

# ON-TRACK

Year 2022 - 1<sup>st</sup> Edition

Bilingual

Official Bulletin of Rail Unit, MOT & NRCOE

Towards Rail Industry Technology Development 2030

#KELUARGA  
MALAYSIA

National Rail Centre  
of Excellence  
(NRCOE)

Evolution of Train  
Simulator in Malaysia

PIES® Saves Lives of Pregnant  
Woman in Malaysia

Hala Tuju Sektor Rel 2030

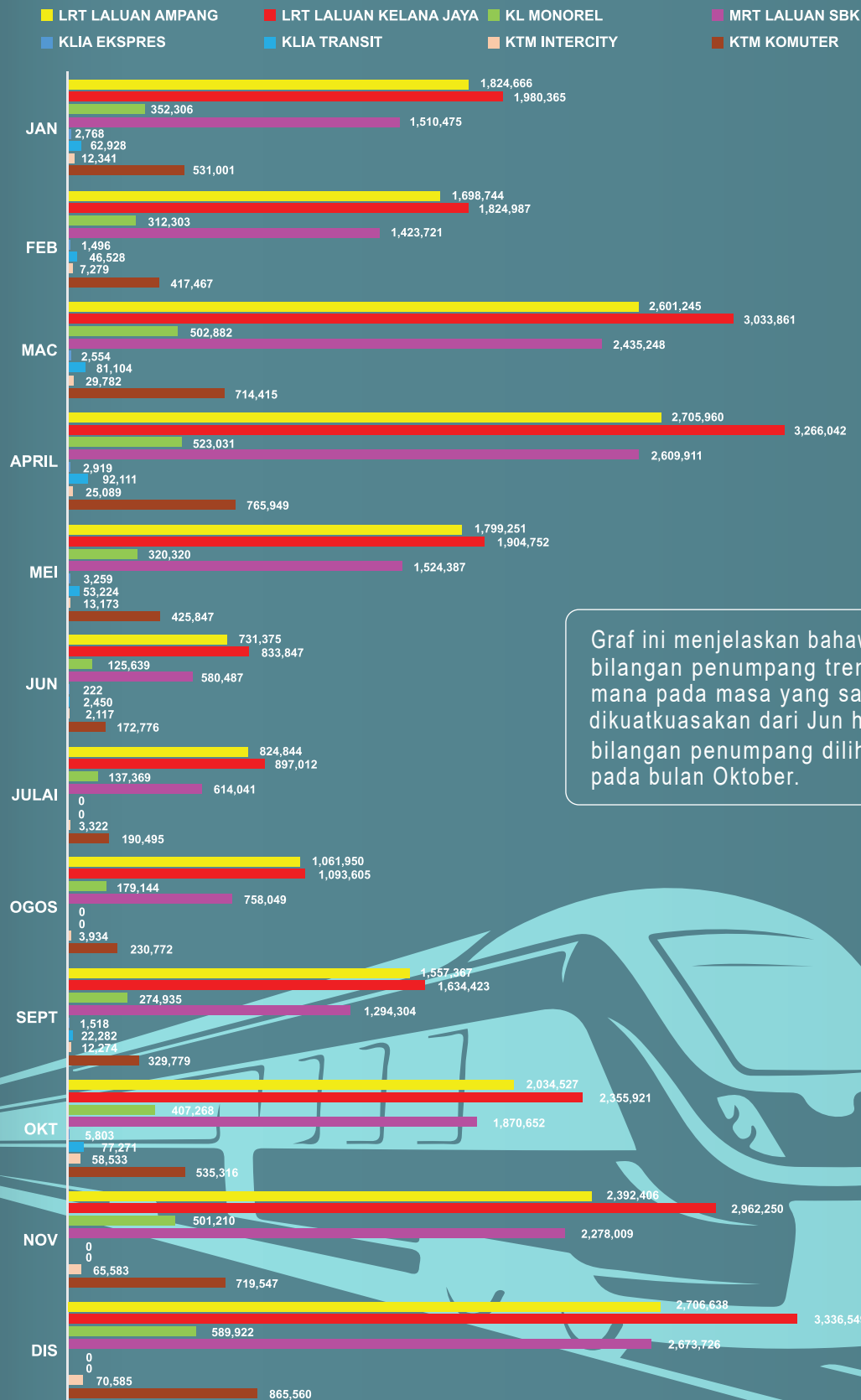
**ENHANCEMENT OF LOCAL  
RAIL INDUSTRY** CAPABILITIES  
TOWARDS SUSTAINABLE  
RAILWAY



# Bilangan penumpang bagi perkhidmatan pengangkutan rel di MALAYSIA, (JAN-DIS 2021)

Pada tahun 2020 dan 2021, seluruh dunia telah dilanda wabak pandemik COVID-19, termasuk negara Malaysia. Impak daripada COVID-19 telah menjejaskan beberapa perubahan terhadap bilangan penumpang yang menggunakan perkhidmatan sektor rel di Malaysia seperti perkhidmatan rel di KTMB laluan antara bandar ke utara, Komuter laluan Lembah Klang, LRT laluan Ampang dan Kelana Jaya, MRT laluan SBK, dan KLIA Express dan Transit.

Berikut merupakan statistik bilangan penumpang bagi perkhidmatan pengangkutan rel di Malaysia.



Graf ini menjelaskan bahawa terdapat penurunan bagi bilangan penumpang tren bermula pada Jun 2021 di mana pada masa yang sama, "Total Lockdown" telah dikuatkuasakan dari Jun hingga Oktober 2021. Jumlah bilangan penumpang dilihat telah kembali meningkat pada bulan Oktober.

# ON-TRACK

1<sup>ST</sup> Edition, Year 2022

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## SETIAUSAHA BAHAGIAN DARAT, KEMENTERIAN PENGANGKUTAN MALAYSIA

**En. Wan Mohd Asraf bin Wan Salleh**



Sektor pengangkutan rel merupakan salah satu pemacu kepada pertumbuhan negara dan penyediaan sistem pengangkutan rel yang berkualiti adalah penting untuk mencapai aspirasi negara maju. Adalah menjadi hasrat utama Kerajaan bagi menyediakan sistem pengangkutan rel yang selamat, boleh dipercayai, mampu guna dan mampan.

Kini, kita menyaksikan kemunculan pelbagai teknologi baru dan yang berpotensi mengubah keadaan seperti Internet of Things dan tren autonomi. Teknologi baru ini wujud dengan pantas dan akan mengubah model industri rel ini. Justeru, keupayaan dan kesediaan pemain industri rel tempatan diharap akan dapat dipertingkatkan bagi mencipta jejak global dan membolehkan mereka bersaing di peringkat antarabangsa.

