

INTERNATIONAL SEMINAR ON INTELLIGENT TRANSPORT SYSTEMS  
(ITS) IN ROAD NETWORK OPERATIONS

The Legend Hotel, Kuala Lumpur, Malaysia, 14-16 August

**MANAGING THE KUALA LUMPUR ROAD NETWORK WITH  
THE INTEGRATED TRANSPORT INFORMATION SYSTEM**

*Ir Mahfix bin Omar,  
Director, Urban Transportation Department,  
Kuala Lumpur City Hall*

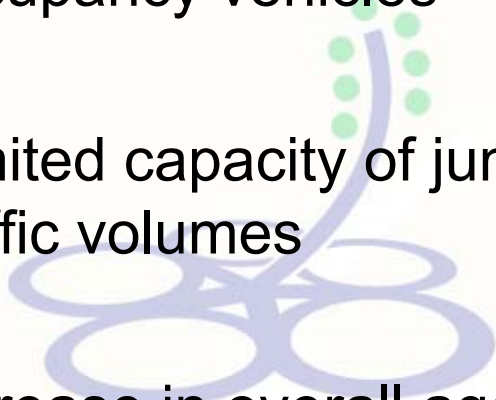
# MANAGING THE KUALA LUMPUR ROAD NETWORK WITH THE INTEGRATED TRANSPORT INFORMATION SYSTEM

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- **Description of the Kuala Lumpur Road Network**
- **Background of the Integrated Transport Information System**
- **Current Operations at the Transport Management Centre (TMC)**
- **Future Challenges**

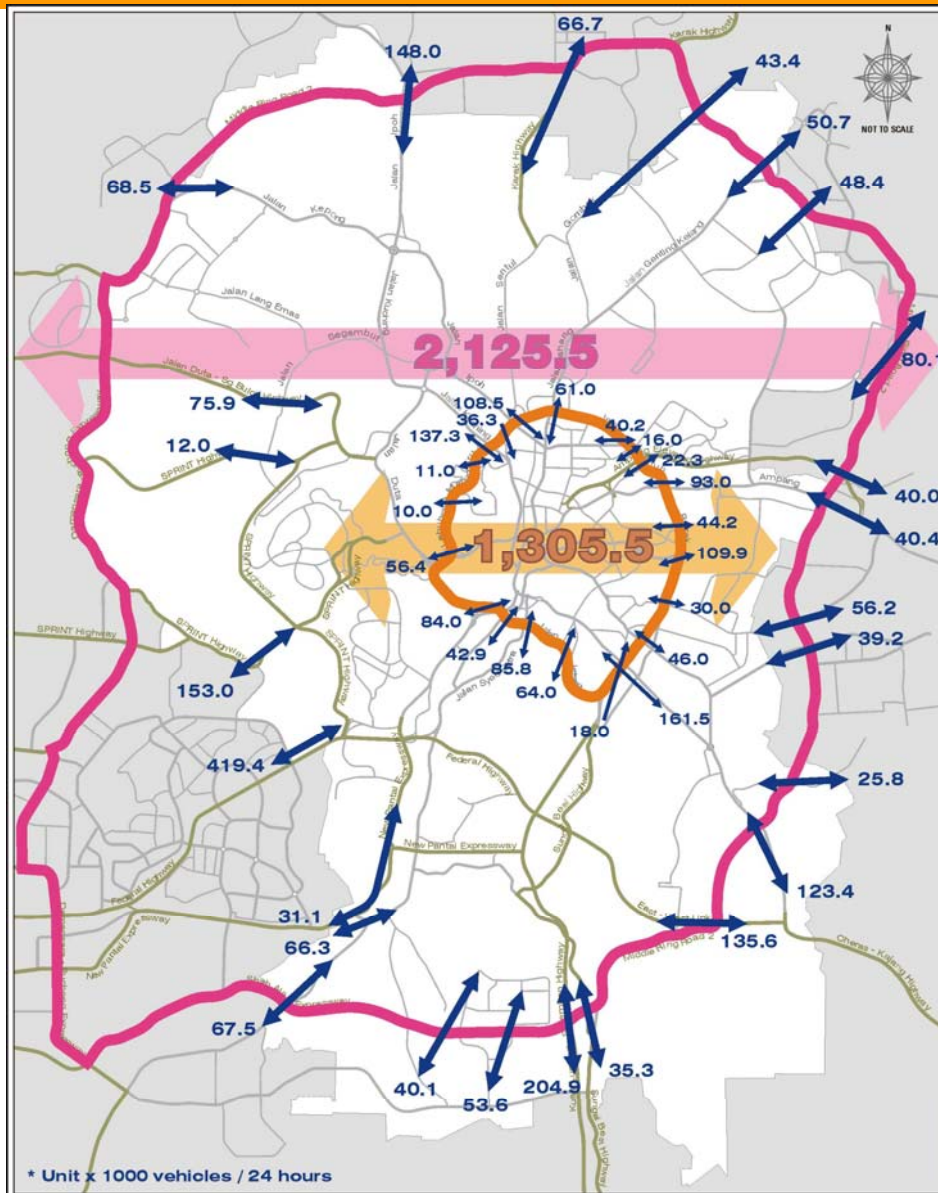
# Challenges in Managing the Road Network System in Kuala Lumpur

- Increase in the vehicle population, especially single occupancy vehicles
- Limited capacity of junctions to cater for increase in traffic volumes
- Increase in overall aggressiveness of driver behaviour
- Resource constraints in managing, controlling and enforcing traffic flows in the city.



Integrated  
Transport  
Information  
System

# Daily Traffic Flow Situation on KL Road Network (2005)



On a daily basis:

- 1.305 million vehicles cross the MRR1
- 2.125 million vehicles cross the MRR2
- 70% vehicle trips crossing MRR1 (42,600 vehicles) and MRR2 (86,500 vehicles) during AM peak hour are SOV.
- 65% crossing MRR1 (39,100 vehicles) and MRR2 (84,500 vehicles) during PM peak hour are SOV.

Total Volume Entering CPA = 1,260,000 pcu/day

FIGURE

Total Daily Vehicles Crossing MRR1 & MRR2

# Problems / Issues in Traffic Management

- Congestion Problems
  - During peak hours
  - Situations during flash floods, partial road closures, events
  - Blockages during road construction, illegal kerbside parking
- Abuse of Dedicated Bus Lanes
  - Bus drivers
  - Private vehicles
- Other related problems
  - motorcyclists
  - pedestrians

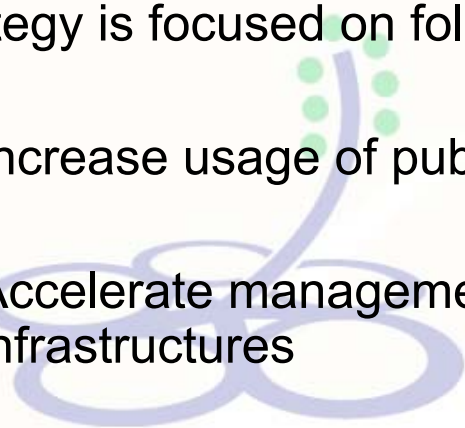
ITIS

*The Clear Way To Go*

Integrated  
Transport  
Information  
System

# Kuala Lumpur's Strategy for Sustainable Management of Road Transport System

- New concept based on “Integrated Transportation Demand Management”
- Strategy is focused on following key areas:
  - Increase usage of public transport system
  - Accelerate management and operations of existing transport infrastructures
  - Optimise usage of transport facilities and infrastructure in the most effective way possible

