenience of interstate and international travels, or when required. Adding values to the system, the VMS helps prevent counterfeit or fake vaccine from being used; provides vaccination status check for subsequent doses, and allows patients to give feedback on any symptoms or side effects they experienced after receiving the immunisation.

VMS also acts as a platform that consolidates all the information gathered by multiple parties such as types of vaccines, quantity, logistic details, storage and warehouse information (including the critical information such as temperature logs) and destinations.

The platform supplies actionable insights to provide surveillance information, intervention measures and empower decision-making capabilities for day-to-day operations as well as for future planning.



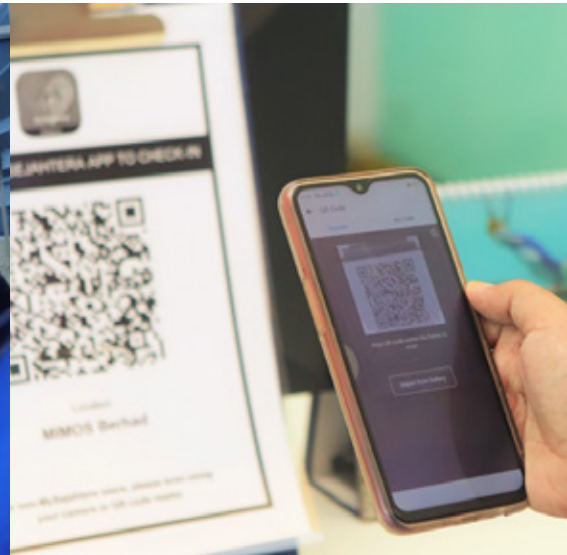
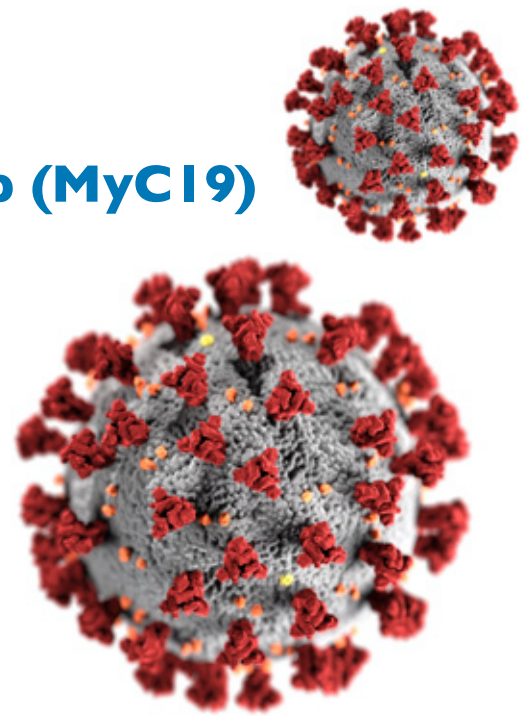
HIGHLIGHTS

Malaysia Covid-19 Information Hub (MyCI9)

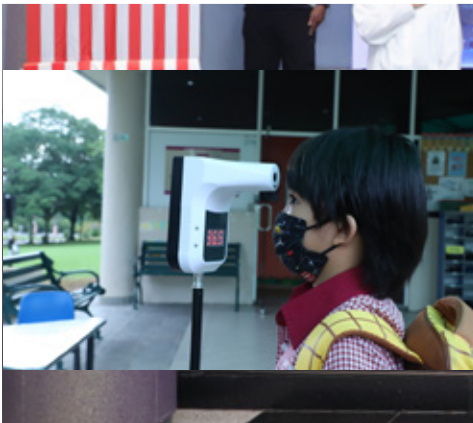
Mass fear and panic situation fueled by incomplete and inaccurate information are some of the concerns during the pandemic. Having a lack of knowledge on the impacts of COVID-19 pandemic could negatively influence decision making, which may adversely affect the nation's economic and societal well-being.

Clarion call had been made to address this issue and to gauge public sentiment, so that appropriate messaging and policy decisions can be implemented.

The application uses MIMOS' patented artificial intelligence (AI)-based text analytics system along with MIMOS' other data analysis technologies, where AI-based bots cruise the Internet to acquire content and information posted in Malay, English and Mandarin. The application aggregates information on the progress of the COVID-19 crisis in Malaysia to help relevant authorities, affected sectors and communities make better-informed decisions.



Following this, MIMOS has developed Malaysia COVID-19 Information Hub (MyCI9) that provides quick and customisable sentiment analysis on COVID-19 related issues so that the Government and relevant authorities can communicate their actions and policies to the general public quickly, accurately and more effectively.



MyTrace

Contact tracing is an essential activity that involves identifying, assessing, and managing people who have been exposed to COVID-19 to prevent further transmission. Various parties including researchers, academicians and app developers worked together to harness technology that can ease the contact tracing process.

MIMOS played its part as a technology contributor for MyTrace, a contact-tracing app that uses Bluetooth signal

to track individuals who have been in close proximity with COVID-19 patients. It collects mobile data, without geo-location tags, which are then anonymised.

The application applies a community-driven approach where participating devices exchange proximity information whenever it detects another device with MyTrace. This application allows the identification of people who have close contact with COVID-19 patients.



Enhanced HSE Measures

We have placed the safety of our employees, visitors, and contractors at the forefront of the COVID-19 pandemic. Internally, MIMOS has stepped up its precautionary measures and made a few in-house inventions to safeguard the safety and wellbeing of communities where the agency operates.

