Future Rail 2030
- Development of National Rail Industry Roadmap
Objectives

1. To present and get feedback on development of National Rail industry roadmap initiative

2. To establish overall scenario of the industry

3. To get inputs / views on issues, challenges & trends

4. To get support & commitment throughout the process of the roadmap development
Contents

1. Introduction
2. National Rail Industry Roadmap
3. Input from Industry Players
4. What’s Next?
“…MIGHT is formed to prospect for business opportunities for Malaysia through strategic exploitation of technology for attainment of Vision 2020 objective” – Hon. Prime Minister of Malaysia, February 1993

- Incorporated as a company limited by guarantee in 1994 - Independent, industry-driven non-profit organization
- Under Patronage of YAB Prime Minister of Malaysia
- Governed by Board of Directors through Joint-Chairmanship (A representative from Industry & The Science Advisor to the Prime Minister of Malaysia)
Strategic Roles

GOVERNMENT

OFFSETS MANAGEMENT
- Value from Government procurement
  - Technology Acquisition
  - Global market access
- Build indigenous capability
- Provide strategic funding

INDUSTRY

HIGH IMPACT PROJECT
- Thematic cross-cutting platform technology
  - Catalytic in realising upstream agenda
  - Collaborative approach @ I-Create
- GLC /MIGHT Lead Members Champions
- Early/Big Wins with economic impact

FORESIGHT
- Strategic direction in priority technologies/sectors
- National & sectoral mapping
- Benchmarking and competitive intelligence
- Future policy validation

INNOVATION AUDIT
- Enhance innovativeness of firms and Nation
- Deepening of industry
- Identifying of industry champions and anchor companies

Access into Global Marketplace

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Foresight

Master Plan

Industry Blueprint

National Strategies

Policy Papers

Industry Park Dev. Concept

Aerospace

Biotechnology

Agro Business & Herbal

Palm Oil

RFID

Automotive

Photonics

Heavy Industries

ICT

Aviation MRO

K-Economic & Innovation

Maritime

Pharmaceutical

Housing & Construction

Nanotechnology

Shipbuilding & Ship Repair

myForesight

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The main deliverable from Offset Programmes is the management of offset activities associated with high value and strategic government acquisitions worth more than RM50 million.

MIGHT oversaw work on **five key Offset Programmes** in 2010:

- **Rolls-Royce Trent 900 Engine Programme**
- **Littoral Combatant Ship Programme**
- **8X8 ATV Programme**
- **A330-300 Airbus Engine Programme**
- **Mass Rapid Transit Programme**
National Rail Industry Roadmap
There are various factors both global and local that provide the right climates to drive the development of rail industry.
In producing the roadmap, the initiative will be undertaken to achieve the following objectives:

• To identify **trends and drivers** that shape the development of rail industry
• To analyse **the industry supply chain** in terms of strengths and weaknesses, critical areas that need to be promoted as well as cross support of non-rail industry.
• To formulate **a list of required technologies and capabilities** to expedite the growth of the industry
• To study **human capital requirements** and **other support elements** in creating a conducive industry eco-system
• To synergise **roles of rail related stakeholders** (Government, Industry and Academia) to support the recommendations of the roadmap
• To explore **potential “quick-wins”** to kick start the roadmap initiative
• To propose **a monitoring mechanism** for effective implementation
Scopes

The Roadmap

- Design, Manufacturing & Assembly
- Infrastructures and Systems
- Maintenance, Repair & Overhaul (MRO)
- Other Services
- R&D and Technology
- Supply Chain of the Industry
- Human Capital Development
- Policy, Standard, Institutional & Peripheral Support
- Issues & Challenges
- Market Outlook

Global and local overview in various range of critical components of the industry ranging from technology to market perspectives
The major outcomes of the initiative are as follow:

- **National Rail Industry Roadmap**
- **Malaysian Rail Industry Database**
- **Rail Technology Wishlist**
- **“Quick-Win” Programs**
Currently, more than 160 organisations involve in rail related activities have been identified – get buy-in at early stage of development.
Input from Rail Industry Players
Rail Industry encompasses activities that contribute to the design and development, construction, operation, maintenance and disposal of rail related vehicle (passenger and cargo)
Propulsion Components Supplier
- Electric Generator
- Engine
- Fuel System
- Traction Motors
- Truck System
- Brakes
- Suspension
- Wheel Set
- Under Carriage Casting