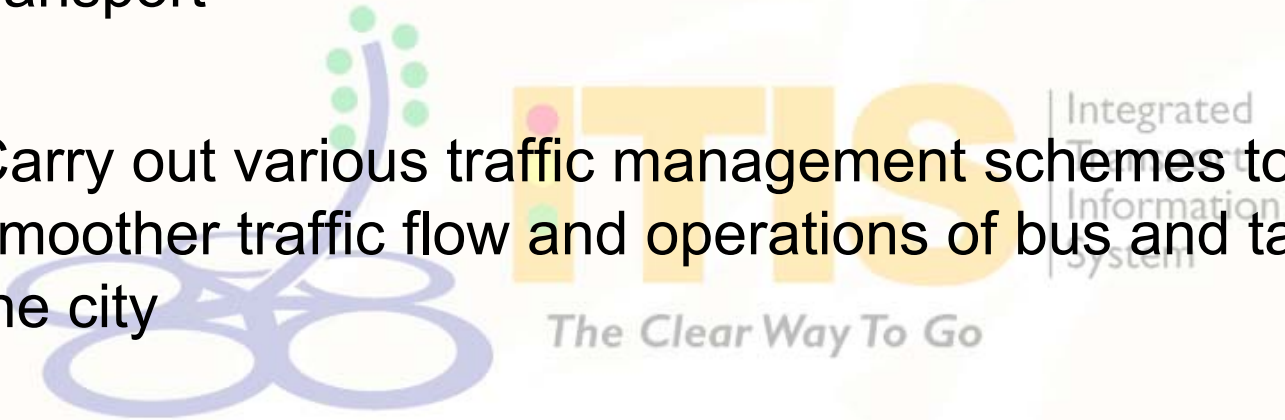


**ITS**  
*The Clear Way To Go*

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Transport  
Information  
System

# Integrated Transportation Demand Management Programme

- Prepare facilities to encourage greater use of public transport
- Carry out various traffic management schemes to smoother traffic flow and operations of bus and taxis in the city
- Apply 'Intelligent Transport System' (ITS) to better utilise the capacity of the overall road network system.



# Background of the Integrated Transport Information System

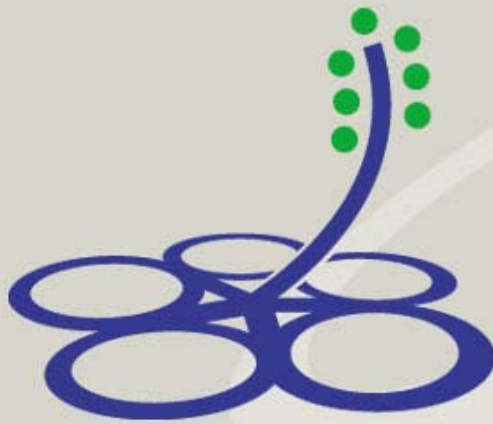
- Design-Build project is funded by Federal Government under Rancangan Malaysia ke 8
- DBKL appointed as implementing agency
- Total cost of RM 365 million
- ITIS Project started in August 2002
- TMC Operations commenced March 2005
- Formal handing over commenced on 30 June 2005

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Transport  
Information  
System



# OVERVIEW OF SYSTEM

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**ITIS**

*The Clear Way To Go*

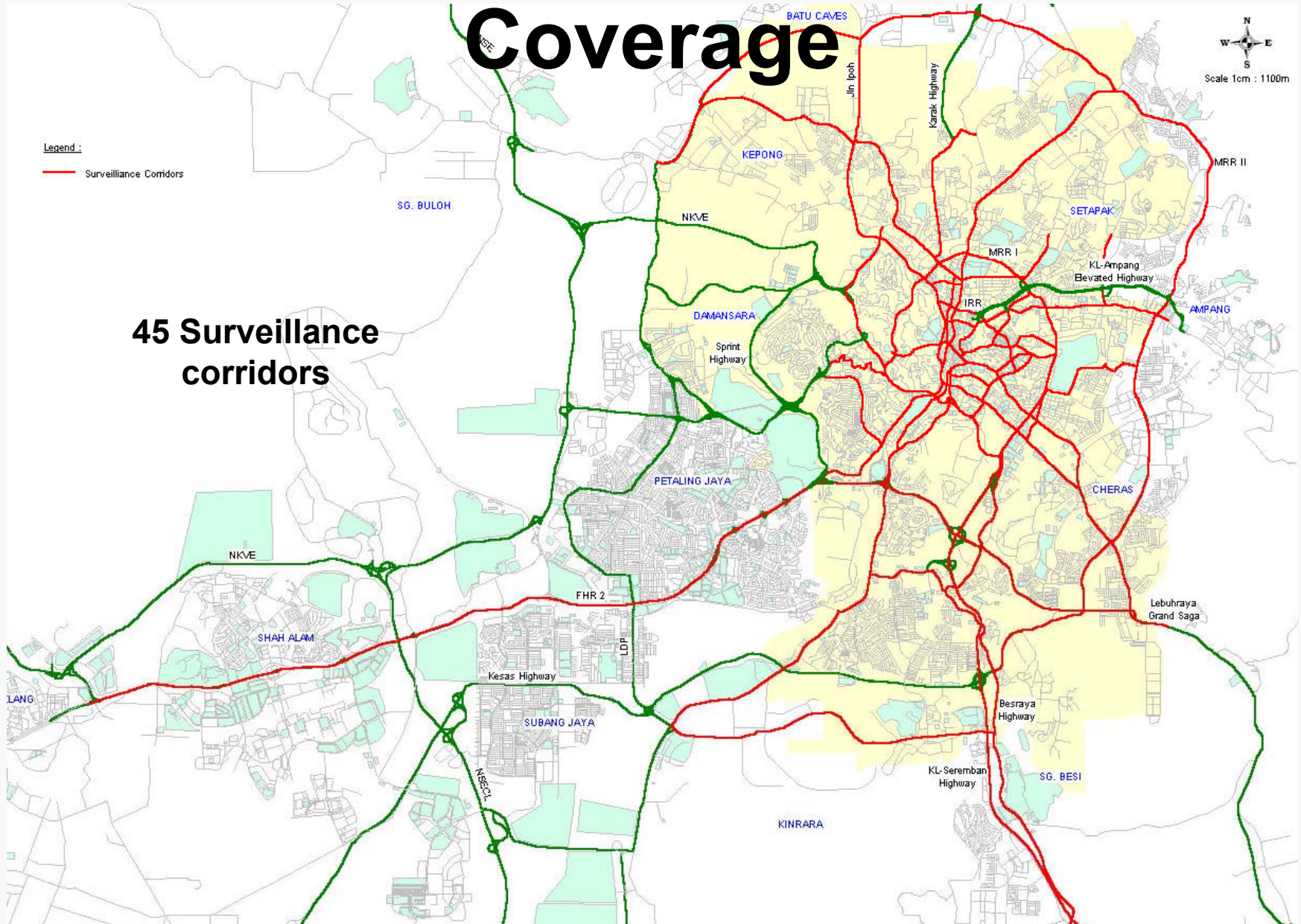
Integrated  
Transport  
Information  
System