Besides the usual health and safety guidelines such as daily body temperature screening, MySejahtera scans, frequent disinfection of common areas and provision of sanitiser dispensers with World Health Organisation (WHO)-recommended formulation at all entry points of the building, MIMOS has also installed an AI-powered physical distancing monitoring system at the lobby area to remind

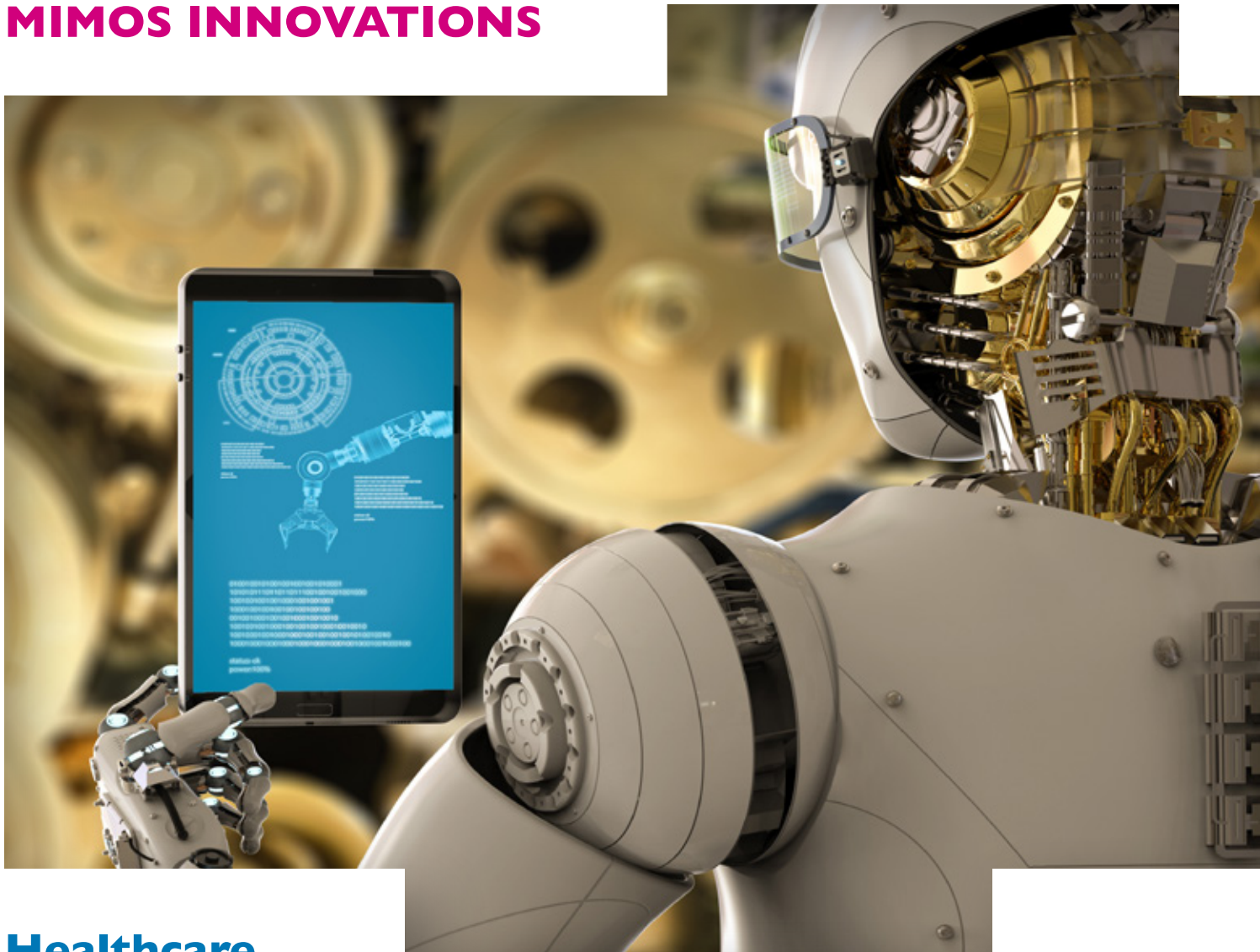
people to practice physical distancing of at least one metre apart.

The screen displays the movement of the subjects and the distance of one another. People remaining more than one metre apart are highlighted with green circles, while those who are closer together are indicated with red circles, which will trigger a warning siren.

MIMOS patented single monitoring device called FloBo is aptly applied to the COVID-19 crisis since it captures multiple vital signs readings, especially symptoms related to the disease. By placing FloBo on the side of the neck, the device can detect body temperature, respiration rate, pulse rate, oxygen saturation in blood and blood pressure.

The moves reflect MIMOS' commitment to providing a safe and healthy work environment for all its employees, contractors and visitors in accordance with Health, Safety and Environment (HSE) Policy.





Healthcare

MIMOS focuses on developing technology solutions to help the Government and industries to render better services including for the healthcare sector. MIMOS has been producing people-centric solutions backed by advanced technologies such as AI, Big Data Analytics and Internet of Things (IoT); along with other cutting-edge technologies such as photonics and smart sensors, to enhance the quality delivery of medical and healthcare services.

Big Data Analytics and AI were primarily applied for healthcare central database and decision support systems. These include applications for the Ministry of Health; namely the Teleprimary Care-Oral Health Clinical Information System (TPC-OHCIS) and the Malaysian Health Data Warehouse (MyHDW) which won the IDC DX Awards (Information Visionary) 2020 for its technology employment.

For medical devices, photonics and Bluetooth Low-Energy were some of the technologies used to generate non-invasive innovations such as glucose monitoring device called Glucosenz and a single monitoring gadget that captures multiple vital signs readings called FloBo.



Public Safety

Public safety and security become even more critical in spawning economic value through enhanced public perception and increased foreign investments. MIMOS continued to help relevant enforcement authorities by developing scalable and smart technology solutions to ensure efficient and uncompromising delivery of public safety services across various needs.

MIMOS has generated technology solutions for public safety that are equipped with the latest technologies such as Video Analytics, IoT and Big Data Analytics that allows faster analysis of relevant data, high-speed communications between relevant parties and improves the decision making process.

The inventions include MIMOS Licence Plate Recognition (Mi-LPR), a scalable automated licence plate recognition platform that processes and analyses video input from surveillance systems, as well as SMART Lokap, a video surveillance system for prison environment that integrates intelligent elements of video analytics and flexible server-client architecture.