Electronic Systems Suppliers
- Communication Systems
- Security Systems
- Electric Collector
- Integrated Software
- Driving Control System
- Aux. Power Unit

Body & Interior
- HVAC
- Coupler
- Bathroom
- Hatch Cover
- Door System
- Seating Flooring
- Body
- Window
- Lighting
- others

Infrastructural Related Equipment
- Signaling/Info. System
- Steel Track
- Other track parts
- Electrification

Other Support Services
Rail related training
Rail MRO

Policy Maker / Regulator & Related Agencies Group
- MOT
- MM
- LPTC
- Jabatan Kereta Api
- Prasarana
- MIDA

Operator Group
- KTM
- KL Monorail
- KTM Komuter
- Express Rail Link

Support Group
- Design, Manufacturing & Assembly Group
- Materials Suppliers
  - e.g. Aluminum, Steel etc.
- Parts Supplier
  - e.g. air compressor, brake parts, blower motor etc.

Support Group
- Other Support Services
- Rail related training
- Rail MRO
What are the issues & challenges hampering the local Rail industry development?

- **Policy & Regulation**
- **Economy** (e.g. market, export & import etc.)
- **Human Capital** (e.g. critical skills, shortage etc.)
- **Technology** (e.g. critical tech./capability gap, R&D etc.)
- **Investment** (e.g. incentive, other facilitation & support)
- **Environment** (e.g. green, alternative fuel, etc.)
**CASE EXAMPLE**

**NO CENTRAL AGENCY IS RESPONSIBLE FOR CoORDINATION OF RAIL INDUSTRY ACTIVITY**

<table>
<thead>
<tr>
<th>Agency</th>
<th>Areas of Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MOT</td>
<td>Ministry responsible for putting modern, efficient and safe rail transport system to facilitate Malaysia's economy.</td>
</tr>
<tr>
<td>2 LPTC</td>
<td>Responsible for issuance of licences, regulates and enforces all matters relating to rail transport activities within land public transport system</td>
</tr>
<tr>
<td>3 RAC</td>
<td>Federal Statutory Body under MoT established to management of all railway assets and liabilities, financing and execute the development and redevelop the railway infrastructures.</td>
</tr>
<tr>
<td>4 MITI</td>
<td>Responsible for formulating policies &amp; strategies for development of transport &amp; logistics sector.</td>
</tr>
<tr>
<td>5 MATRADE</td>
<td>Responsible for export promotion in promoting Malaysian products which includes transport equipment.</td>
</tr>
<tr>
<td>6 SIRIM</td>
<td>Responsible for preparation of Malaysian Standard for railway engineering and construction materials.</td>
</tr>
</tbody>
</table>
Case Example

Currently, there is no standardization & interchangeability of various systems due to different track gauge & power rating.

<table>
<thead>
<tr>
<th></th>
<th>KTM Komuter</th>
<th>STAR/ PUTRA</th>
<th>KL Monorail</th>
<th>ERL</th>
<th>KVMRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Speed (km/h)</td>
<td>120</td>
<td>120</td>
<td>80</td>
<td>176</td>
<td>??</td>
</tr>
<tr>
<td>Gauge (mm)</td>
<td>Meter (1000)</td>
<td>Std (1,435)</td>
<td>Single</td>
<td>Std (1,435)</td>
<td>Std (1,435)</td>
</tr>
<tr>
<td>Power</td>
<td>25KV AC</td>
<td>750V DC</td>
<td>750VDC</td>
<td>25KV AC</td>
<td>??</td>
</tr>
<tr>
<td>Track length (Km)</td>
<td>152</td>
<td>65</td>
<td>8.6</td>
<td>57</td>
<td>51 (Phase 1)</td>
</tr>
</tbody>
</table>
CASE EXAMPLE

MALAYSIA WILL BE NET IMPORTER OF RAILWAY VEHICLES EQUIPMENT AND ASSOCIATED EQUIPMENT

High dependency on imports...