# Coverage



Legend :  
— Surveillance Corridors

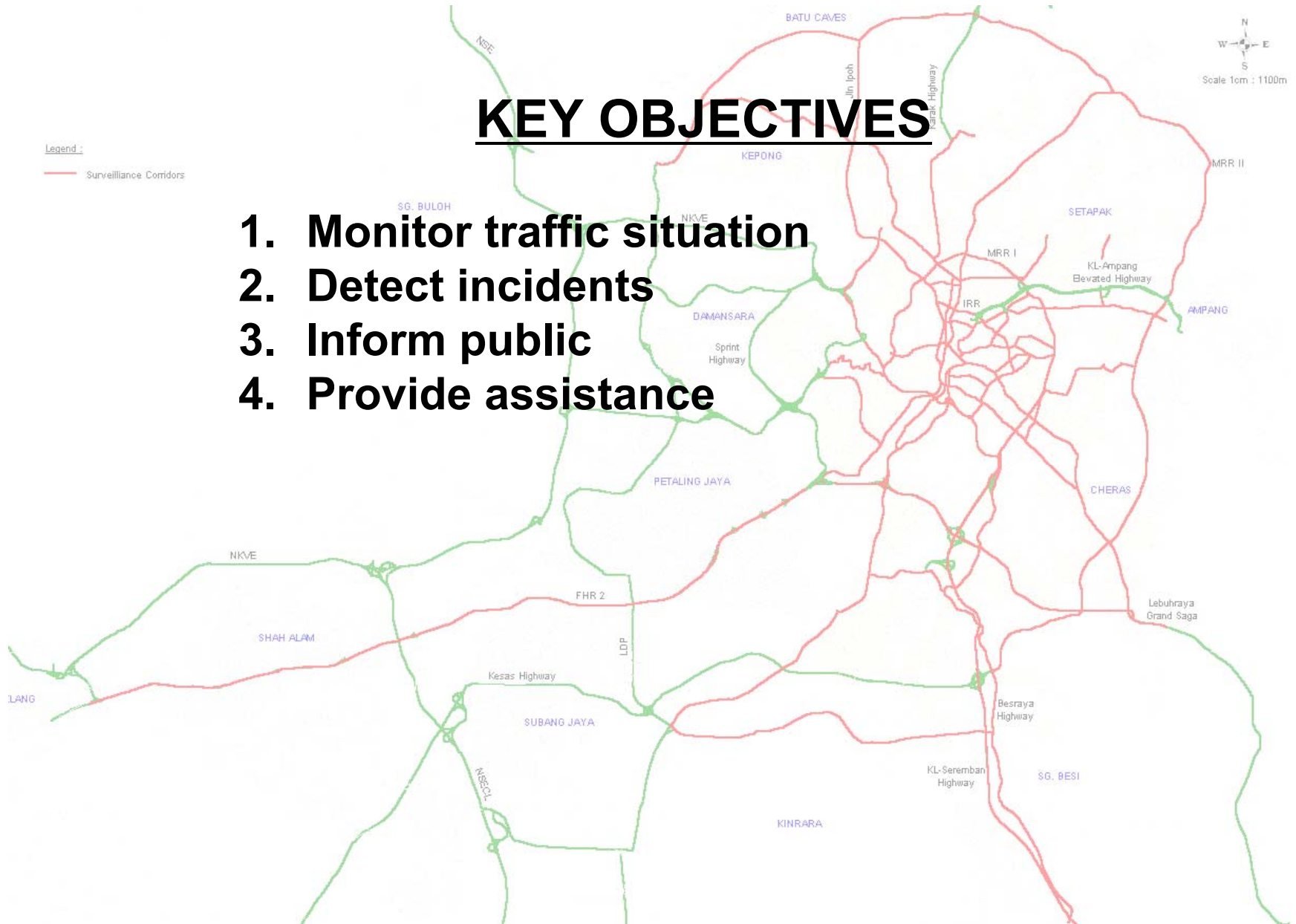
45 Surveillance corridors



# Integrated Transport Information System

## KEY OBJECTIVES

1. Monitor traffic situation
2. Detect incidents
3. Inform public
4. Provide assistance





## Overview of the ITIS

### Data Collection Stage

TRAFFIC INCIDENTS



Vehicles Breakdowns

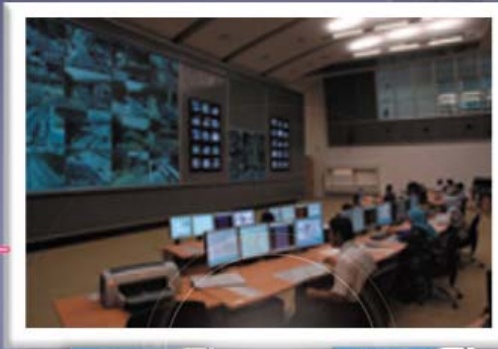


Road Accidents



Special Public Events

Situation detected and data sent via ITIS sensors



Useful traffic info in real time disseminated to the commuting public via...

### Dissemination Stage



Internet



Variable Message Sign Boards



Call Centre

ATMS Powerful suites of software interpreting the data collected into congestion maps, travel times, etc.



T

M

C

**CCTV Monitoring System**

255

**Automatic Incident Detection System**

728

**Variable Message Sign System**

140

**Automatic Vehicle Location System**

1600

**Communications System**

89

**ATMS Operations**

**Call Centre Operations**

**Media Relations**

**Network Operations**

**Traffic Engineering / Transport Planning / R&D**

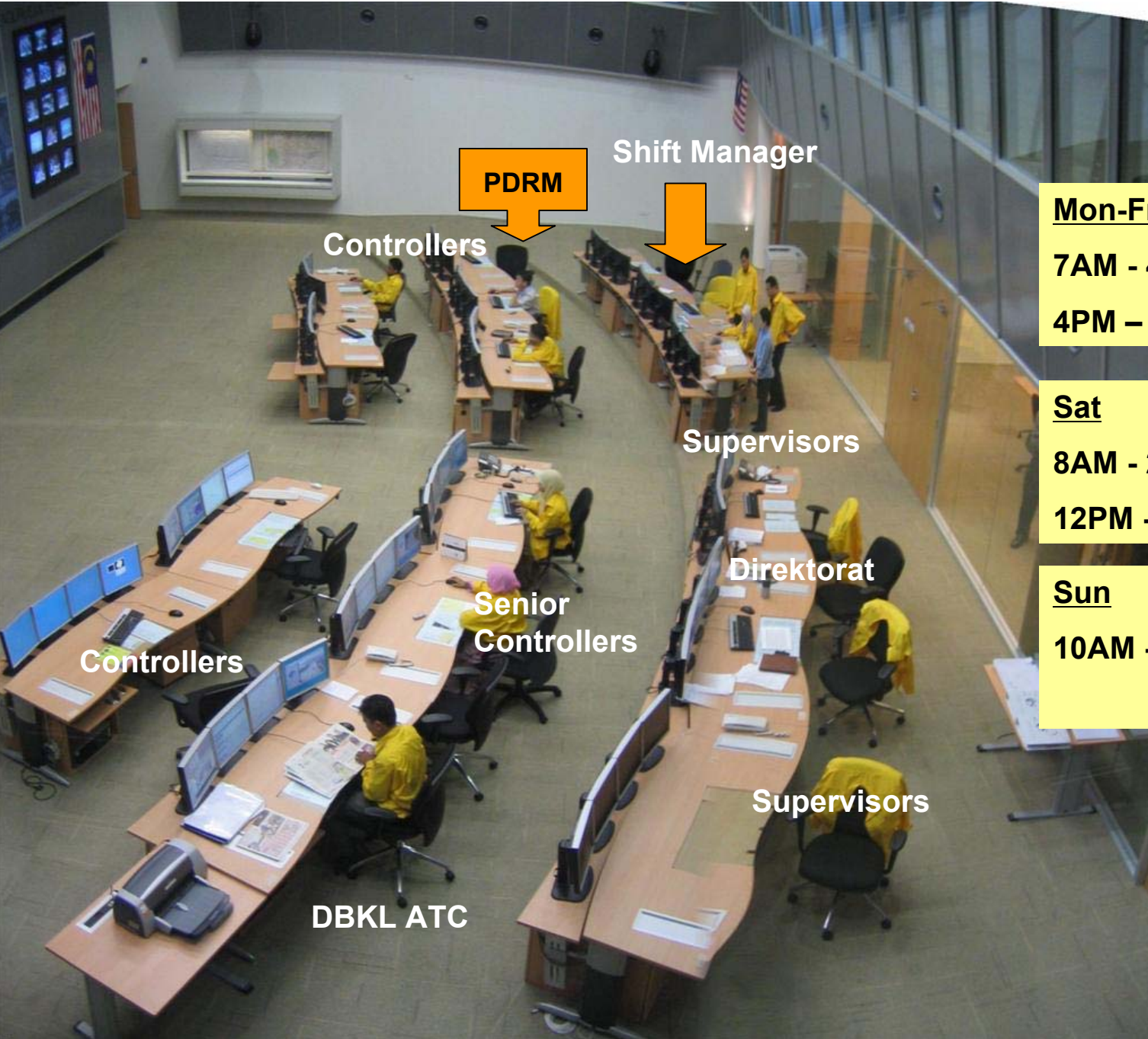
**TMC Building Systems**



# TRANSPORT MANAGEMENT CENTRE







Shift Manager

**PDRM**

Controllers

Supervisors

Direktorat

Senior  
Controllers

Controllers

Supervisors

DBKL ATC

**Mon-Fri**  
7AM - 4PM  
4PM - 11PM

**Sat**  
8AM - 2PM  
12PM - 6PM

**Sun**  
10AM - 4PM



(1<sup>st</sup> Floor) **Call Centre**





(2<sup>nd</sup> Floor) **Simulation / Joint Operations Centre**

# OPERATIONS

- Detect and Validate
- Monitor and Respond
- Inform and Advise
- Engineering for Enhanced Safety and Traffic Flows