Wireless Innovation

Communications technology is another key segment in the digital transformation.

MIMOS innovation in wireless communications traverses key applications such as smart manufacturing, environment monitoring, smart agriculture, mission-critical and disaster management, smart city as well as rural communication.

With its strong R&D capabilities in advanced technologies, MIMOS is at the leading edge of spurring wireless innovation as a foundation for Malaysia's digital transformation.

One of the wireless innovations is MIMOS Off-Grid Communication (Mi-OGC) which enables communication between smartphones without the need

for a cellular or Wi-Fi network. The device allows users to send and receive voice and text messages, use an off-line map, share location with other Mi-OGC users within range, as well as functions as a backup battery for smartphones.



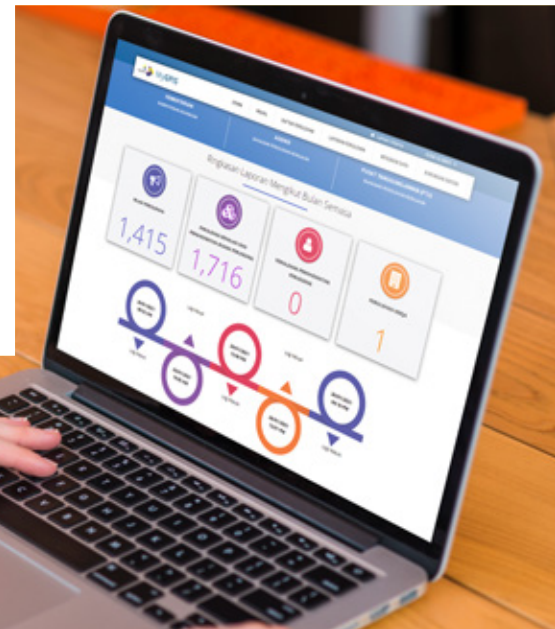


Government Technology

MIMOS is committed to producing high-impact solutions and driving digital transformation to help boost the government performance and deliver better services.

MIMOS joins forces with Government agencies, industries, academia and even individuals to identify issues, develop applications that can be beneficial for citizens and monitor their effectiveness. The applications and solutions are supported by MIMOS' strong R&D capabilities in data science, AI, information security, wireless smart sensors and IoT.

Ongoing and successful projects include a government online service that integrates the services of different government agencies; a job market portal; modern policing solutions for public safety and security; a national identity management and transaction signing platform and a web-based integrated information system for a procurement data warehouse.



Digital Manufacturing

MIMOS provides technological capabilities, resources and services for the manufacturing as well as E&E sector through its advanced shared service facilities.

With its R&D capabilities in AI, information security, wireless smart sensors and IoT, MIMOS can equip startups and multinational corporations with cost-efficient advanced technologies to improve their efficiency and productivity, enhance performance and deliver better results.

MIMOS' cloud-based Smart Manufacturing Intelligence Service Platform (SMISP) offers infrastructure-as-a-service, data management, analytics and visualisation, IoT middleware, AR toolkits, AI toolkits and smart manufacturing integration services. SMISP was initiated to develop cost-effective, flexible and reliable technology solutions as well as to encourage technology adoption among SME manufacturers in their production and business process.

Under SMISP, MIMOS has developed several smart solutions to help manufacturers and SMEs in Malaysia to embrace the Industry4WRD agenda:

Biz4WRD

A portal system used by businesses to complete their needs analysis by identifying potential providers of the required products or services. The system is designed as a single point for SME manufacturers to interact and collaborate with technology providers to adopt Industry 4.0. It is a centralized technology sourcing platform that assists business matching allowing supply and demand-supply exchange.



Real-Time Tracking

A real-time tray tracking system capitalising on wireless Localisation System with Ultra-Wide-Band technology. It monitors the movement of trays within the designated factory floor to enable automated tracking of goods and process.

Machine Monitoring Solution

A dashboard in the cloud which monitors machine status such as speed, total pass, total fail, system uptime, downtime, operation time and time stamp. The machines are of different models and this solution integrates all information that is displayed in a single dashboard.

Data Analytic

A platform that helps improve product testing cycle time and product quality by analysing the correlation between different test parameters. The reduction resulting from this have a direct impact on the company's financial aspect.

AR Visualisation Solution

A platform that helps users to identify potential deviations from optimal equipment condition in real-time, especially Equipment Front End Module (EFEM). This will raise early warnings for preventive maintenance actions before breakdowns.



Food Processing & Storage Solution

Wireless temperature sensors solution that integrates with real-time dashboard system via cloud to achieve the best yield in poultry processing from live feedstock until storage. The system increases productivity with real-time temperature control for freezers and evisceration machines with the least manual intervention.



Energy Consumption Monitoring

A real-time monitoring solution using cloud integration and wireless sensors that allows operators to easily monitor the machine's power consumption. The system provides data for analysis on the machine's current consumption, thus further action can be taken for future energy savings.

Some SMEs have also benefitted from other solutions which included a vibration sensor for electric motor predictive maintenance, a data analytics for transportation; a system to monitor and predict downtime of 3D printers to reduce material waste; and subcontractors tracking portal to improve On-Time-Deliveries.



Sustainability

MIMOS also promotes sustainability-led innovation. In supporting the national science, technology and innovation agenda, MIMOS is dedicated to producing meaningful innovations that are accessible to all communities and every level of society towards creating a connected, digitalised government and nation. Backed by strong capabilities in advanced and emerging technologies, MIMOS is at the vanguard of driving sustainable and inclusive innovation for Malaysia.

One of MIMOS solutions includes Supply Chain Traceability which espouses best sustainability practices in agriculture and other industries through advanced technologies such as Blockchain, Big Data Analytics and Machine Learning. The technologies allow end-to-end product tracing to ensure transparency and visibility; integrity and sustainability.

MIMOS has also generated solutions for environmental sustainability, which included an IoT system for smart

agriculture and an anti-poaching system at one of Malaysia's rainforests, just to name a few.