Buletin ini diterbitkan untuk menelusuri dan mendokumentasikan perkembangan teknologi rel negara. Buletin ini akan meluaskan capaian syarikat kepada khalayak yang terlibat secara langsung dalam pembentukan polisi, perolehan dan hala tuju sektor rel negara.

Kita perlu memastikan bahawa pendekatan gabungan di antara pembekal, pengangkutan dan infrastruktur yang berbeza dengan teknologi adalah penting untuk menjadikan industri rel sebahagian daripada ekosistem terbaik untuk pergerakan pada masa akan datang.



## CHIEF EDITOR, ON-TRACK BULETIN

**Zaidatul Shahira Zahari**

The on-track bulletin is the first publication for the rail industry sector from the Ministry of Transport Malaysia (MOT). We have identified & evaluated potential companies that have capabilities and technology in the rail industry. This bulletin will address and overview and knowledge on the presence of local vendor capabilities in supporting the new project development, operation, maintenance, repair, and overhaul.

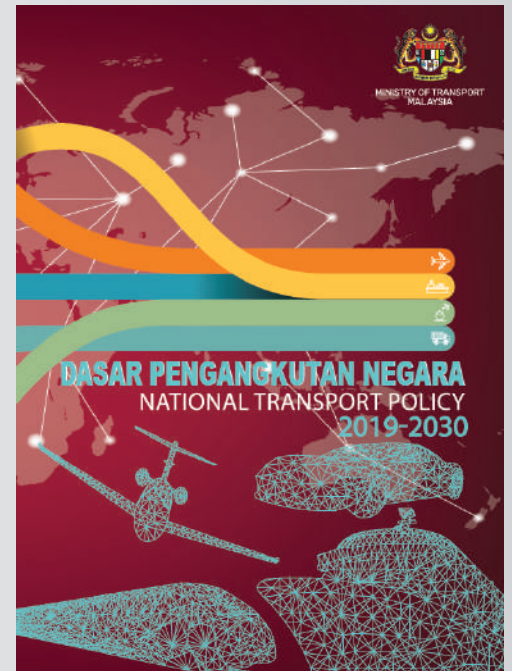
The rapid growth of the rail industry in Malaysia and ASEAN has triggered MOT to enhance local industry capability through NRCOE under land division. The rail industry development program will ensure Malaysia develops quality and competent local industry players to support Malaysia's rail project and penetrate the global market. These initiatives also serve to ensure Malaysia's rail industry is sustainable by 2030 and depends less on foreign OEM and suppliers.

Furthermore, this bulletin publication has been coordinated by the protege trainees under Land Division and NRCOE, MOT. As a protege with a background in material engineering from International Islamic University Malaysia (IIUM). I have gained vast knowledge on rail systems, rail components, rail technology, rail industry landscape, and how to conduct an assessment of local vendors' capabilities. I want to thank my team and the industries involved for showing their commitment, brainstorming the ideas, and allowing the corporation to produce this bulletin successfully. I wish you an exciting and entertaining read.



# HALA TUJU SEKTOR REL 2030

Sebagai sebuah negara beraspirasi tinggi, Malaysia kini giat membangunkan rangkaian pengangkutan rel bagi menyokong pertumbuhan ekonomi serta perhubungan sosialnya. Malaysia juga tidak ketinggalan dalam memastikan pembangunan infrastruktur pengangkutan rel ditingkatkan secara sistematik ke satu tahap setanding negara-negara maju.



## 5 TERAS DASAR

MELANGKAH MAJU KE ARAH  
EKOSISTEM PENGANGKUTAN  
HIJAU

Dasar Pengangkutan Negara (DPN) 2019-2030 bertindak sebagai teras dasar untuk melonjakkan negara dengan penambahbaikan sektor rel dan menjadikan Malaysia kekal mesra perniagaan dan mampu menjadi pesaing global dalam industri rel. Visi DPN 2019-2030 berpaksikan kepada prinsip pengangkutan yang mampan. Ia membolehkan penyatuan dan penyelarasan inisiatif ke arah matlamat yang sama sekali gus menyumbang kepada penggunaan sumber yang cekap, serta menangani cabaran dalam sektor pengangkutan.

## MENJELANG TAHUN 2030

Kementerian Pengangkutan mempunyai visi untuk melihat industri rel di Malaysia menjadi sektor perniagaan yang kukuh dan mampan, berupaya memenuhi permintaan pengangkutan rel nasional dan pemain global yang berdaya saing bagi mengoptimumkan penggunaan sumber dan teknologi tempatan.

Dalam tempoh 8 tahun akan datang, Malaysia bakal tiba ke visi tersebut dan terdapat 5 destinasi yang perlu dilalui iaitu;

Industri Rel Malaysia menjadi penyumbang penting kepada ekonomi negara.

Industri Rel Malaysia Boleh memenuhi permintaan tempatan dan serantau (ASEAN)

Malaysia menjadi peneraju utama sistem rel dan mampu bersaing diperingkat global

Malaysia akan melahirkan pekerja mahir yang berkualiti tinggi dan diiktiraf diperingkat antarabangsa

Kelestarian Industri Rel pada 2030



# National Rail Centre of Excellence (NRCOE)

Badan penyelaras yang teguh penting untuk mencipta ekosistem yang sihat dan kondusif agar pemain industri dapat beroperasi dengan cekap dalam persekitaran yang berdaya saing bagi menyampaikan perkhidmatan pengangkutan rel yang selamat dan selesa kepada pengguna.

Pada masa yang sama, rangka kerja badan penyelaras tersebut mesti boleh disesuaikan untuk menerima kemasukan pelbagai teknologi dan *trend baru*. Justeru, Pusat Kecemerlangan Rel Kebangsaan (NRCOE) ditubuhkan bagi sektor rel dimana ia merupakan salah satu pelan tindakan utama Teras Dasar 1 di dalam DPN 2019-2030.