# Integrated Applications in ATMS Command Console



**MAIN**



**VMS**



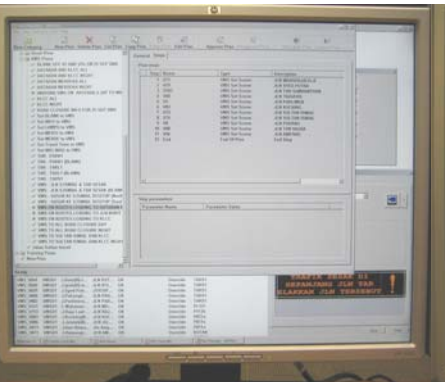
**MAPS**



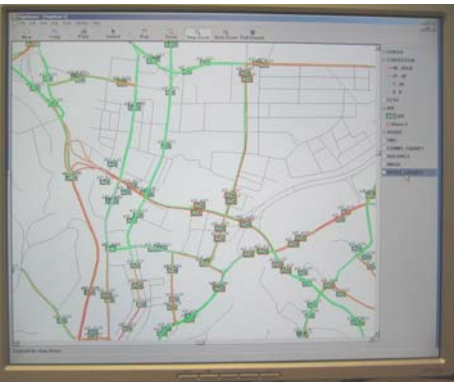
**CCTV**



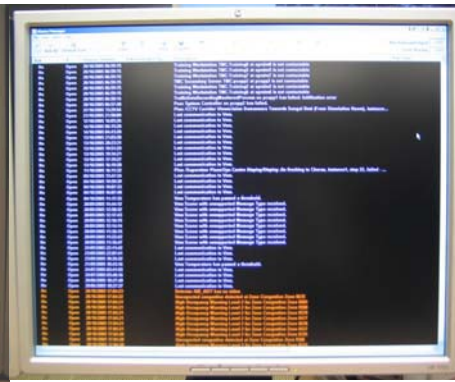
**STYLISED**



**PLANS**



**MAPS**



**ALARMS**

# Types of Incidents

- **Stopped vehicles**
- Road hazards
- Accidents
- Lane / road blockages
- Unusual congestion
- (Flash) Floods
- Faulty traffic lights





# Types of Incidents

Stopped vehicles

● **Road hazards**

Accidents

Lane / road blockages

Unusual congestion

(Flash) Floods

Faulty traffic lights



# Types of Incidents

Stopped vehicles

Road hazards

## ● Accidents

Lane / road blockages

Unusual congestion

(Flash) Floods

Faulty traffic lights

MRR2 ke Pandan Indah

Jenis insiden : Kemalangan

Jenis kenderaan : 3 buah

1) Iswara (WHA 3947)

2) Hyundai Matrix (Plat ta

3) kancil - WHS 3..... (No

Lokasi : MRR2 ke Pandan

Kesan : Trafik sesak

kehadiran direktorat/polis: uada

Masa mula dikesan: 1555

Masa tamat :

Catatan : Lorong kanan sekali terhalang.