Blockchain Ventures

MIMOS is committed to driving Blockchain technology for the nation towards accelerating digital transformation. Its Blockchain system has been successfully commissioned on several initiatives including palm oil traceability, contactless payment tracking and vaccine traceability system.

For palm oil traceability, the technology enables the tracking of the data collection, starting from the source of origin right from the palm oil fruits plantation location, followed by a point of collection centre, to the destination of mill and refinery until the final distribution of the end product or the consumers.

The blockchain tracking and traceability functions are important requirements to meet the international standard and practice of sustainable compliance for Malaysia's exports to the global market.

Meanwhile, the contactless payment tracking system was implemented in collaboration with a third-party e-wallet provider, where the latter's data was connected to MIMOS' Blockchain server to permit all transactions to be stored and tracked in the system. This e-wallet system runs on a mobile interface whereby parents can create a wallet and assign the wallet to their children with a contactless flexible card.

On top of that, Vaccine Management System is an ongoing Blockchain project in collaboration with MOSTI and MOH. It involves the tracking and tracing of the vaccination exercise of all Malaysians nationwide.



MIMOS STRATEGIC ROLES



National E&E Roadmap

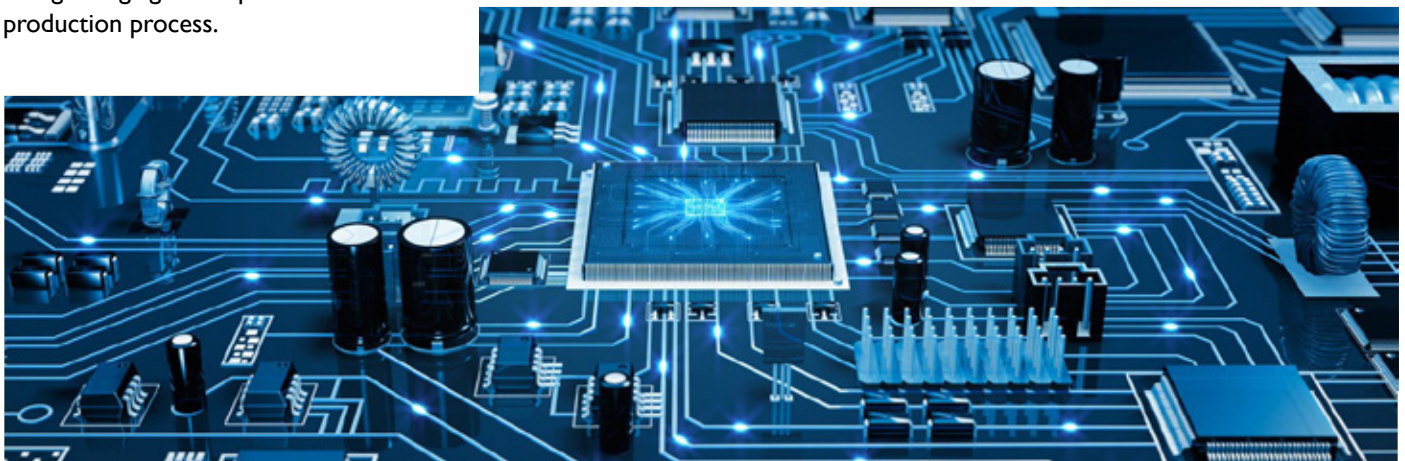
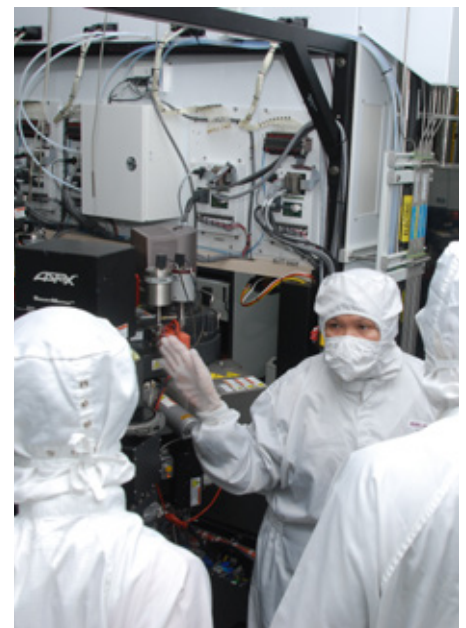
Championing the E&E Growth

MIMOS has been supporting the E&E sector's long-term growth by strengthening the E&E ecosystem, offering end-to-end shared services facilities for industry, SMEs and academia as well as providing expert services in advanced materials R&D.

MIMOS national facilities are equipped with the latest equipment for various services such as Failure Analysis, Material Analysis, integrated circuit (IC) Design and Wafer and IC Testing, staffed by experienced engineers in the semiconductor industry. One of MIMOS' capabilities and resources include IC Design ranging from specification to production process.

MIMOS also offers excellence in advanced materials for wide-ranging applications such as graphene. Using MIMOS' facilities, local E&E industries can enjoy a low cost of entry and faster time to market, while safeguarding their local intellectual properties.

MIMOS appointment as one of the secretariats of National E&E Roadmap 2021-2030 amplifies the agency's role in empowering the E&E industry via frontier R&D activities. The roadmap stresses the need for technology development, transform Malaysia from being the user to the developer of technologies and eventually use local technology in every aspect and sector for economic growth.



For Future Economic Development

Since the E&E sector was established in Malaysia in the 1970s, it has rapidly developed to become the key driver of Malaysia's industrial development and contributing significantly to the country's export earnings, foreign investments and employment.

The local E&E sector, which contributes about 6.3% to Malaysia's gross domestic product in 2019, can be classified into four sub-sectors namely, electronic components, consumer electronics, industrial electronics, and electrical products. E&E also stimulates the growth of new economic clusters, particularly manufacturing-related services such as testing and engineering, as well as trade services-related global hub activities.

Nevertheless, the sector still faces significant challenges in sustaining growth with the competition from other regional countries.