- 01 PEMBANGUNAN MODAL INSAN (HCD)**
  - Pusat penyelaras latihan kebangsaan
  - *Industry Lead Body* (ILB) untuk sektor rel
  - Pengurusan bakat dan pembangunan kompetensi
  - Sasaran menjadi sebuah institusi rel di ASEAN
- 02 PROGRAM PEMBANGUNAN INDUSTRI REL (RIDP)**
  - Membangunkan keupayaan pembekal tempatan untuk menjalankan MRO / sistem / komponen pada masa hadapan
  - Program Lokalisasi
- 03 PENGUJIAN DAN PENSIJILAN (T&C)**
  - Membangunkan piawaian rel Malaysia & ASEAN
  - Peningkatan kemudahan peralatan ujian tempatan
- 04 PENYELIDIKAN DAN TEKNOLOGI (R&T)**
  - Menghasilkan komponen *rolling stock*/sistem tempatan
  - Program *refurbishment* tempatan
  - Reka bentuk & Pembangunan produk tempatan melalui program *re-engineering* (*applied and fundamental R&D*)

Keseluruhan pembangunan akan berdasarkan *Prinsip Mampan* mengikut Dasar Pengangkutan Negara 2019-2030



NRCOE bertindak sebagai badan penyelaras di peringkat nasional dalam memastikan pembangunan bakat tempatan profesional, mahir dan separa mahir dalam bidang rel, menambahbaik piawaian dan jaminan kualiti untuk industri rel serta menyelaras kajian dan penyelidikan teknologi rel agar seiring dengan dasar pengangkutan negara dan keperluan industri.

*Malaysia Rail Industry Dialogue 2022 (MARID 2022)* dianjurkan oleh NRCOE. Dialog ini disertai oleh lebih 200 peserta yang terdiri daripada wakil-wakil kementerian, agensi-agensi kerajaan, ahli akademik dan para pemain industri rel pelbagai bidang seluruh Malaysia. Penganjuran MARID 2022 ini bertujuan untuk berikutan membincangkan isu-isu dan jurang dalam industri rel tempatan untuk merancang inisiatif-inisiatif pembangunan serta menetapkan hala tuju industri rel tempatan. Selain itu, menambah baik dan memperkasakan pelan polisi di dalam Malaysia bagi perolehan yang akan datang untuk kemampanan perniagaan syarikat-syarikat tempatan. Di samping itu, merangka pelan hala tuju industri rel melalui *Malaysia Railway Masterplan 2050* dan melaksanakan program pembangunan kepada para pemain industri rel tempatan agar lebih mampan dan berdaya saing sehingga ke peringkat global. Kerajaan melalui MOT akan terus memberikan sokongan dan panduan kepada pemain-pemain industri tempatan yang ingin berusaha menambah kepakaran, penambahbaikan fasiliti dan kapasiti mereka. MOT mengharapkan ianya akan dapat membantu meningkatkan keupayaan dan kebolehpasaran seterusnya meningkatkan peratusan kandungan tempatan (*local contents*) sekurang-kurangnya 45%.





# NRCOE

NATIONAL RAIL CENTRE OF EXCELLENCE

## BACKGROUND



NATIONAL TRANSPORT POLICY  
2019 - 2030

### VISION

By 2030, MALAYSIA RAIL INDUSTRY will be a strong and sustainable railway, capable of satisfying the demands of the national rail transportation; and a competitive global player that optimizes the use of indigenous resources and technologies.



DEVELOPMENT



COORDINATION



IMPLEMENTATION



FACILITATION

Ministry of Transport (MOT) have established a coordinating body for sector under Land Transport Division to steer the development of railway industry in Malaysia. The entire development will be based on sustainability principles

## ROLES & RESPONSIBILITY



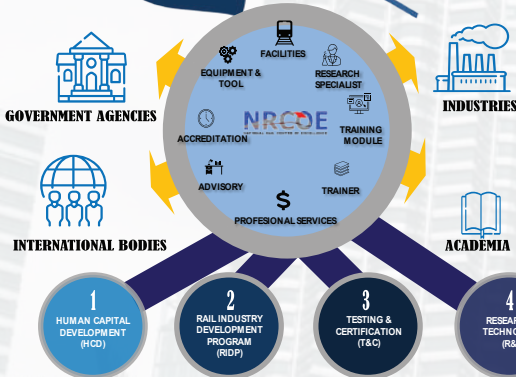
CENTRALIZED PLATFORM



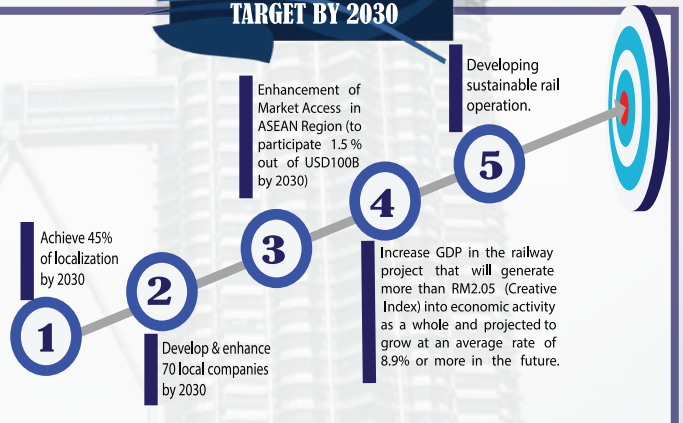
INDUSTRY LEAD BODY

- Implement the Human Capital Development (HCD), Testing and Certification (T&C), Rail Industry Development Program (RIDP) and Research and Technology (R&T) by remaining sustainable in general;
- Become the facilitator for Rail Industry Development in Malaysia;
- Become the hub and the front-line interface for international and local industry players to interact and to provide professional advice on Rail Industry.

## COORDINATING BODY



## TARGET BY 2030



### 1. HUMAN CAPITAL DEVELOPMENT (HCD)



CENTRALIZED TRAINING CENTRE



INDUSTRY LEAD BODY

- Centralized railway training eco-system
- Training modules & system development
- NOSS development
- Curriculum development
- Training fund requisition
- Collaboration with local & ASEAN organization
- Certification & Accreditation

### 2. RAIL INDUSTRY DEVELOPMENT PROGRAM (RIDP)

Develop and enhance local industry capability & capacity in support of local supply chain contributing towards international market.