0 MRR2 ke Pandan Indah - Kemalangan - 271105 - 1558.jpg (79620 bytes) (Download Count: 7)



# Types of Incidents

Stopped vehicles

Road hazards

Accidents

● **Lane / road blockages**

Unusual congestion

(Flash) Floods

Faulty traffic lights





# Types of Incidents

Stopped vehicles

Road hazards

Accidents

Lane / road blockages

● Unusual congestion

(Flash) Floods

Faulty traffic lights





# Types of Incidents

Stopped vehicles

Road hazards

**Accidents**

Lane / road blockages

Unusual congestion

● **(Flash) Floods**

Faulty traffic lights



# Types of Incidents

Stopped vehicles

Road hazards

**Accidents**

Lane / road blockages

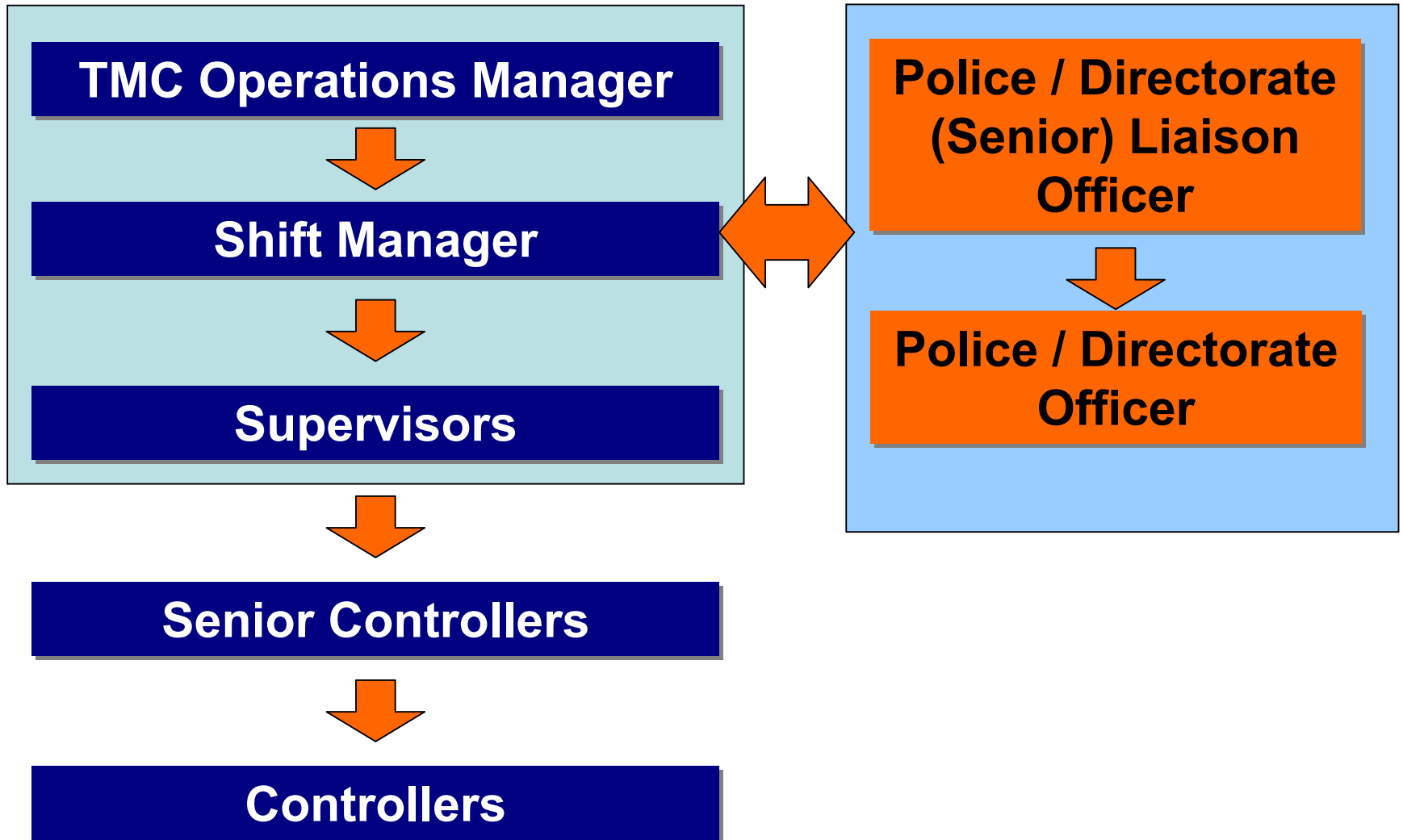
Unusual congestion

(Flash) Floods

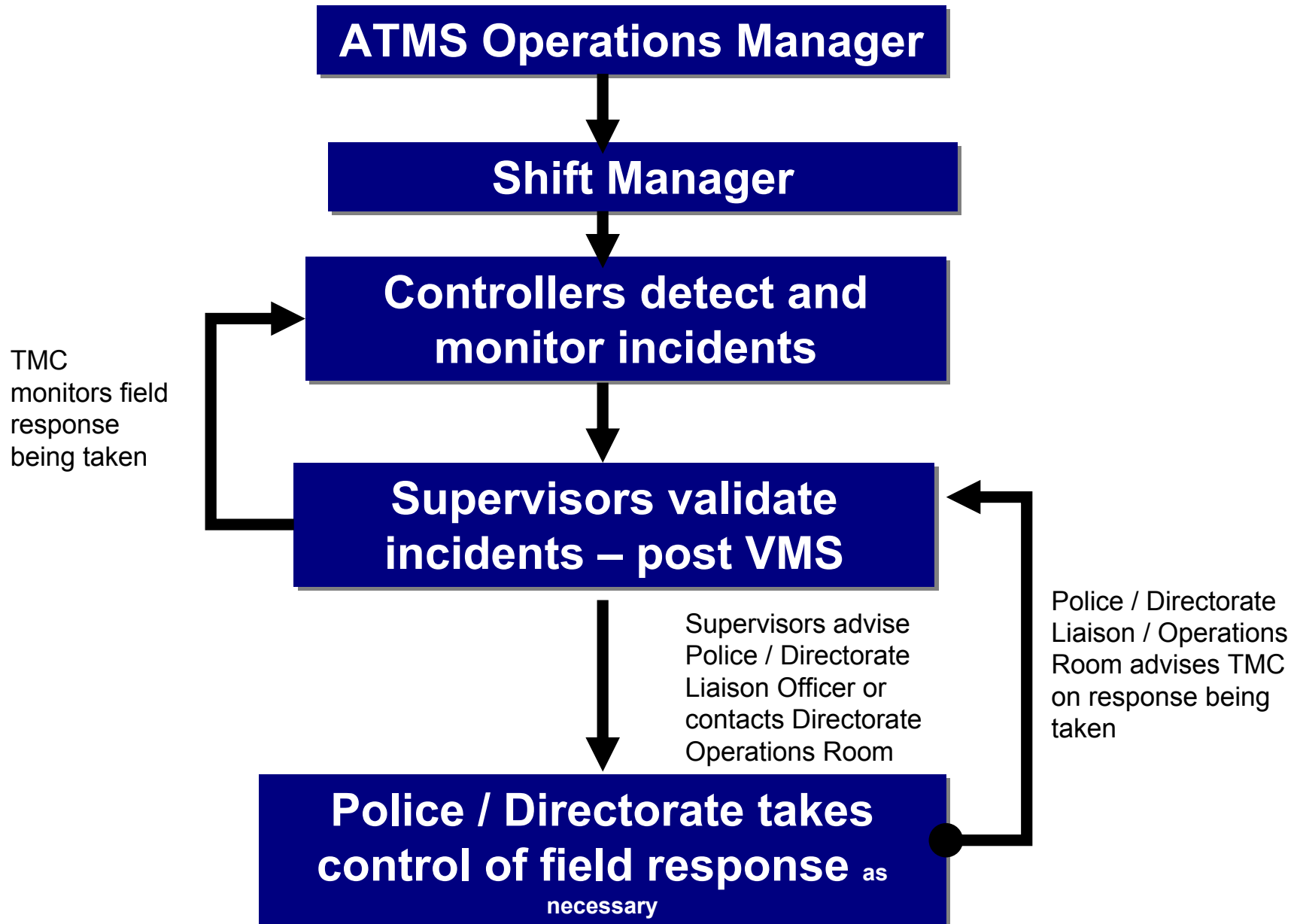
● **Faulty traffic lights**



# Reporting Lines: Operations – Field response



# (Cooperative) Operating Framework

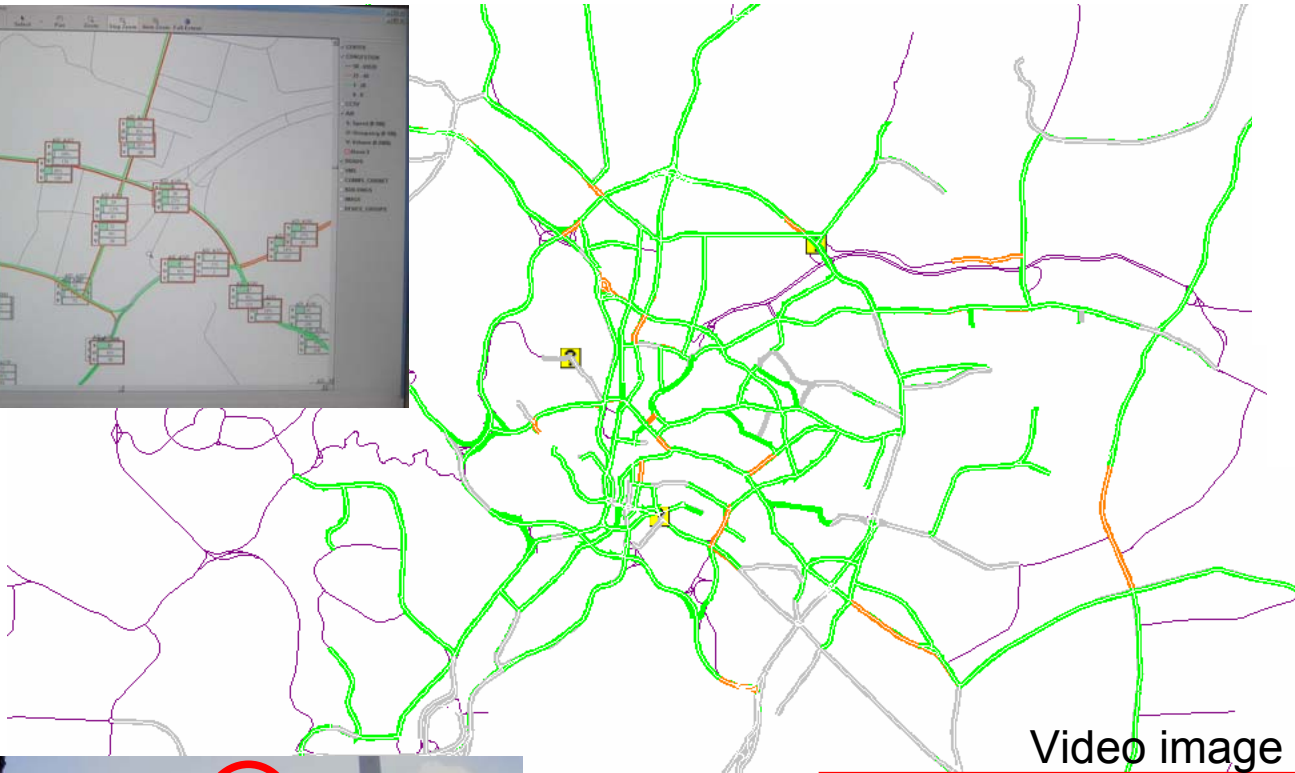
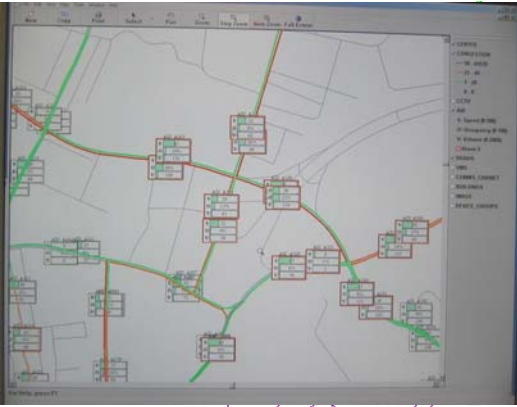