The National E&E Roadmap 2021-2030 has outlined some possible ways forward to sustain E&E as leading industry sector in Malaysia and future direction for the E&E sector in Malaysia, for immediate action within the first five years (2021-2025) and the next five years (2026-2030).

In a nutshell, the roadmap is prepared for future growth and economic development of the country especially to develop strategies and action plans for the 12th Malaysia Plan (12-MP) and New Industrial Master Plan 2021-2030 (NIMP).



National Blockchain Roadmap

Beyond Cryptocurrency

Blockchain technology is more than mere cryptocurrency. It has extended into broader business world and has great potential to the underlying problems of security and privacy not only in the financial industry but also in other crucial sectors such as healthcare, agriculture, education and law enforcement.

Blockchain is a distributed ledger that stores all the transactional data executed or shared among peer-to-peer nodes. The data will be encrypted and verified by other participating parties before a transaction can be stored in the ledger, after which a new block of data will be added to the chain and be visible to all users on the public. Once a block is formed, it can neither be deleted nor altered. The philosophy behind blockchain is to create a neutral, decentralised, borderless and network-resilient technology.

The Roadmap Development

The National Blockchain Roadmap 2021-2025 is formulated to prepare Malaysia for Blockchain 2.0 or beyond cryptocurrency, and angle at the solution to business issues ranging from fraud management, supply-chain monitoring to identity verification, that can potentially increase efficiency and reduce costs.

MIMOS has engaged with various stakeholders, ranging from industry, academia, government agencies and non-governmental organisations (NGOs) to develop Malaysia's National Blockchain Roadmap with action plans to adopt blockchain technology and enable its proliferation.

The roadmap outlines 29 initiatives and 23 government-led programmes for each of the five ecosystem building blocks in five years' time span to energise its pervasiveness. A core element of MIMOS recommendation is the creation of the Malaysia Blockchain Infrastructure (MBI).

This is to protect user privacy and data confidentiality of off-chain information, and also to enable ownership specification and establishment via personalised identity wallets, which would potentially also serve as a national digital identity. MIMOS also recommended that trade facilitation and government services be the strategic focus of any early use case development.

Under the roadmap, three proofs-of-concept (POC) or use cases blockchain-based projects have been and will be implemented, namely:

- i) The ongoing Vaccine Management System with MOH;
- ii) Authorised Economic Operators (AEO) with the Royal Malaysian Customs Department to enhance the level of integrity and governance in trade and supply chain.
- iii) Halal tracking and certification.



Blockchain will be the transformative and pervasive driver of change for Malaysia's digital transformation journey through the five ecosystem building blocks namely Collaboration, Amplifier, Talent, Legal and Governance; and Enablers. While acknowledging its strengths and advantages, several challenges must be addressed to unleash the full capability of blockchain.

The MBI serves as a seeding point for development efforts in support of the roadmap. To this end, work should commence to build common and reusable components useful across problem specifications, use cases and solution architectures; inclusive of data notarisation, zero-knowledge commitment and proofing, and middleware interfaces to external systems.



National Technology and Innovation Sandbox (NTIS)

The National Technology and Innovation Sandbox (NTIS) was launched on 19 August to help intensify the government's efforts in developing and commercialising local technologies towards making Malaysia a high-tech and high-income country.

NTIS, a key initiative under the Short-Term Economic Recovery Plan (PENJANA), is a facility that allows researchers, innovators, startups and high-tech entrepreneurs to test their products, services, business models and delivery mechanisms in a live environment.

In supporting NTIS, MIMOS plays a role in improving Malaysia's societal well-being through patentable technology platforms, products and solutions. In terms of R&D, MIMOS offers technopreneurs and innovators its six national-level technology reference centres equipped with a complete spectrum of advanced analytical tools.

MIMOS has been entrusted to evaluate eight out of 10 technology focus areas namely 5G/6G, Sensor Technology, 4D/ 5D Printing, Advanced Materials, Advanced Intelligence Systems, Cyber-security and Encryption; Augmented Analytics NS Data Discovery, and Blockchain.

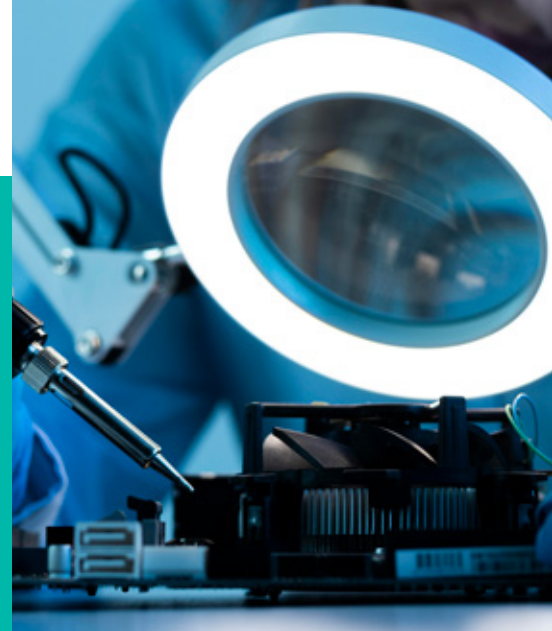
As of December last year, MIMOS has completed technical evaluations for 109 applications, 87 of which were recommended and tabled to the Executive Selection Committee (ESC) for approval. ESC accepted all recommendations by MIMOS.

MIMOS also jointly hosted three online clinic sessions on NTIS for more than 200 applicants.



ELECTRICAL AND ELECTRONIC

In 2020, MIMOS continued to contribute to the productivity and competitiveness of local E&E industries through the provision of advanced analytical services as well as capacity and capability building.



Empowering E&E Industry

In 2020, MIMOS has rendered a total of 1,358 analytical services to various organisations and research institutes mainly in Failure Analysis and Material Analysis, Semiconductor and Microelectronics Systems.

As of December 2020, MIMOS' Advanced Analytical Laboratory – Failure Analysis and Material Analysis has benefitted 378 customers from manufacturing industry; universities; research institutes, government agencies and R&D organizations.