Localization



Vendor Development Program



Performance Management



Sustainable Railways



Meeting Quality, Costs, Delivery, Development Reliability

### 3. TESTING & CERTIFICATION (T&C)



Develop Malaysia Rail Standard (MRS)



Collaboration with local/ international certification bodies



Benchmark with international rail standards



Develop & enhance local testing facility for industry requirement

### 4. RESEARCH & TECHNOLOGY (R&T)

Produce local rolling stock components/systems and manage local refurbishment program



Identify research gap between industry & university and applied to industry



Collaboration with international university on research program



Integration with IOT and IR 4.0 (Digitalization)



Research, Development & Commercialization (Applied & Fundamental Research)



R&D center for re-design and refurbishment program



# PEMBANGUNAN MALAYSIA RAIL STANDARD (MRS)

Pada 2030, Industri Rel di Malaysia dijangka berkembang dan akan menjadi satu bidang perniagaan yang sangat kukuh dan lestari, mampu memenuhi keperluan dan permintaan industri pengangkutan tempatan serta mampu menembusi dan bersaing di peringkat antarabangsa. NRCOE bertindak sebagai pusat penyelaras di peringkat nasional bagi melaksanakan pembangunan industri, bakat tempatan secara profesional, mahir dan separa mahir dalam bidang rel, menambahbaik piawaian dan jaminan kualiti untuk industri rel serta menyelaras kajian dan penyelidikan teknologi rel agar seiring dengan hala tuju negara dan keperluan industri.

Bagi tujuan pelaksanaan tanggungjawab yang diberikan oleh Kementerian Pengangkutan Malaysia untuk membangunkan industri rel yang bersepadu dan terancang, NRCOE telah memulakan inisiatif dengan menganjurkan satu bengkel pada 24 Disember 2021 bagi mengenal pasti dan membincangkan 'Malaysia Rail Standard' (MRS) bersama pemain industri rel dan pemegang taruh. Selain itu, bengkel ini juga telah membincangkan ketersediaan fasiliti pengujian yang digunakan oleh pemain industri dan menyeragamkan operasi yang terpilih antara semua operator rel di dalam Malaysia. Bengkel ini juga menjadi platform bagi membincangkan dan mencadangkan inisiatif-inisiatif pembangunan agar selari dengan hala tuju Dasar Pengangkutan Negara (DPN) 2019 – 2030.

Penganjuran bengkel MRS tersebut telah berjaya menghimpunkan seramai 93 perwakilan daripada organisasi berkaitan rel iaitu agensi kerajaan, operator rel, syarikat-syarikat rel tempatan dan akademia. Hasil daripada bengkel tersebut, NRCOE dengan kerjasama Technology Depository Agency (TDA) telah memulakan langkah pertama dengan membangunkan Malaysia Rail Industry Standard (MRIS) bagi 10 komponen trackwork melalui platform ICP dan SIRIM telah dilantik sebagai sekretariat.



## PEMBANGUNAN PUSAT PENGUJIAN DAN PERSIJILAN

Selain penetapan piawaian, terdapat juga keperluan untuk mengadakan kemudahan pengujian dan persijilan (Testing & Certification - T&C). Melalui pembangunan MRS, NRCOE sedang mengenalpasti beberapa pihak yang berpotensi dibangunkan sebagai pusat T&C seperti SIRIM dan beberapa pusat pengajian tinggi seperti Universiti Teknologi Mara (UiTM) yang kini telah pun mempunyai peralatan pengujian.

### Objektif MRS

- 1 Menyokong keperluan industri tempatan bagi menggalakkan aktiviti localization bagi komponen-komponen terpilih di bawah kategori Trackwork, Rolling Stock, Signalling, Communication, Electrification dan Automated Fare Collection (AFC).
- 2 Menyeragamkan piawaian bagi sistem operasi yang terpilih antara semua operator rel di Malaysia.
- 3 Menyediakan piawaian yang memenuhi kesesuaian persekitaran unik Malaysia dan ASEAN.
- 4 Menenalpasti dan menambah baik ketersediaan fasiliti pengujian di Malaysia dan memberi cadangan fasiliti yang perlu ada untuk kegunaan industri tempatan.





# Railway Assets Corporation (RAC)



Kuala Lumpur Railway Station

**R**ailway Assets Corporation or better known as RAC is a Federal Government Statutory Body under the Ministry of Transport Malaysia (MOT) entrusted with responsibility as owner, manager and business planner to govern and interpret Government-funded railway assets into valuable property capable of generating continuous income for the Government.

Since inception, RAC has taken on the key role of driving sustainable growth in Malaysia's railway industry to be competitive and at par with the rail sector in the developed world.

RAC was officially established on Aug 1, 1992, the same time the Malayan Railway Administration (KTM) was corporatised

and known as Keretapi Tanah Melayu Berhad (KTMB). The Corporation was set up under Railway Act 1991 (Act 463) through the Government Gazette P.U (B) 401/1992 dated Aug 1, 1992. With the formulation of the Act, all railway assets under KTM administration as well as railway land held by the Federal Land Commissioner (PTP) are vested in RAC, while railway service operations are managed by the successor company, KTMB.

Apart from being the manager and administrator of railway assets, RAC took over all liabilities of KTM to enable the successor company to operate without any debt. The Government's decision to corporatise KTM as KTMB was made with the aim of reducing the national railway industry's dependency on the Government.

## CHRONOLOGY OF RAC'S ESTABLISHMENT

Revocation of  
Railway  
Ordinance  
1948

Formulation  
of Railways  
Act 1991

Establishment  
of Railways  
Assets  
Corporation  
(Aug 1, 1992)

Rebranding of  
PAK as RAC  
(Nov 19, 2015)