# Building a Real Time Map of the Traffic Situation

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# Congestion Map

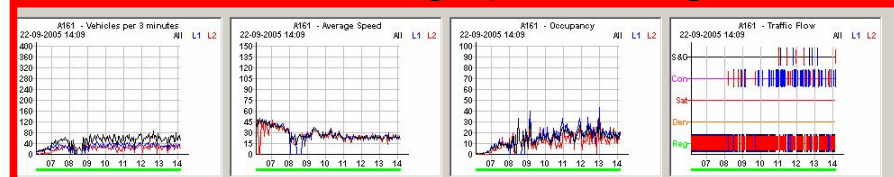


**Vehicle Detector (AID)**

**Video image processing**

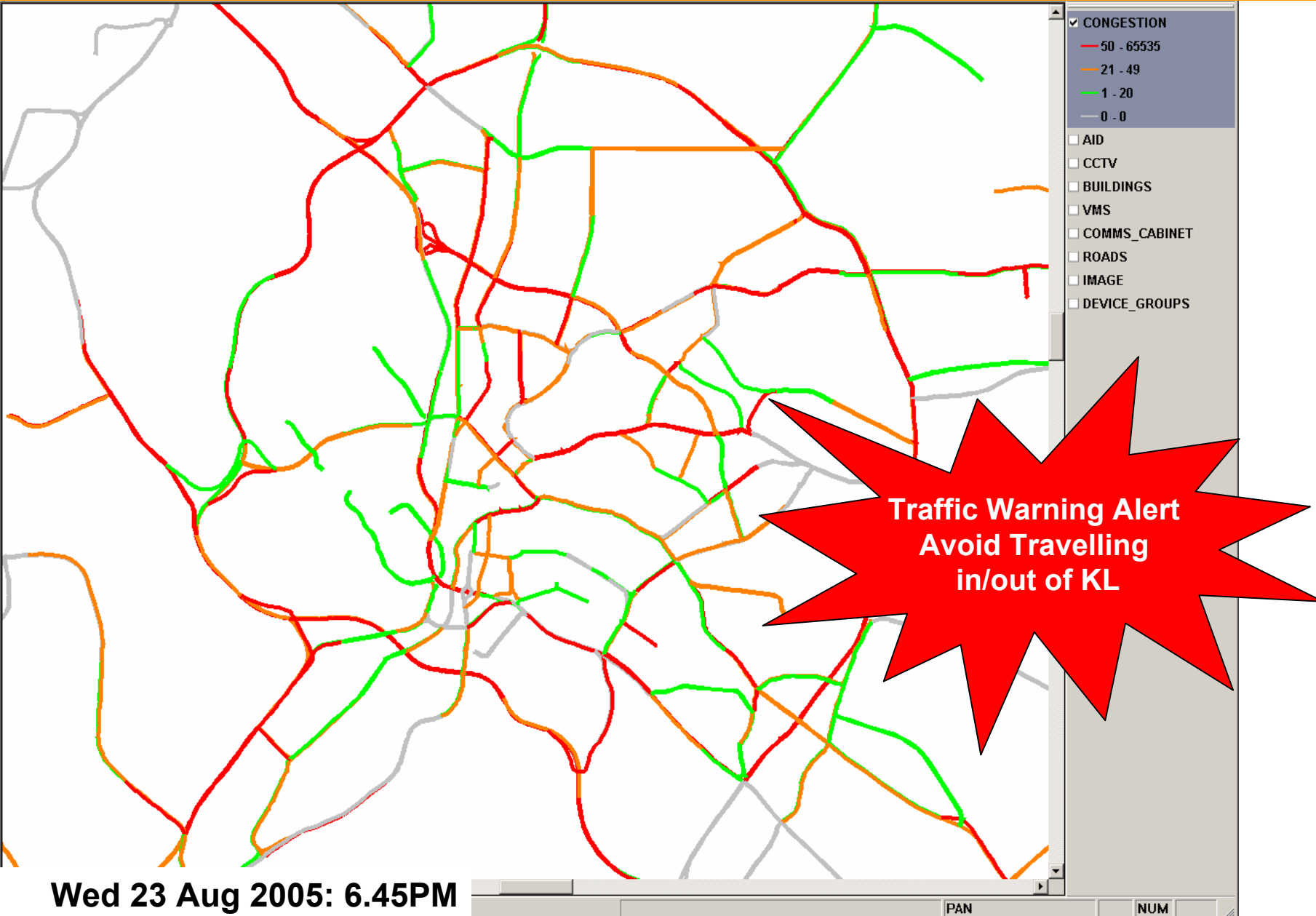


**Vehicle Detector mounted on street light**





# Congestion Map

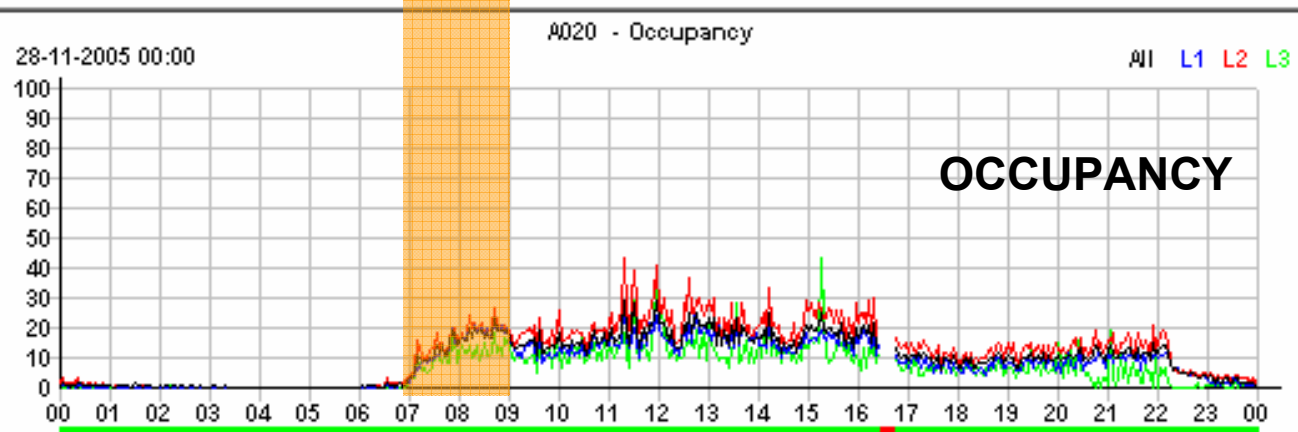
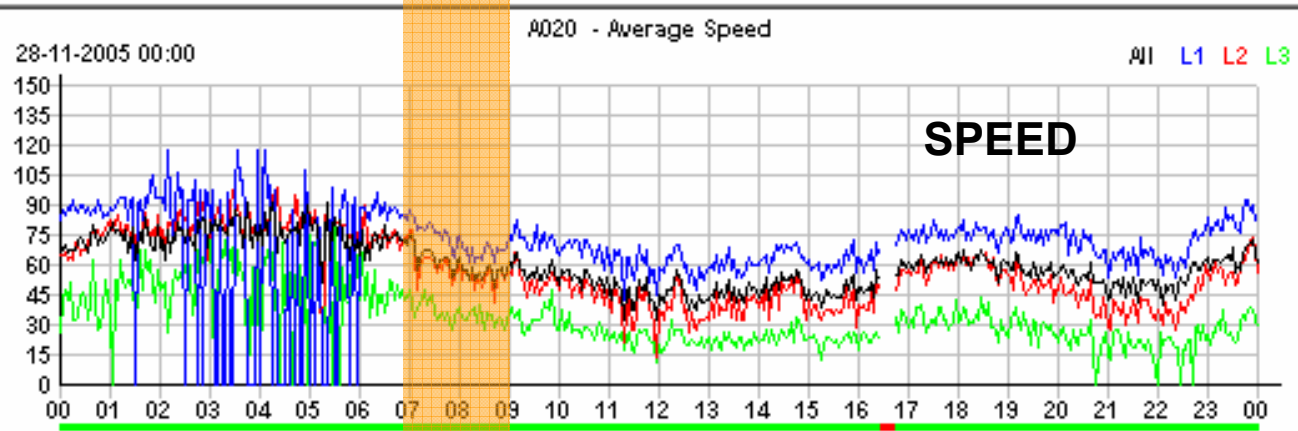
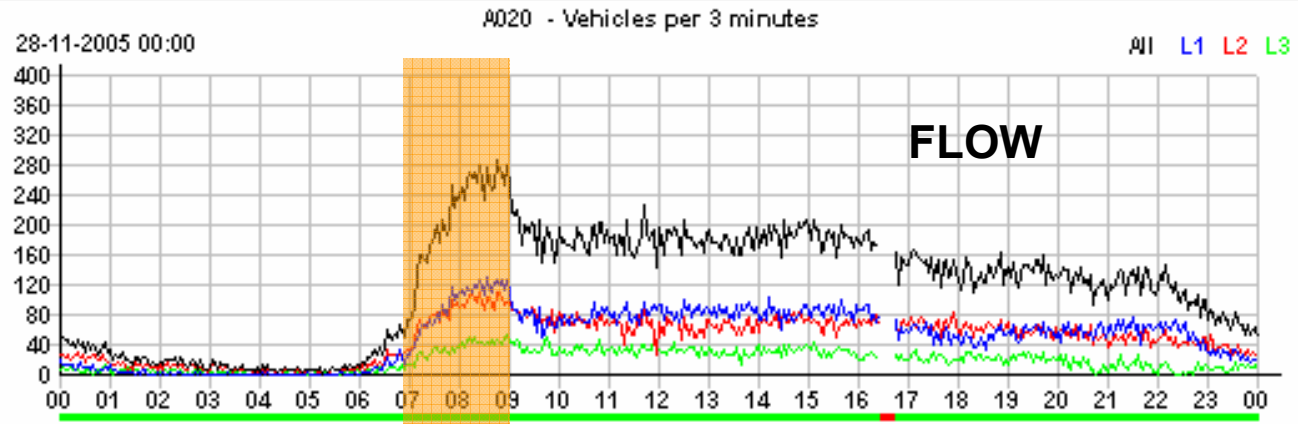


