

# ***AUTOMOTIVE*** ***SUMMIT 2014***



Driving Behaviour Evaluation Platform using  
Sensory Data on Smartphones

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19-20  
June 2014

BITEC • Bangkok  
Thailand

## Motivation

- Road traffic accidents -> Fatalities / Death
- Thailand ranked **second** in the world (2013)
- 44 fatalities per 100,000 population
- Losses accounts for 2% of GDP (250,000 MB)



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\*\*source: University of Michigan Transportation Research Institute

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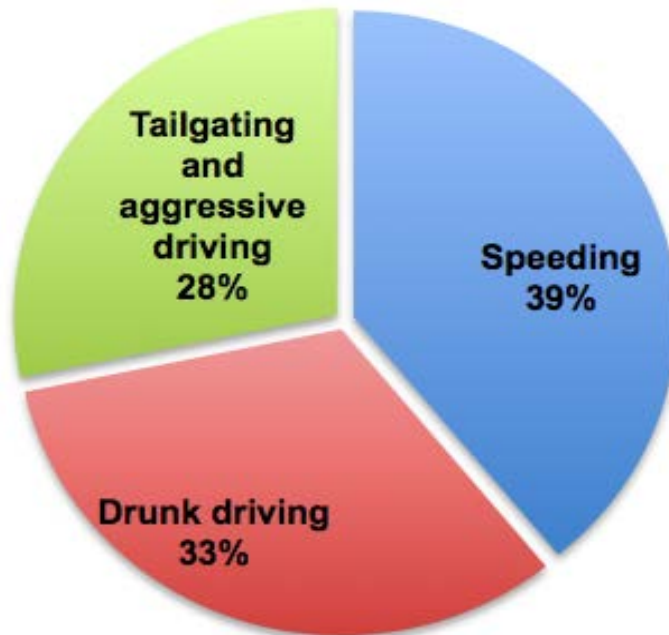
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## Road Traffic Accidents in Thailand



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Causes of road accidents in Thailand 2009-2011



### Road Traffic Accidents

- Human
- Vehicle
- Road

Approximately 67% caused by bad driving behaviour

Major problem in Thailand

\*\*source: Royal Thai Police

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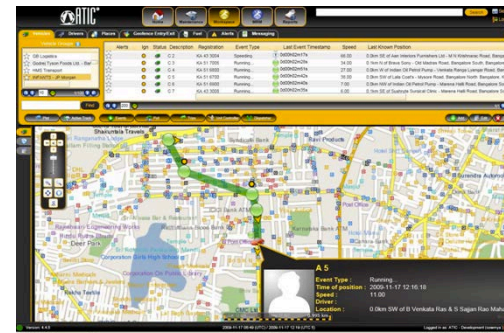
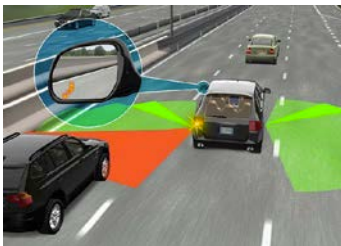


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## Existing Solutions for Safe Driving

### Advanced Driver Assistance Systems (ADAS) Driver Behaviour Evaluation Tool

- Automatic Braking System (ABS)
- Adaptive Cruise Control
- Automatic Parking
- Blind Spot Detection
- Collision Avoidance System
- Driver Drowsiness Detection
- In-vehicle Data Recorder
  - Speed limit violation
  - Zone violation
- Found in fleet vehicles



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## Can you find these in Thailand?

Advanced Driver Assistance Systems (ADAS)

- only available in high end vehicles
- one or two features in low to mid range vehicles

In-vehicle data recorder / driver monitoring

- only in fleet vehicles
- some taxis, buses and vans



**Not accessible  
by all drivers!**

## Is there an alternative solution??

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## Smartphones!

- Portable
- Easily accessible
- Customisable
- Low set up cost : starting at 3000THB
- Contains many sensors
  - GPS
  - Accelerometer
  - Compass
  - Gyroscope
  - 3G / WiFi / Bluetooth / NFC



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## SAFEMATE



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### Driving Behaviour Evaluation Platform using **Smartphone**

- Started in 2012
- based on GPS / accelerometer sensors
- Mobile application platform

Detect Driving  
Events

Classify Driving  
Events

Real-time Alert  
when  
Dangerous

Compute  
Driving Score

Provide  
Feedback

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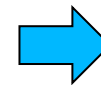
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## Features

- Real-time Driver Behaviour Data Collection
  - Speed Profile
  - Sudden Braking / Acceleration
  - Sudden Lane Change
  - Sudden Turn
- Real-time alerts: sound and vibration
- Driving Score
  - Users given a score and feedback
- Facebook
  - Share your score to your wall
- Published in 4 international conference papers and journals in review