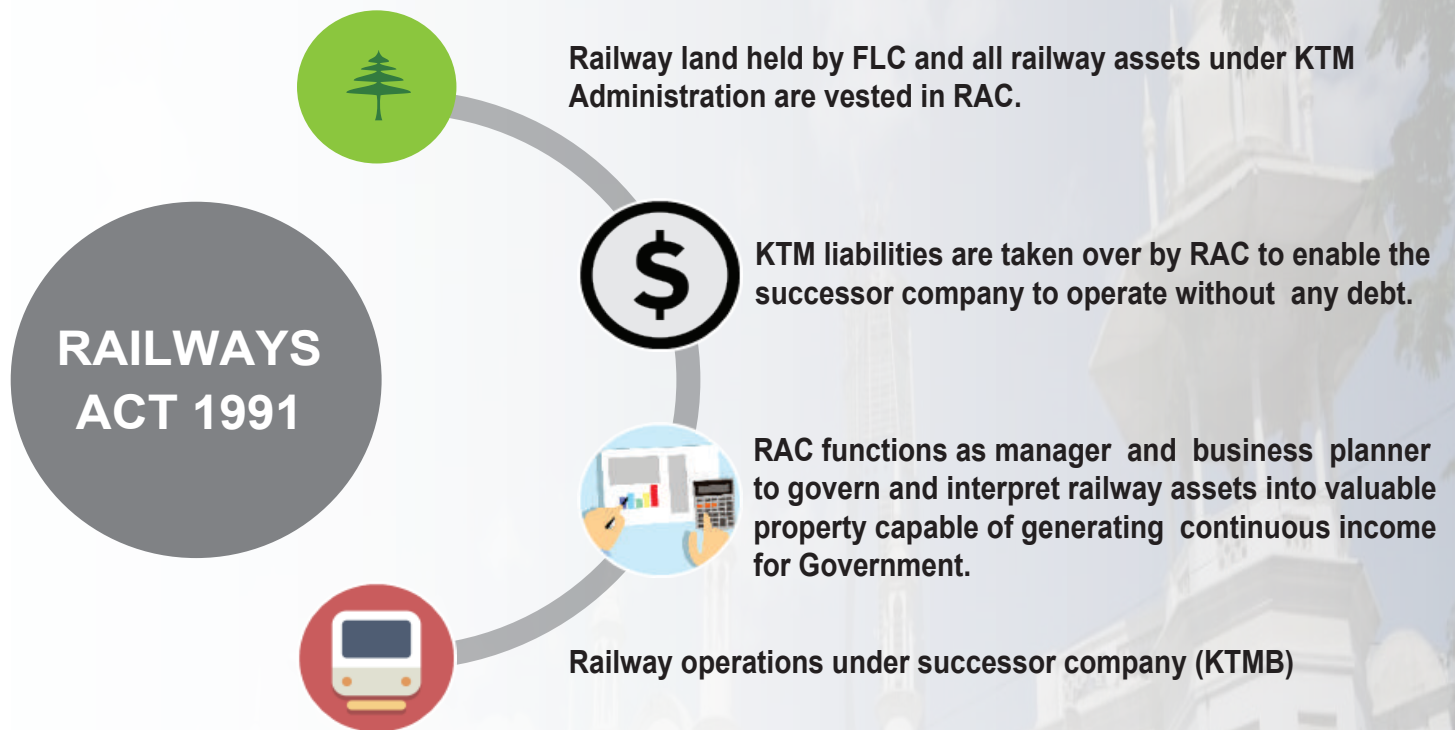
■ All property and rights of KTM and railway land held by the Federal Land Commissioner (PTP) are vested in RAC

■ Railway service operations are taken over by successor company

■ All KTM's liabilities are taken over by RAC to enable the successor company to operate without having to carry the burden of past debts

# Rail Asset Management

## RAC'S RESPONSIBILITIES UNDER THE RAILWAYS ACT 1991



RAC's dedication is conveyed through its mission to manage and develop railway assets to redevelop railway infrastructure through the planning and implementation of a systematic and high-value asset management. This mission can be realised with the vision "LEADING THE TRANSFORMATION OF SUSTAINABLE RAILWAY ASSETS MANAGEMENT BY 2030". Looking at the functions of the Corporation, it has indeed played an important role in managing and developing railway assets capable of generating income for the Government, hence empowering the railway industry in the country.

### LATEST UPDATE !!

**NRCOE is a strategic collaborative partner with RAC to support the rail industry development program in Malaysia**

## THE FUNCTIONS AND ROLES OF RAC

### RENTAL/ LEASE

- Rental and leasing of potential railway land for commercial purposes including advertisement.

### WAYLEAVE

- Permission granted to any parties to use railway land, not for commercial purposes.

### LAND ADMINISTRATION

- Governance of titled-land and gazetting of railway land under reserve category, including taxation.

### IMPROVEMENT OF RAILWAY INFRASTRUCTURE

- Improvement through construction and restoration of infrastructure at railway stations as the main focus to ensure passenger comfort.

### ENFORCEMENT

- Issuance of notice, periodic monitoring and eviction work following active engagement with the District Land Administrator.

### ASSET MAINTENANCE AND DISPOSAL

- Maintenance and disposal of uneconomical railway assets to reduce the cost of maintenance and to minimise complaints.

### DEVELOPMENT OF RAILWAY LAND

- Transit-oriented railway land development is the core strategy of RAC towards increasing revenue and ensuring long-term returns.





# Industrial Collaboration Program (ICP)

by Technology Depository Agency (TDA)

The Industrial Collaboration Program (ICP) is a value-add requirement for Government Procurement that exceed certain threshold values (as per ICP Policy & Guideline) with aim to promote participation from industry and private sectors in working collaboratively with Government and local institutions in the area of industry and technology development towards competitiveness. Since the inception of National Offset Policy (2011) which later being enhanced into ICP Policy in 2014, more than 50 programs were related to railway system & infrastructure such as Klang Valley Mass Rapid Transit (KVMRT), Electric Train Service (ETS), Light Rapid Transit (LRT) to name few. Apart from Railway, other key sectors such as ICT (13 Programs), Aerospace (8 Programs) and Automotive (7 Programs) were implemented.



Completion ceremony of ICP initiative: Manufacturing of electric train under MRT Putrajaya Line Project

## Among notable initiatives as result from ICP implementation were:

- ◆ Establishment of electric train assembly facility equipped with dynamic test track owned by SMH Rail Sdn. Bhd. conformed to the international standard at Rasa, Selangor. The facility has gained track record of electric train assembly and other value-added activities for the KVMRT Kajang Line and Putrajaya Line;
- ◆ Collaboration between Dhaya Maju Infrastructure (Asia) Sdn. Bhd. or DMIA with Universiti Teknologi MARA (UiTM) via acquisition of Cyclical Testing Rig for Rail and Concrete Sleeper testing equipment that helps to elevate the capability of UiTM to become independent testing provider which over the years (particularly during movement restriction regulation world-wide) has helped the Malaysian and locally-based Multinational Company (MNC) industry players getting technical consultation within the desired lead-time; and
- ◆ Development, installation and certification of locally developed Vehicle Safety Monitoring System (VSMS) which served as advanced condition-based monitoring system that would benefit KTM Berhad in operation & maintenance management. The technology would assist in monitoring and analyse the condition and “health-level” of axle box bearing and traction motor of KTMB’s Six Cars Set (SCS) which aspire to reduce the maintenance cost for KTMB in long-run as well as improve the efficiency of its operation.

The implementation of ICP has indeed assist to the industry development and economic growth. Based on analysis conducted by TDA in partnership with University Putra Malaysia (UPM) to selected ICP Program (completed), about 13,189 employment has been generated and the project activities co-contributed to about RM2.51 Billions to the national economic output (compared to RM1.42 Billions spent from Government procurement) which resulted in RM1.01 Billions attained to the National Gross Domestic Product (GDP).