Of the total, 41 per cent were from multinational companies; 40 per cent

from small and medium enterprises; 15 per cent from research institutes and universities; and 4 per cent from foreign customers.

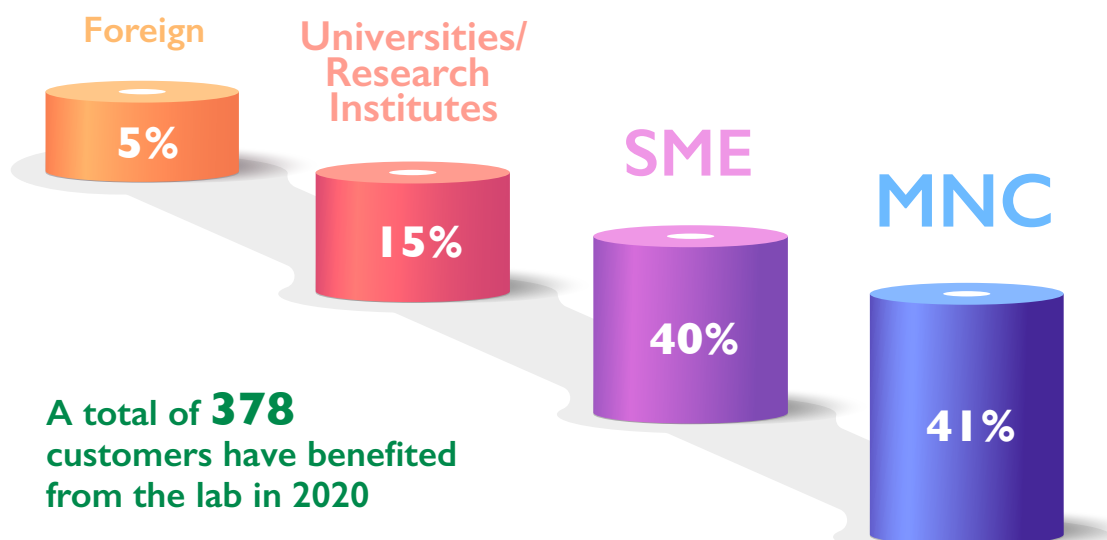
The services have enabled the industries to boost their performance cycle time and production quality, and reduce downtime associated with manufacturing and design defects.

The lab has also collaborated with more than 18 local partner labs with various types of analysis to support the industries and joined membership in various industry associations.

We also worked closely with lecturers in a consultation programme with industry customers based on their subject matter experts. This consultancy exercise had assisted customers with their product and manufacturing issues by solving the mechanical aspects and collaborating in research.

All in all, MIMOS is the only local centre that has complete Semiconductor Value Chain capabilities and high-tech facilities that meet international manufacturing standards to offer and support advanced skills training for industries and academia.

MIMOS' ADVANCED ANALYTICAL LABORATORY – FAILURE ANALYSIS AND MATERIAL ANALYSIS



Enabling Next E&E Generation

Throughout the year, a total of 6,365 participants have undergone training under the MIMOS Skills Development Programme which included E&E and cutting-edge technologies courses. Of the total, 3,731 engineers, lecturers and students have benefited from E&E and advanced skills training in the area of Failure Analysis, Material Analysis, Reliability Engineering, IC Design and Wafer Fabrication, among others.

Under the Post-School Finishing Programme (PSF), MIMOS trained 580 graduates in National IC Design Talent Development. PSF is a programme held in collaboration with the Ministry of International Trade and Industry (MITI), Malaysian Investment Development Authority (MIDA), Ministry of Education (MOE), Electrical and Electronics

Productivity Nexus (EEPN), Collaborative Research in Engineering, Science and Technology Centre (CREST), USAINS and participating universities. The programme was aimed to fill the knowledge and skills gap among graduates by exposing them to the latest industries tools and technology.

Additionally, MIMOS played a role under the National IoT roadmap where the agency provided an IoT development training programme for 81 participants to hone their technical skills in the IoT area, while the remaining 1,973 trainees took part in tech talks and seminars.

Since 2006, MIMOS has trained more than 4,300 engineers, lecturers and students from industry and universities in the E&E-related training based on the approved industry syllabus.

MIMOS also provides its very own industry-standard training courses on E&E and Semiconductor for the future workforce. These include Semiconductor Wafer Level Testing Training; Advanced Analytical – Failure Analysis; Material Testing for Hardness via Nanoindentation; Reliability Testing and Analysis in Industrial Application; Problem Solving-Basic Quality Tools Used in Manufacturing; Integrated Analog Digital Converter and Digital Automatic Test Equipment (ATE) Application.