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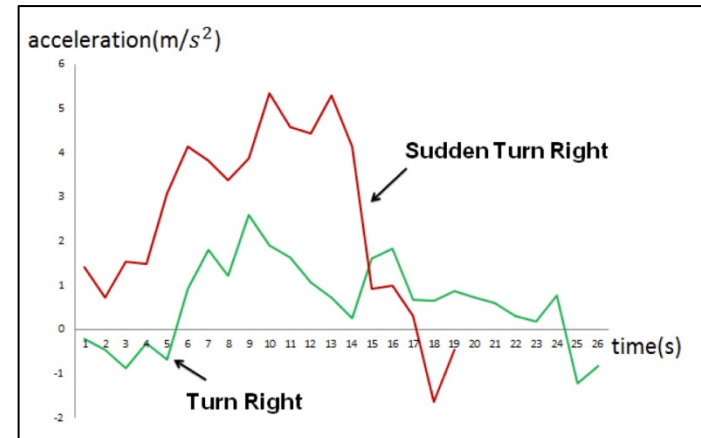
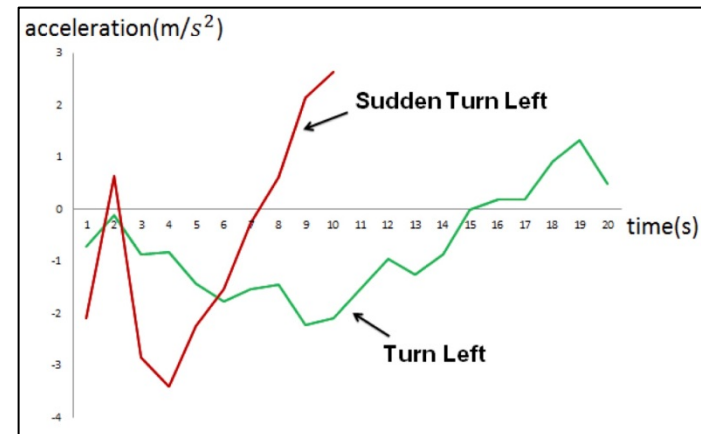
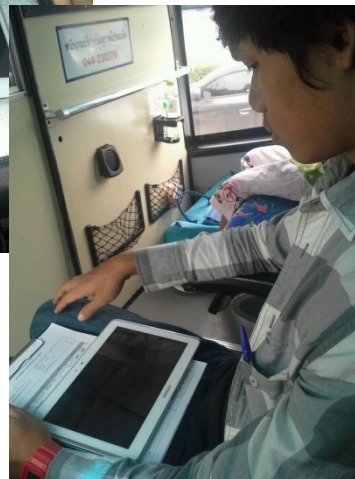
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## Data from accelerometer



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Available for **FREE**

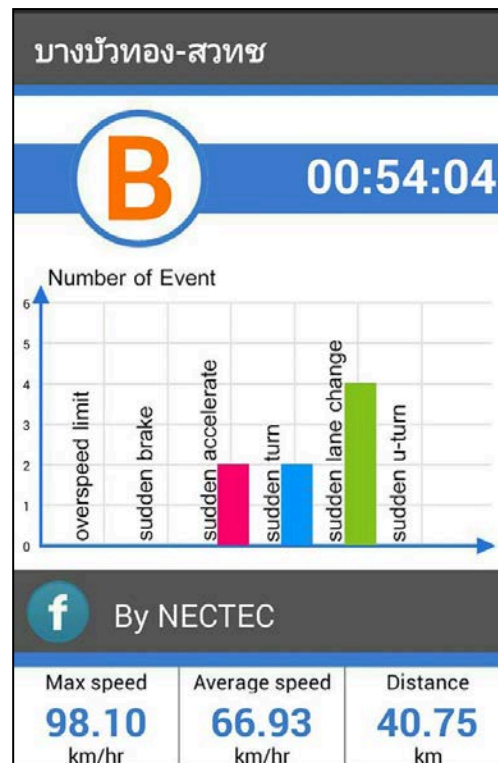
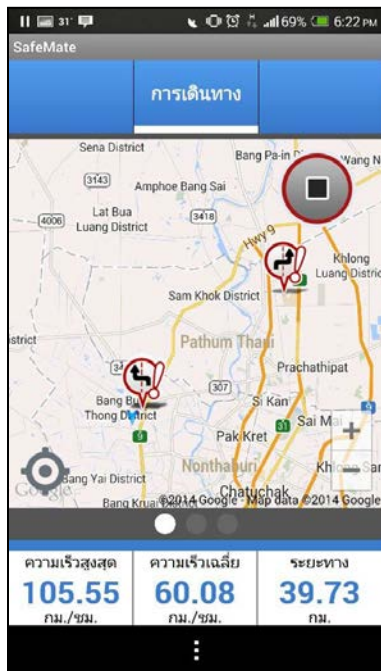
Dual – Language : **ENG/TH**