# Signal of Significance

by Global Rail Sdn Bhd

The signaling system is the engineering to prevent collision between trains. Prior to modern day signaling system, train drivers must always keep an eye out for stopped train ahead of their own. Even with the best condition and braking power, the braking is always unsafe due to the inertia from a high-speed heavy vehicle on a metal-to-metal contact surface i.e., the train wheels and track. The sighting distance and drivers' response decide the rest.

As the system evolves along with the development in electronics, it relies on control functions that isolate an active train service from adjacent services by establishing blocks. These blocks are fixed segmented portions along the track, thus known also as the fixed blocks. Examples of this approach is in the operation of the mainline railway by KTMB. In modern signaling system, the segment follows the train as it moves. These dynamic gaps between services are called the moving blocks.

The moving block was made possible with the state-of-the-art Computer-Based Train Control or CBTC. With just few clicks from the operator's desk, a train service can be scheduled, and set to move in a safe and optimized manner. From here on, nearly all operation can be automated, including driving to effectively minimize human error. The MRT Putrajaya Line is adopting this technology in continuation from the MRT Kajang Line. In both projects, the installation of this technology was delivered by Global Rail Sdn. Bhd.

Global Rail Sdn. Bhd. has the competency to provide top of the line service in engineering, procurement, construction, and commissioning for local signaling system. Global Rail become the leader in local railway signaling since the first engagement in the mainline KTMB Seremban Depot, and now looking at the final stage of MRT SSP Line delivery.



Contact  
Global Rail Sdn Bhd





# Maintenance Repair Overhaul Supporting Vehicle Manufacture and Supply



The Next Generation Utility Vehicle (NX04) Model is Malaysia's first shunting locomotive equipped with Bio-Diesel engine compliance. The 1st shunting locomotive (NX04) was jointly designed by DS Rail and UniKL Asia Rail where the manufacturing of NX04 had contributed 64% of localization which involved 15 local suppliers. It was designed and built from the ground up by DS Rail Mobility Sdn Bhd. The NX04 Model is a lighter-weight utility vehicle that is able to operate on any railway track which has axle weights of 7.5 tonnes. The 400HP engine of NX04 locomotive allows it to transport weights of up to 300 tonnes. The primary function of the NX04 is to provide service for shunting, track work and construction area. The company is dedicated to producing world-class railway-designed product, implementing Green technology and digitalization into all product.



This Diesel-Electric locomotive is suitable for flexible usage in Depot, transport, construction (e.g. cable laying, infrastructure maintenance works and shunting operations). It is equipped with Idle cut off fuel-efficient Caterpillar diesel engine and convinces with its reliability and simple maintenance. This locomotive can be multi-unit operated with max hauling load of 1,120 tonnes. Low noise and pollution (fitted with water scrubber) which complies with the environmental protection specification of Malaysia government.



Design and develop jointly by DS Rail and UNIKL MIDI as a Zero Emission Friendly plug-in hybrid version. The passenger trolley is suitable for depot and track inspection activities with range per charge up to 70km and recharge time 1 hour. This trolley able to seat up to 8 passengers.

Contact  
**Mimi Shafeeza**  
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# Platform Intrusion Emergency Stop (PIES®)

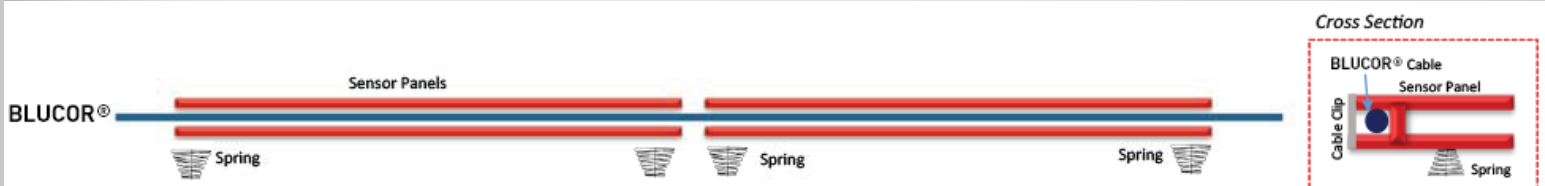
by AZTI® Technology Sdn Bhd

The recent Kelana Jaya LRT incident was a good case study. The PIES® system has proven its capabilities in ensuring platform safety. This state-of-art innovative PIES® system utilizes a series of flexible mounted sensor panels located between running rail in front of platforms and attached a proprietary strain sensitive cable BLUCOR® to these sensor panels and developed electronic circuitry to eliminate environmental effects while still detecting human intrusion.

The motion sensitive cable generates electronic signals in direct response to any motion applied to the sensor panels and sends it to the local control panel. The signal will be filtered and monitored for any changes to trigger a notification signal to the affected Platform Control Panel, Train Signaling and SCADA systems. The intrusion signal of PIES® will notify Signaling to close the station track from trains entering. It meets all safety requirements for averting any tragic accidents such as passengers falling onto the tracks.



## HOW DOES PIES® WORK?



- ◆ Sensing Cable BLUCOR are laid along the groove of Sensor Panel for motion sensing.
- ◆ Sensor Panel are fixed in position but only allow for downward movement.
- ◆ There are Metal Springs installed underneath the Sensor Panel, which will compress if weight that is greater than 7kg is placed on the sensor panel.

PIES® is the most reliable system with the longest operating track record worldwide since 1985. The Company's long list of prestigious projects and clientele include the Sky-train in Vancouver, Canada for 20 stations. Since then, the system has been installed in various projects globally such as Sydney Monorail (Australia), Los Angeles Metro Green Line (USA) and Kelana Jaya LRT, Kelana Jaya Extension Line, Ampang LRT and Ampang Extension Line (Malaysia).

AZTI® Technology Sdn Bhd is the technology owner for the PIES® system that 'saved the day'. Putting people's safety as the highest priority, the Platform Intrusion Emergency Stop (PIES®) system has proven that it is a cost effective platform intrusion safety solutions at minimal capital outlay and lowest operating expenses for the rail industry.