Will give low value added contribution to manufacturing sector (i.e. other transport equipment)

Value added in other transport equipment is declining in comparison to numbers of establishment

Source: COMTRADE, 2010

USD 265 mil

Import Years

USD 18 mil

Export Years

9.0% 186 establishment in 2003

7.9% 255 establishment in 2007

Percent

Electrical & Electronics Products 24.1
Chemicals & Chemical Products 13.3
Machinery and Equipment 4.9
Basic Metals 4.7
Other Transport Equipment 2.2
MISSING LINK BETWEEN INNOVATION & HUMAN CAPITAL, UNDERSERVED INDUSTRY COMPETITIVENESS

The educational level of the workforce is still relatively low

Unemployed graduate numbers have more than doubled since ‘08

Source: MoHR, Dept. of Stats.
Malaysia Using Various Proprietary Systems
- Expensive Interface Requirements
- Inefficient Centralized Traffic Control

CASE EXAMPLE

FOR A RELATIVELY LOW TRACK LENGTH (1830 KM), THE NATION EMPLOYS SEVERAL PROPRIETARY SIGNALING SYSTEMS;

<table>
<thead>
<tr>
<th>KTM SECTOR</th>
<th>CONTRACTOR</th>
<th>SIGNALLING SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klang Valley</td>
<td>Siemens</td>
<td>Siemens</td>
</tr>
<tr>
<td>Rawang-Ipoh</td>
<td>Mitsui</td>
<td>Ansaldo</td>
</tr>
<tr>
<td>Ipoh-Padang Besar</td>
<td>Balfour Betty/Ansaldo</td>
<td>Ansaldo</td>
</tr>
<tr>
<td>Seremban-Gemas</td>
<td>Ircan</td>
<td>(To be nominated)</td>
</tr>
<tr>
<td>Gemas-Johor Bahru</td>
<td>Chinese Contractor</td>
<td>(To be nominated)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RAIL OPERATOR</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PUTRA</td>
<td>Bombardier</td>
<td>Thales</td>
</tr>
<tr>
<td>ERL</td>
<td>YTL</td>
<td>Siemens</td>
</tr>
<tr>
<td>STAR</td>
<td>Adtranz (Daimler-Chrysler)</td>
<td>-</td>
</tr>
<tr>
<td>Monorail</td>
<td>Scomi (MMT)</td>
<td>Ansaldo</td>
</tr>
</tbody>
</table>
CASE EXAMPLE

IF SERVICEABILITY ISSUE IS NOT ADDRESSED, NEW PROCUREMENT TO MEET DEMAND WILL NOT SOLVE THE PROBLEM - Vicious Cycle

- NEW PURCHASE
- MASSIVE GOVT. SPENDING ON RAILWAY PROJECTS
- ASSET DETORIATION
- LACK OF CORE COMPETENCIES
- POOR ASSET MANAGEMENT
- LACK OF LOCAL MRO CAPABILITY
CASE EXAMPLE

NOT MUCH RAIL INVESTMENT GIVE IMPACTS TO THE LOCAL SUPPORTING INDUSTRIES

<table>
<thead>
<tr>
<th>Rail Supply</th>
<th>Local Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail Track</td>
<td>Well established construction industry with export capabilities</td>
</tr>
<tr>
<td>Rolling Stock</td>
<td>Cost Breakdown:</td>
</tr>
<tr>
<td></td>
<td>1) Body (60%)</td>
</tr>
<tr>
<td></td>
<td>2) Bogie (60%)</td>
</tr>
<tr>
<td></td>
<td>3) Propulsion (20%)</td>
</tr>
<tr>
<td></td>
<td>4) Interiors (20%)</td>
</tr>
<tr>
<td>Control System</td>
<td>Highly dependence on OEMs</td>
</tr>
<tr>
<td>Rail Service</td>
<td>Small &amp; not widely known</td>
</tr>
<tr>
<td></td>
<td>Capable in design, manufacture and sub-assembly works</td>
</tr>
<tr>
<td></td>
<td>Numbers of E&amp;E manufacturing industries</td>
</tr>
<tr>
<td></td>
<td>Provide component MROs &amp; refurbishment</td>
</tr>
</tbody>
</table>

Numbers of E&E manufacturing industries
What’s Next ?
NOTE:
MIG – MIGHT Interest Group
Appreciate your kind cooperation and support by providing **the required information, commitment and participation** throughout the process to develop National Rail Industry Roadmap.
Thank You

For enquiries & feedback on the initiative, kindly email us at futurerail@might.org.my

This slides presentation is available at http://www.myforesight.my

Pictures of the meeting are available at http://facebook.com/myforesight