# Real Time Traffic Data

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**November 2005**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3
4	5	6	7	8	9	10

Today: 30-Nov-05

**AID:**

28-11-2005 00:00:00

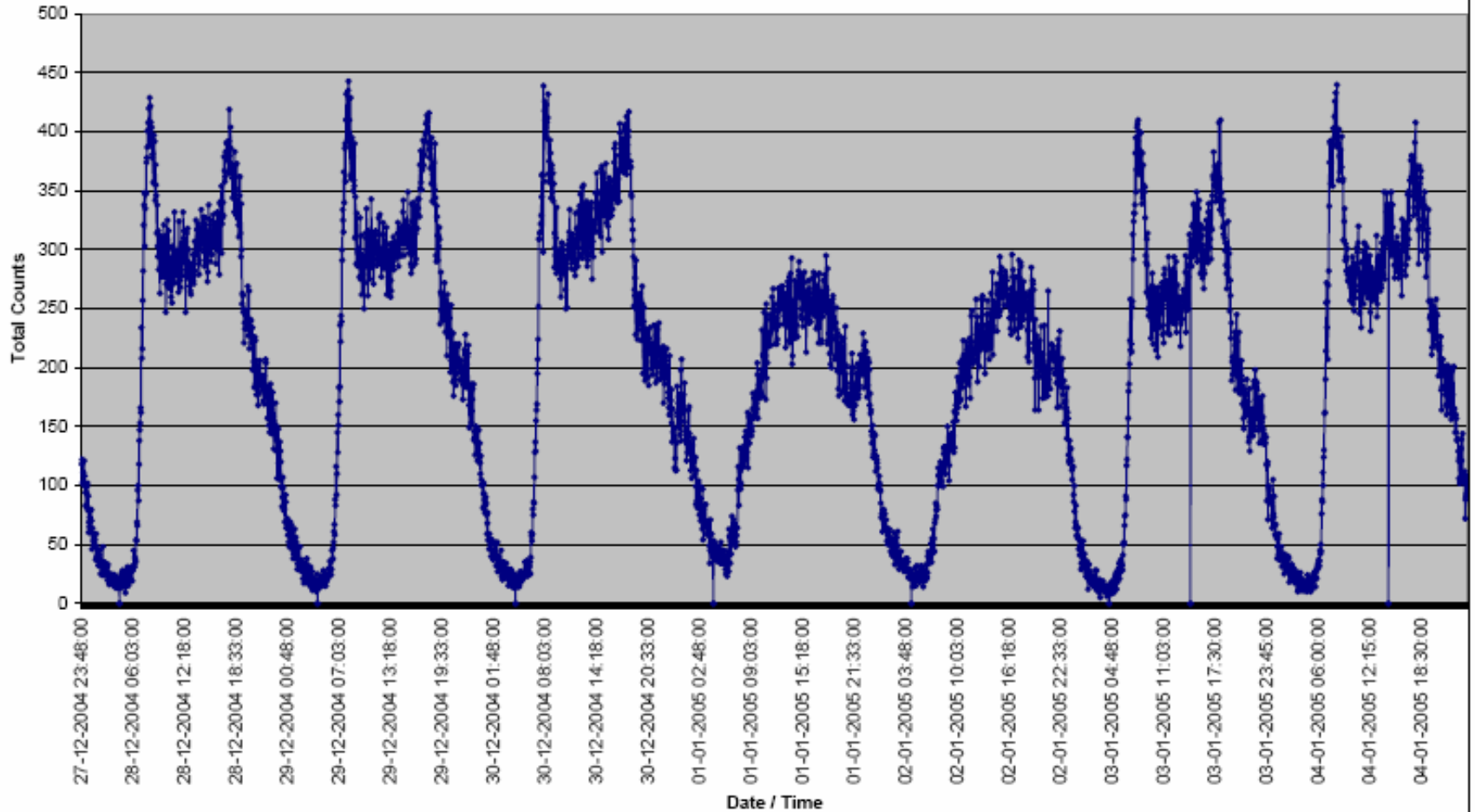
29-11-2005 00:00:00

**CC:**

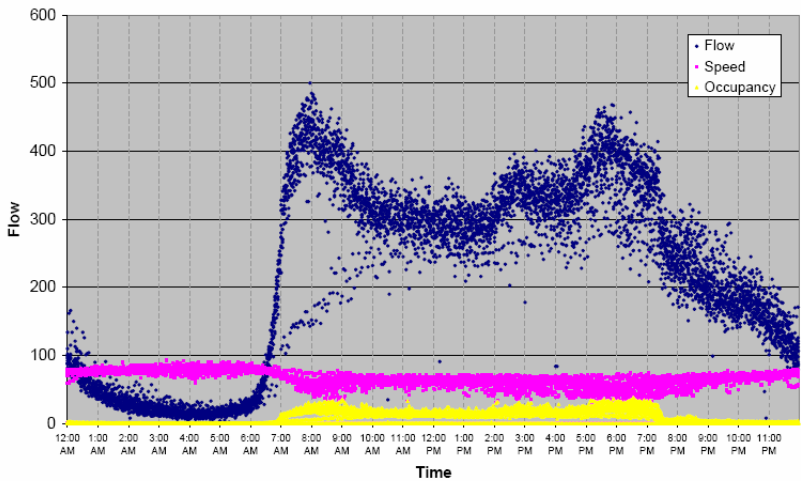
# Profile of Traffic Flow at a Specific Location