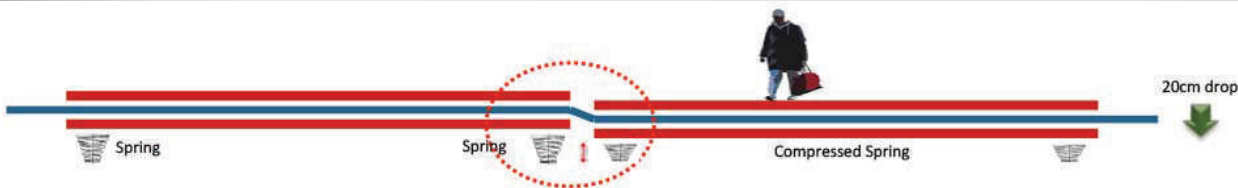


# Saves Lives of Pregnant Woman in Malaysia



Like a scene out of a movie, a railway tragedy was averted in April 2018 thanks to a state-of-the-art innovative safety system that was installed on that train line. PIES<sup>®</sup> was able to immediately stop the approaching train when the impact of a four month pregnant woman who fainted and fell on the track was detected.

The incident occurred at the Damai LRT Station in Kuala Lumpur, Malaysia where the PIES system was installed on the Kelana Jaya Light Rail Transit (LRT) line. The rescue team from the Fire and Rescue Department and medics reached the location soon after the incident, and took about seven minutes to rescue the victim. The Kelana Jaya LRT line was cleared to resume operations in less than half an hour.



## Advantages of (PIES<sup>®</sup>)

Have been installed and still operational since 1985 with zero fatal incidents.

A system that requires minimum maintenance and upkeep.

Barrier Free Intrusion detection/prevention System that provides better flexibility for implementation and future station/rolling stock upgrade.

A system that meets all safety requirements for detecting passengers accidentally falling onto the tracks.

A system that does not require high level of skilled workers to maintain it.

A system that is cost effective and meets safety requirements.

When the sensor panel is compressed down with a 7kg load, the BLUCOR cable will bend due to differential of level between Sensor Panel.

Voltage flow through the cable will then change, feeding a different signal to the control panel, which will relay this signal to the Automated Train Control or SCADA to activate the procedure to stop the train.

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# Evolution of Train Simulator in Malaysia

by Xcel Itech Sdn Bhd



The rapid growth of railway infrastructure worldwide has increased the demands for qualified drivers. This has made train simulator an essential tool in providing effective training to the drivers.

Simulators have been widely used because they provide a safe and reliable method to train drivers in their full range of tasks, including handling system faults and emergency situations. They are potent cost saving initiatives while also reducing carbon footprint. Furthermore, the most important trainings are conducted in a safe environment.

Malaysia has the local capabilities in developing and maintaining simulator for various type of vehicles. Based on the capability and experience, the opportunity to become the leading train simulator provider after completing a train simulator project with UniKL Asia Rail Centre was taken by this company.

Designed and developed by local expertise, it is the first dual configuration (LRT and ERL) train simulator in Malaysia, featuring the highest fidelity in modelling and simulation technology. The uniqueness of this simulator is its setup; installed in an actual coach, it mimics the similar realism of a real train.







The simulator has separate cabins for driver, passenger, and instructor. Driver Cabin provides all the Human-Machine Interfaces (HMIs) such as Master Controller, Deadman, Displays and Communication Device. This is where trainees can improve their drive handling skills and develop a habit of being prudent and cautious.

The Instructor Operation Station allows the instructor to manage the simulation such as route selection, signaling, environment settings, real-time guidance, and scenario generation. It also observes the trainees via CCTV and analyses their actions.



With the capabilities and expertise as the designer, developer, and integrator of train simulators, this company is well equipped for EMUs, DMUs, multiple units, High Speed Train as well as Metros, LRVs and trams to suite customer requirements. With the advancement of technology in the rail industry such as the Train Simulator, this will in hand, aid the other companies in this industry and also in serving as a stepping-stone for a bigger opportunity towards other ventures in the rail industry.

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# Advanced Manufacturing Solutions in Automotive And its Potential in The Rail Industry

by Sapura Industrial Berhad

## HIGH PRECISION MACHINING

Manufacturing of high precision metal-based components for the automotive industry, with in-house capabilities in design & development, assembly and testing, and in refurbishment of machines.

High-value precision parts, such as engine, transmission, and brake related components, are manufactured in the high precision machining division for the automotive sector. The latest testing equipment are also utilised in a way to ensure that the strictest quality standards are satisfied, while remaining cost-effective and efficient. For the domestic vehicle market, critical safety items such as front brake discs, rear brake drums, and front hubs with an anti-lock braking system (ABS) are also manufactured.

## CHASIS & MODULE ASSEMBLY

In the process of chassis and modular assembly, this company are also progressively moving up the value chain to produce high-end and high-value assembly components for the manufacturing of finished modules, and this includes increased capabilities in assembly and in-line assembly of complete automobiles in customers' factory.

Leveraging on the knowledge and experience over the years, the in-house design and research & development (R&D) centre allows the team to develop technical and technological products that are coupled with strong, evocative design integration. The initial target of this company, which is to develop spring for rail industry has a design similarity with automotive spring. Currently, the design and CAE analysis has been conducted, and now is waiting for the material for sample trial preparation. The purpose is to diversify Sapura industrial capabilities to rail sector and support localization by NRCOE and Government. The purpose is to diversify Sapura Industrial capabilities to rail sector and support localization program by government.

## HOT & COLD FORMING

Malaysia aspires to become the leader in this area by nurturing local companies with talents and technical capabilities. As local experts in this particular area, Sapura Industrial utilises both the hot and cold forming technology to produce advanced, high strength steel components, that have become the staple of the modern automotive industry in the manufacturing process. To meet the growing trend towards Energy Efficient Vehicles, in-house capabilities were also developed to produce hollow stabiliser bars for a vehicle's suspension system, which weighs less while providing almost the same functionality as a conventional stabiliser bar.



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# Local Roles in Pivoting Capabilities Towards Railway

by UMW Development & UMW Aerospace Sdn Bhd

Beyond Boundaries

## MANUFACTURING & ENGINEERING

A shock absorber or damper is a mechanical or hydraulic device designed to absorb and damp shock impulses. The kinetic energy of the collision is converted into another form of energy (usually heat), which is then dissipated. Most shock absorbers are a type of damper (a damper that resists movement due to viscous friction). Shock absorbers are an important component of all freight cars, locomotives and freight cars. Over the years, local manufacturing & engineering capabilities were developed to strive in high-quality products and services especially in the automotive scene, alongside with delivering green innovative solutions for the users.

The shock absorbers allow trains to run safely and comfortably, providing the smooth and comfortable ride we experience today. It is part of Bogey's main suspension system. The shock absorbers are mounted to support the weight of the train. Recently, improvements in train suspension systems have been sought in order to reliably reduce external vibrations and improve stability and ride quality. The suspension system for railway vehicles is divided into primary suspension and secondary suspension.