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Can be used world-wide



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## Potential Use Cases

### 1. Logistics / Fleet (Customised Solution)

- Currency, Gold, Jewellery, Oil and Gas



### 2. Transportation (Customised Solution)

- Group tour
- School bus



### 3. Mobile Application (end user)

- Ordinary drivers
- Public transport users



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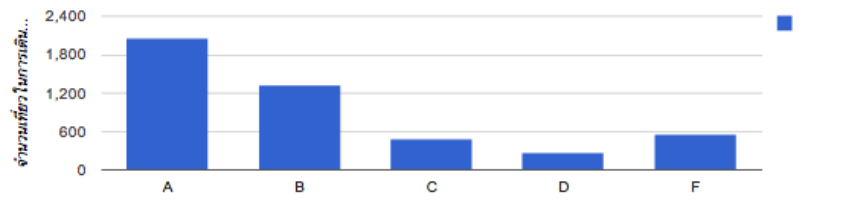
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- Launched during Songkran 2014
- Number of apps download 17 June 2014 = 30,000 downloads

Score of each trip



SafeMate Users

**30,947**

Number of Trips

**4,668**

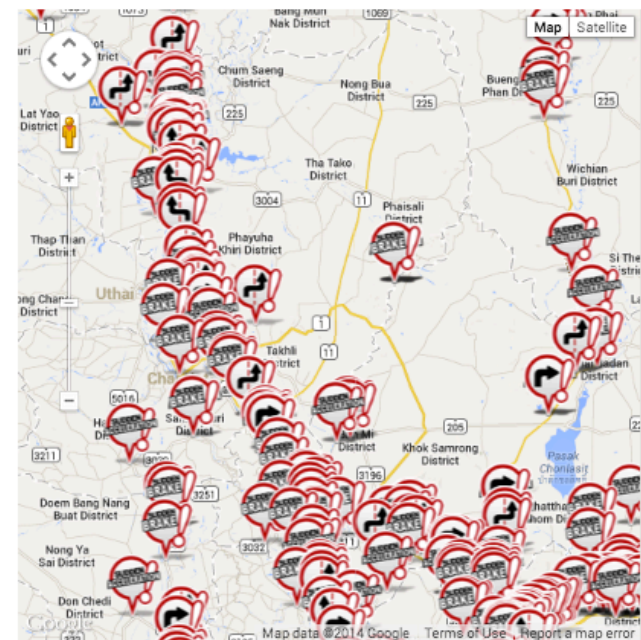
Number of GPS data points

**8,122,970**

Number of sudden events

**74,250**

Location of sudden driving events



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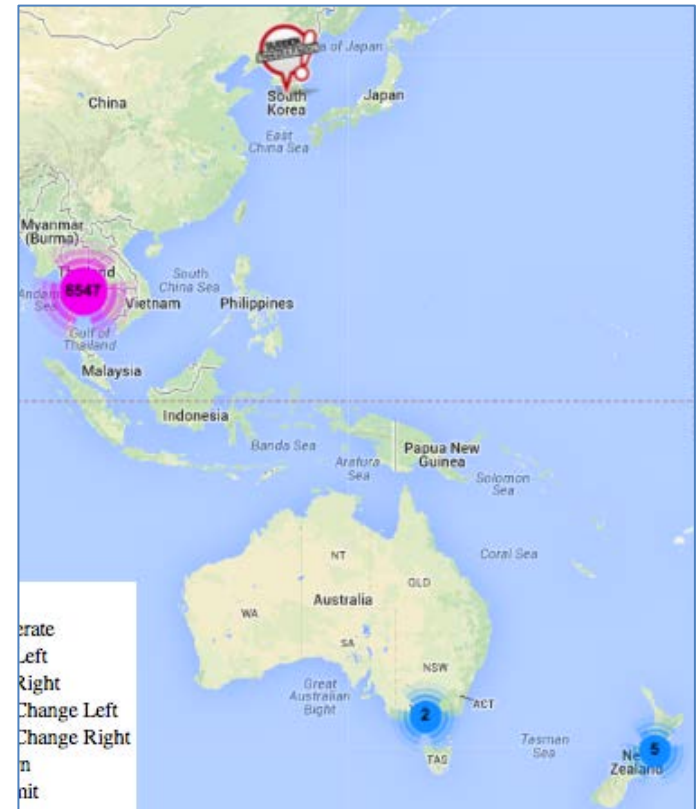
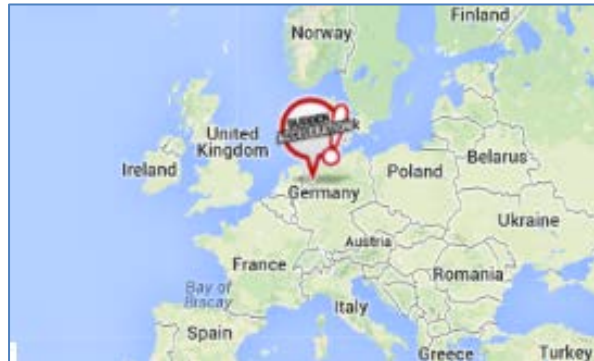


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## World Wide Usage



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## Conclusions

- Reduce risk of road traffic accidents
- Human factor → Drivers behaviour
- Use smartphone : tools not easy to access
- **SAFE MATE** offers alternative platform
  - Low cost / easily accessible

*“Let **SAFE MATE** be your travel companion to create safer roads for yourself and loved ones”*

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