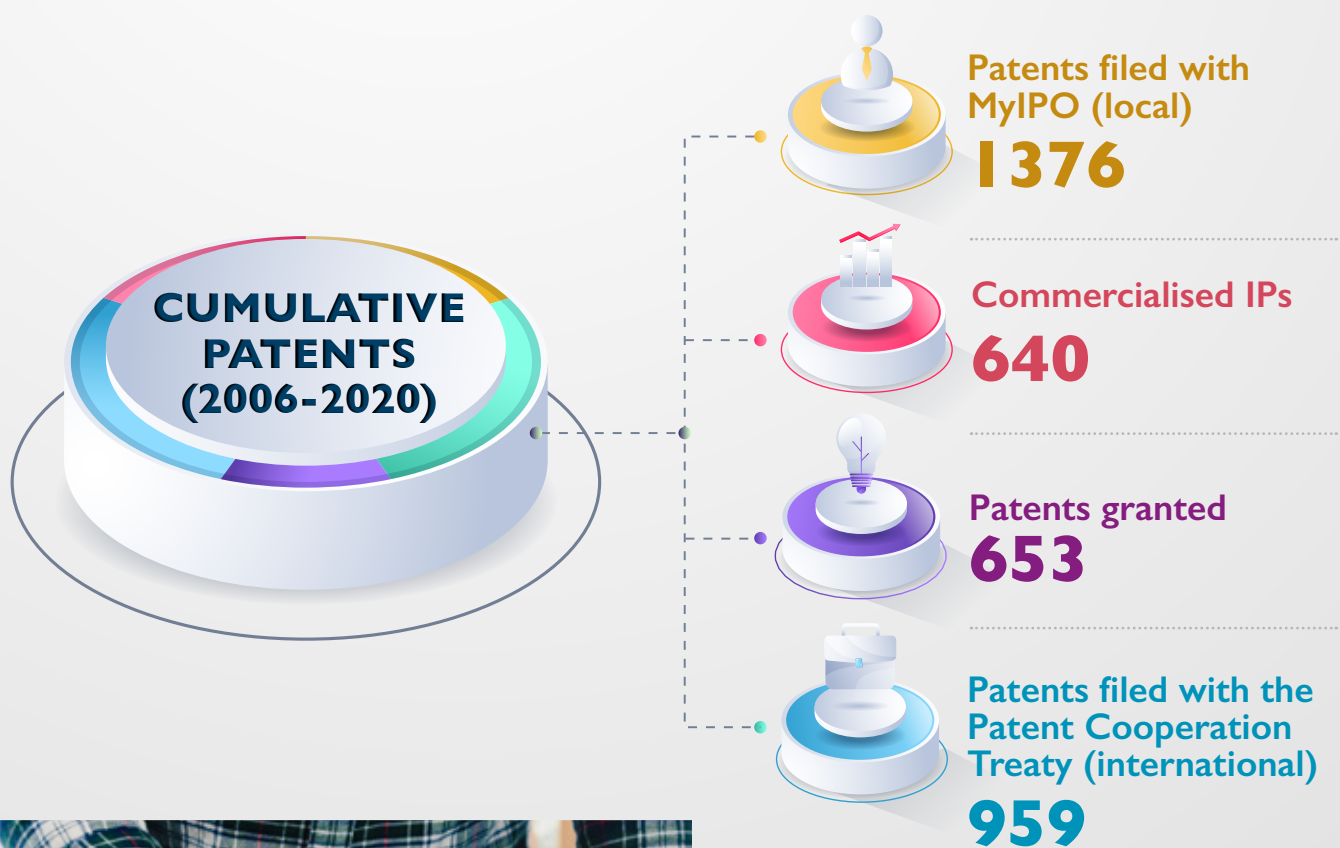


MIMOS SKILLS DEVELOPMENT PROGRAMME



RETROSPECTIVE 2020 | Driving Competitiveness

We managed to sail through the pandemic storm and continue developing competitive edge. 2020 saw some growth in our IP portfolio, where cumulative results from 2006 to 2020 showed an upward trend while in 2020 alone, 58 patents were filed with MyIPO, with 55 IPs (patents: 22, copyright: 33) commercialised.



MIMOS has always been a dynamic centre of excellence, knowledge and discovery - and 2020 was no different. Our R&D activities and technological know-how were cascaded through online talk series and webinars which covered topics on technology domains across various sectors including manufacturing, E&E, healthcare and commodity. We also participated in conferences and events with the Government, business and scientific communities alike - both physically and virtually.

MIMOS R&D Online Talk Series

Industry4WRD: Advanced. Advantageous. Accelerate (15 October 2020)



The talk provided a better understanding of Industry4WRD, MIMOS' SMISP and how it assists industry players to accelerate in the area of technology.

Photonics in Medical Devices: Revolutionising the Current Practices (28 October 2020)



This knowledge sharing session centred around revolutionary photonics-based medical devices and MIMOS R&D activities in the area of biomedical sensor.

Transforming Rubber Industry through Advanced Analysis Techniques and Graphene Application (11 November 2020)



Technology and industry experts came together to deliberate on the advanced analysis techniques and graphene application in revolutionising the rubber industry.

Evolution of 3D Digital Development in Computer-Aided Industrial Design (12 November 2020)



The talk shed lights on the latest design applications and demonstration of 3D modelling.

Graphene: The Wonder Material Revolutionising Wearable Tech (26 November 2020)



An insightful session that uncovered the wonders of graphene and its application for wearable tech.

Video Content Analysis: Traffic Analytics in Complex Scene (10 December 2020)

The talk discussed the function of traffic analytics especially its utilisation during a complex situation.

Private Blockchain Technology, Hyperledger Fabric Chaincode Development (17 December 2020)



A sharing session that focused on the code development area of general blockchain technology.

Conferences and Exhibitions

Southeast Asia Smart Urban Infrastructure Forum

(18 Feb 2020)



The forum addressed issues that the government and private players were facing in accelerating and optimising smart cities. MIMOS Chief Technology Officer Thillai Raj, who was one of the panel speakers, shared some of the agency's advanced technologies that can be used to boost efficiency of the overall infrastructure performance.

ACCA Virtual Panel Session : The Next New Normal – Life after COVID-19 in Malaysia.

(15 May 2020)



MIMOS highlighted its technological capabilities and experiences in assisting the accounting industry in the adoption of frontier technologies such as AI so that the industry can be globally competitive.

Building Resilience with Blockchain for a Sustainable Malaysia's Agriculture

(2 July 2020)



The webinar gathered experts from MIMOS, UPM, MiGHT and Infinity Blockchain Ventures to discuss how Blockchain offers a secure way of storing and managing data, which enables the development of data-driven innovations for smart agriculture.

APAC CISO Summit Cybersecurity in a Hyperconnected Ecosystem

(27 Aug 2020)



Proficient experts including MIMOS exchanged insights to improve security posture and mitigate financial and brand damages. The summit highlighted strategies for future-proofing the digital business community in the times of a pandemic.

All About Design with Saharudin Busri

(3 Sep 2020)



The virtual talk featured MIMOS award-winning Industrial Design Head Saharudin Busri who shared his design inspiration, design journey and a demonstration from 2D design to 3D modelling.

