Introduction to M-ROADS
(MIROS Road Accident Analysis & Database System)

Muhammad Ruhaizat Abd Ghani
muhammadruhaizat@miros.gov.my
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Data Intelligence & Traffic Exposure Unit
Road Safety Engineering & Environment Research Center
Malaysian Institute of Road Safety Research (MIROS)
Global Road Safety Scenario

• **1.24m people died** on the road due to road crashes every year.

• **92%** of the fatalities are from **low and middle income country**.

Source: WHO, 2014
Malaysia Road Safety Situation

Source: Royal Malaysia Police, 2014
The overall goal of the Decade will be to stabilize and then reduce the forecast level of road traffic fatalities around the world by 2020.

- setting an ambitious yet feasible target for reduction of road fatalities by 2020 by building on the existing frameworks of regional casualty targets.
- monitoring progress and performance on a number of predefined indicators at the national, regional and global levels.

**Activity 6: Establish and support data systems for on-going monitoring and evaluation**

To include a number of process and outcome measures, including:

- establishing and supporting national and local systems to measure and monitor road traffic deaths, injuries and crashes;
- establishing and supporting national and local systems to measure and monitor exposure to road traffic injuries.

*Source: WHO*
Data is a vital asset in monitoring the effectiveness of road safety advocacy. Thus, a road safety database for overall information management will be established. The information will be collected and disseminated to relevant parties to help them to formulate policy and intervention. The information includes road crash, death, injury and insurance claim.
Malaysian ITS Architecture

Advanced Traffic Management Systems
Electronic Payment Systems
Advanced Traveler Information Systems
Emergency Management Systems
Information Warehousing Systems
Commercial Vehicle Operation Systems
Advanced Public Transport Systems
Safety Systems
Advanced Vehicle Control Systems

ITS Sectors for the Malaysian ITS Architecture
M-ROADS 2.0
MIROS ROAD ACCIDENT ANALYSIS & DATABASE SYSTEM
Introduction

Safeguarding vital information

Evidence

WHY
M-ROADS

Blackspot identification

Centre of knowledge to support policy making, intervention program, and exposure analysis
Introduction

• In-house development
• Utilizing accident data from Royal Malaysia Police (PDRM)
• Centralized system to manage & analyze data
• To support research activity by identifying problem & accident cause
Development

Mobile Apps
- Hybrid PhoneGap
- Able to work offline

Web-based
- Open Source (PHP)
- Online

Centralized Server
- Located at MIROS
- MySQL
# Features & Modules

## Case
- Data entry
- Data management
- Listing

## Analysis
- Crosstabulation
- Filter (narrowing down aspect)
- Export result to excel
- Heatmap (Google Maps Layer)

## Data Import/Export
- Export raw data to csv/excel format
- Import existing data into the system

## User Management
- User grouping/Access level

## Configuration
- Dynamic form management
<table>
<thead>
<tr>
<th>Datasets</th>
<th>Accident Info</th>
<th>Car/Driver Info</th>
<th>Injury Info</th>
<th>Other Info</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severity</td>
<td>Vehicle type</td>
<td>Passenger/Pedestrian</td>
<td>Narrative</td>
</tr>
<tr>
<td></td>
<td>Weather</td>
<td>Vehicle damage</td>
<td>Injury severity</td>
<td>Geolocation</td>
</tr>
<tr>
<td></td>
<td>Num. of vehicle involved</td>
<td>Driver injury severity</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
Conceptual Use of M-ROADS

Input

Case 1

Case 2

Case 3

Case 4

Process

MIROS

Output

Case

Analysis

Report

User

All road crashes case
Conceptual Use of M-ROADS
Conceptual Use of M-ROADS
Conceptual Use of M-ROADS
Awards & Recognitions

• Innovation Award for Road Transport in Developing Countries (INAROAD) 2010
• Winner of Road Safety Category and 3rd Place Overall
• Organized by the International Road Federation (IRF) and the award ceremony was held on 10th May 2011 at Bucharest, Romania

• Silver medal in the 9th Malaysian Road Conference Invention & Innovation Exhibition (MRC-IIE 2014)
• Submitted with other MIROS projects under the title ‘Malaysia Road Risk Manager’
Awards & Recognitions

• Ministry of Works Innovation Day 2017
• Winner of ICT Category
• MIROS was appointed by Malaysian Highway Authority to customize and extend the usage and function of M-ROADS to improve highway concessionaires road crashes data management, analysis, and reporting
Commercialization

Since the launching of M-ROADS 2.0 in 2015, there are several agencies appointed MIROS to customize M-ROADS to meet their database requirement.
Commercialization

Highway authority & concessionaires

Malaysian Highway Authority

PLUS Expressway

KESAS Expressway
The Future

Integration with Malaysia Road Assessment Programme (MyRAP)
The Future

Vehicle ownership
Traffic information
Injury data
3rd party data
Insurance
Road assets inventory

Crowd-sourced

For Safer and Efficient Transportation

Artificial Intelligence
Machine & Deep Learning

Improvements and research

Universities
City Hall
Research Institute

Cities and Towns
THANK YOU
TERIMA KASIH

Muhammad Ruhaizat Bin Abd Ghani
muhammadruhaizat@miros.gov.my