The production of shock absorber in Malaysia involves many company but there are no specialist that produce shock absorbers for use in railway system. Therefore, as a specialist in high precision and superior performance shock absorbers, Malaysia's UMW have collaborated with the renowned Kayaba Research Center (KYB). Located in Telok Panglima Garang, automotive parts have been exported to 37 countries worldwide. KYB has been in the shock absorber business for over 100 years and covering wide industry including railway. In 1952, they began producing oil dampers for railcars. Today, they are heavily involved with major projects such as high-speed trains in Japan and China.

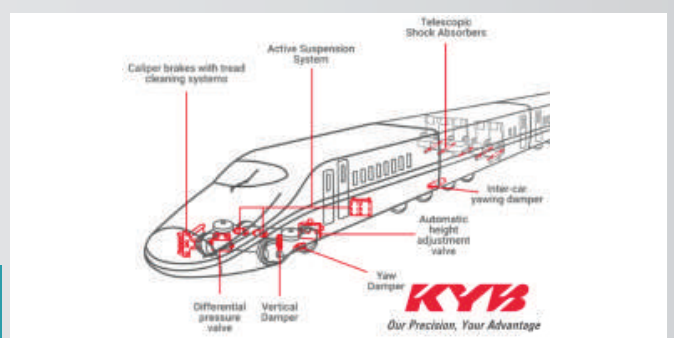
For sustainability front, green innovations such as battery services, membrane filtration and bio-lubricant are the main focus. Partnership with local technologies and universities were done to provide the industry green solutions to meet our country's sustainability goals including railway sector.

## UMW HVM PARK & AEROSPACE

In 2015, this group has developed the UMW Development and UMW Aerospace Sdn Bhd. A new portfolio was entrusted with unlocking land value in Serendah, and the Aerospace business will be a catalyst to pivot the capabilities towards High-Value Manufacturing (HVM).

UMW Development manages Malaysia's first HVM industrial zone which is located strategically between a few upcoming major railway lines like East Coast Rail Link (ECRL) and Serendah-Port Klang Rail Bypass plan.

UMW Aerospace manufactures and assembles fan cases with a 25+5-year contract with Rolls-Royce Plc, Malaysia's first Tier-1 aerospace engine component manufacturer. The plants are equipped with a skilled workforce and equipment for Precision Machining, Welding, Fluorescent Penetrant Inspection, and Radiographic Testing. Many capabilities developed in aerospace can be shared cross-industry such as railway component manufacturing.



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# THE ALTERNATIVE SOLUTION to PLATFORM INFORMATION SYSTEM (PIS) LCD DISPLAYS AT STATIONS

Article by **KTMB**

The typical Passenger Information System (PIS) has been deployed in almost every station in the world. The type of display evolves from split-flap, or also known as Solari board, to dot matrix, and eventually replaced by LCD display which enables unlimited flexibility on the information that is to be displayed. The PIS provides a convenient way info on train scheduling to waiting passengers.

As of year 2020, KTMB stations are equipped with various types of PIS display; the modern LCD screen, the dot matrix display and even the manual board in the under-developed east coast stations.

While the LCD screen reflects the current trend of PIS, it is also creating a challenge for KTMB to upkeep the assets in a good working condition. Despite the a significant amount of money spent in maintenance, the number of malfunction screens did not seem to recede and was inviting public outcry and tarnished the image of the company. Therefore, there was a greater need for alternative solutions than ever before.

## CHALLENGES

The LCD screen PIS is a common feature for the major stations in the upper west coast KTMB network. The number of screen installed varies from 30 at major stations and 1 at smaller stations. In 2021, out of 279 screens installed in KVDT area, 119 was malfunction and for the Padang Besar to Ipoh stretch, 98 out 312 units was malfunction. The malfunction screen simply displays a black screen which easily attracts complaints and portray a negative image to the company.



Malfunction PIS units at Kuala Lumpur Station

As far as maintenance is concerned, similar to other electronics-based equipment, not much is to be done as a mean of preventive maintenance. From 2016 to 2019, KTMB spent around half a million annually to upkeep the LCD PIS. The amount spent was basically to replace the screens and the CPU that acquires data from the network and configures what to be displayed.

It needs to be mentioned that the screen and the CPU are of industrial grade which cost are in multiple folds compared to the typical consumer goods. However, since most of the equipment are placed outdoor, the exposure to heat, moisture, dust, and running on a 24/7 basis, earlier-than expected-life failure is imminent. In 2020, an amount of RM2.9 million was allocated just for that but due to the pandemic, the plan to reinstate the broken units was put on hold.







## ADVANTAGES

The deployment of MyRailTime 2.0 requires a low investment cost as it only involves the software development and the printing of the QR Code display. The QR Code is designed to fit in the current LCD PIS housing.

Without any electronics involved on the provider's side with exception to the backend processing, the product is deemed to maintenance free and it is also does not require any electricity as what was required by the LCD screen. Besides reducing electricity bills, the product also contributes to a "greener" environment.

Other advantages also includes low expansion cost and is more everlasting compared to its predecessor. With the ease of expansion, the east coast stations which usually trails in modernization of infrastructures, will also be able to enjoy this feature this time. The look however is different as the east coast stations are not equipped with the LCD PIS.



Installation at Bunut Susu Station in the East Coast

## THE LIMITATIONS

Like any other solutions, the MyRailTime also has its own limitations. The QR Code link relies on the availability of telco network services. To overcome this, KTMB does not plan to terminate the existing LCD PIS but rather to ensure that the LCD PIS continues to operate at strategic locations such as the station entrance.

The other limitation that has been brought up prior to the implementation of MyRailTime 2.0 is the dependency on the availability of passengers smartphones. While this remains a valid concern, the likelihood is considerably very low.

The introduction of MyRailTime 2.0 has certainly benefited KTMB in many ways especially when it comes to minimizing its operating cost. While the utilization of QR Code seems to be a conventional approach these days, the application for the said purpose may be unprecedented in railway environment. The next step is to gauge the passengers feedback which shall be carried out once the implementation is fully completed.



Installation at Kuala Lumpur Station





# HIGHLIGHT



MALAYSIA RAIL STANDARD WORKSHOP



MALAYSIA RAIL INDUSTRY DIALOGUE



MALAYSIA RAIL INDUSTRY DIALOGUE



MOU EXCHANGE CEREMONY






MALAYSIA RAIL STANDARD WORKSHOP





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