Program Kembara STIE – Rembau

(5 Sep 2020)



Organised by MOSTI, the programme provided an integrated platform for private companies, technology experts, scientists, researchers, academics, university students and agencies under MOSTI to collaborate and celebrate science, technology and innovation. MIMOS showcased some of its innovations such as a painless blood glucose test device and IoT-based monitoring system for agriculture and aquaculture.


MOSTI' Malaysia Commercialisation Year Summit 2020

(17 - 18 Dec 2020)



MIMOS participated as an exhibitor in this annual event which was done virtually.

RETROSPECTIVE 2020 | Engagements



MIMOS has enjoyed the symbiosis with government agencies, industry players and academia – from local and abroad – towards forming a stronger innovation ecosystem and enriching business network. MIMOS has actively engaged with key partners to make technology works for the people and to address real-world challenges.

21 Jan 2020

Visit by Royal Malaysian Navy Western Naval Logistic Commander, First Admiral Rozaide Megat Othman

12 Feb 2020

Visit by Bukit Aman Deputy Director (Technical and Operation), Logistic & Technology Department DCP Dato' Sahabudin Abd Manan

19 Feb 2020

MIMOS formed a tripartite collaboration with SEGi University and RM Applications Sdn Bhd to establish the nation's first Islamic Centre for Emerging Technologies (ICET). ICET was set up to champion R&D programmes and training on Islamic finance.



25 – 26 Feb 2020

An engagement session between the government and industry players to discuss on the development of E&E roadmap.

27 Feb 2020

The IoT-based early warning system developed by MIMOS and Universiti Putra Malaysia at Raja Musa Forest Reserve in Selangor has helped to

prevent incidents of fire especially during dry season. The system collects data on surrounding environment and peat condition.



21 Jan 2020

Visit by Director-General of National Registration Department, Dato' Ruslin Jusoh



5 Feb 2020

Visit by Department of International Trade of British High Commission

7 Feb 2020

Visit by Malaysia External Trade Development Corporation (MATRADE) CEO Dato' Wan Latiff Wan Musa

12 Feb 2020

Visit by Maxis Head of Practices Ms. Claire Featherstone

2 Mar 2020

Visit by Director-General, Health Services Division of Ministry of Defence Lieutenant General Dato' Pahlawan (Dr) Md Amin Muslan



10 Jun 2020

Visit by Science, Technology and Innovation Minister Khairi Jamaluddin



6 Jul 2020

Visit by Malaysian Anti-Corruption Commission Intelligence Division Director, Datuk Abd Aziz Aban

14 Jul 2020

Visit by UMW Corporation Sdn Bhd

1 Oct 2020

Visit by Deputy Secretary General of Treasury (Investment), Ministry of Finance Puan Anis Rizana Mohd Zainudin

RETROSPECTIVE 2020 | Going The Extra Mile



22 Jan 2020

MIMOS pre-Chinese New Year Celebration.



One of our recipes for success is positioning the highest value on its people. MIMOS' milestones and achievements would have not been possible without the steadfast loyalty and endless supports of our MIMOSians, especially our frontline employees who have been collectively driving innovations during the health crisis. Amid the pandemic, MIMOSians have gone the extra mile by giving their full commitment at work to ensure service continuity.



31 Jan 2020

Bomba Fire Drill Exercise

18 May 2020

Tan Sri Shahril Shamsuddin appointed as MIMOS chairman.



10 July 2020

MIMOS donated laptops for the underprivileged students at International Islamic University of Malaysia to support students with their studies.





2 Sep 2020

Tadika MIMOS celebrated Malaysia Independence Day.



15 Sep 2020

MIMOS welcomed new President & CEO Dr. Iskandar Samad.



28 Sep 2020

Tadika MIMOS Taekwondo Grading Test.



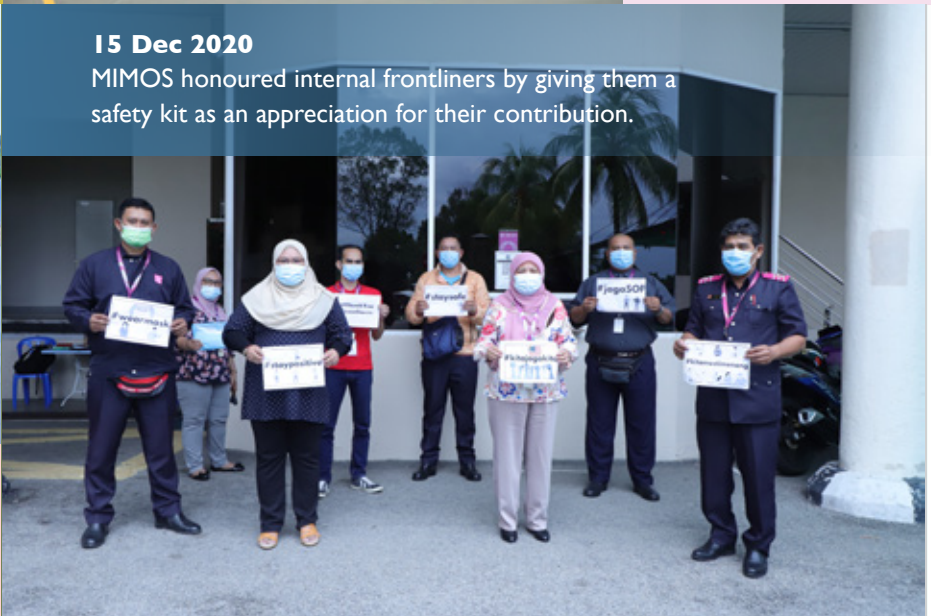
28 Sep 2020

MIMOS Sports Carnival.



1 Dec 2020

MIMOS contributed dried food supplies for PDRM frontliners at IPD Serdang as part of CSR activity during the COVID-19 pandemic.



15 Dec 2020

MIMOS honoured internal frontliners by giving them a safety kit as an appreciation for their contribution.

MIMOS

RETROSPECTIVE **2020**

National Applied R&D Centre



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