A 728

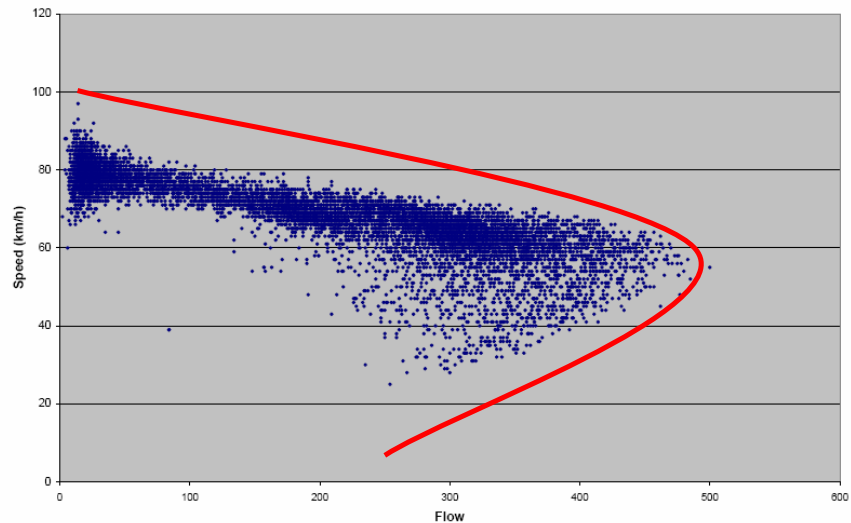
All lanes



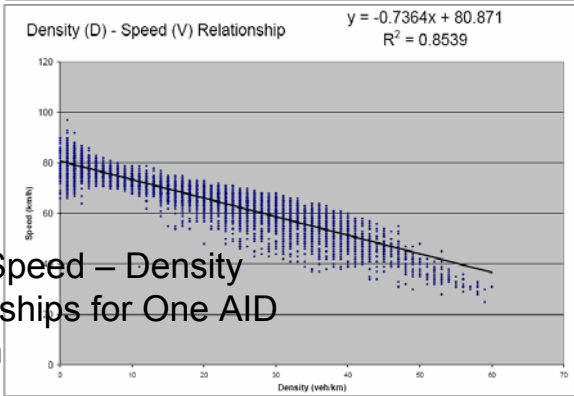
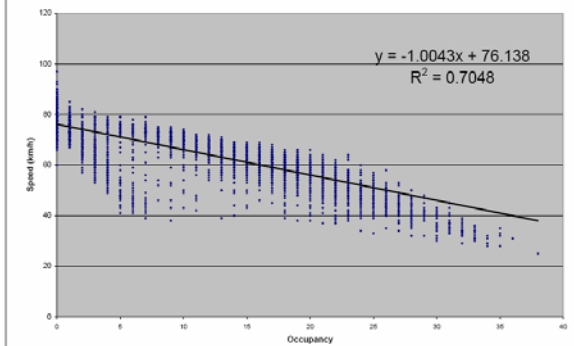
Flow (Mon-Fri)



Flow (Q) -Speed (V) Relationship



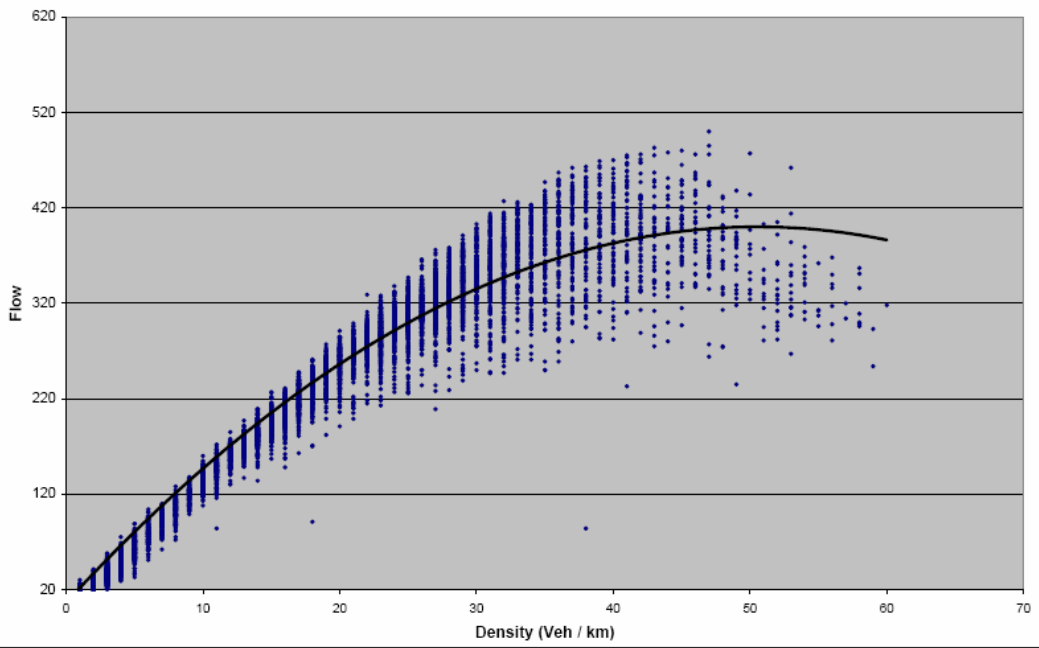
Speed (V) - Occupancy (O) Relationship



Flow (Q) -Density (D) Relationship

$$y = -0.1541x^2 + 15.579x + 6.3279$$

$$R^2 = 0.8889$$



Flow – Speed – Density  
Relationships for One AID  
Location

# Detecting Disruptions in Network Flows

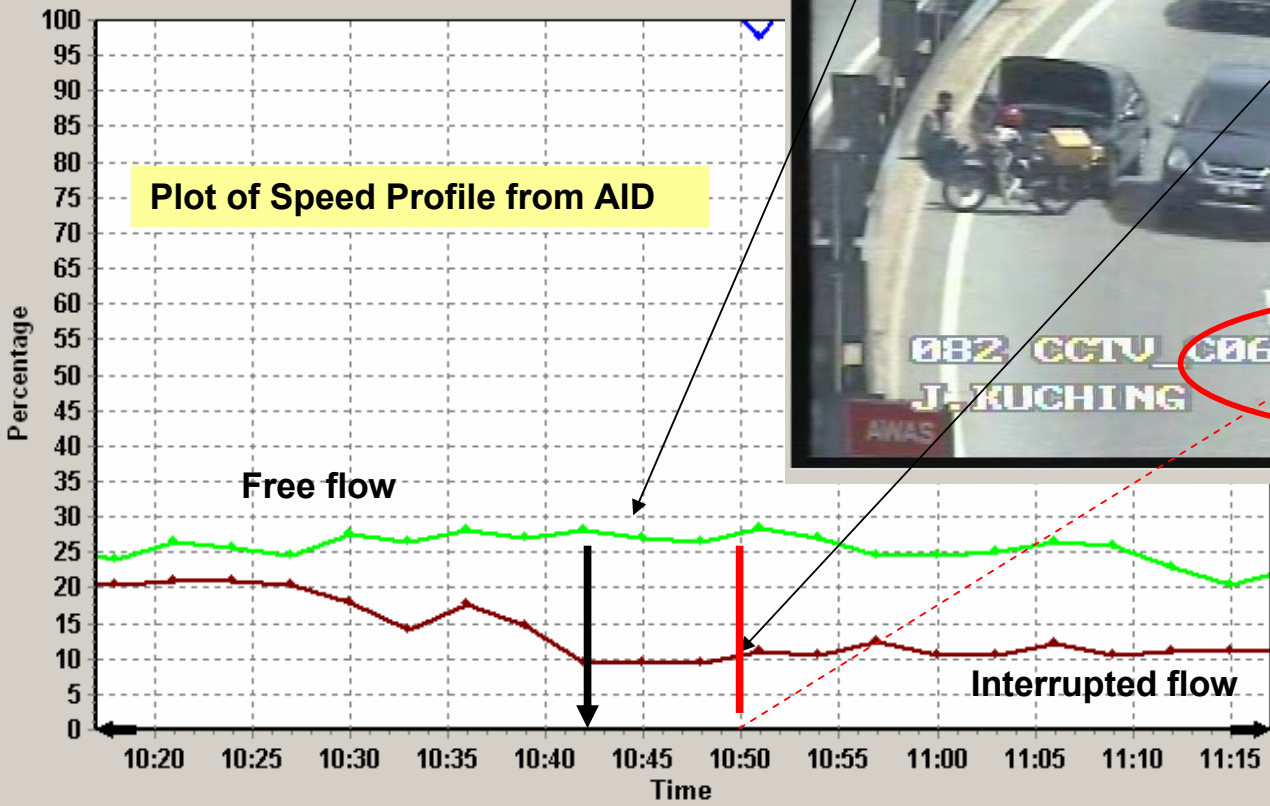
0 CCTV\_C064

Jln Kuching

- aid:AID\_A462.volume (aid:AID\_A462.volume De
- aid:AID\_A462.volume (aid:AID\_A462.volume De
- aid:AID\_A462.speed D (aid:AID\_A462.speed Da
- aid:AID\_A462.speed D (aid:AID\_A462.speed Da
- aid:AID\_A461.speed D (aid:AID\_A461.speed Da
- aid:AID\_A461.speed D (aid:AID\_A461.speed Da



Plot of Speed Profile from AID



24/08/05 10:17

24/08/05 11:17

Ready



# Detecting Disruptions in Network Flows

Jln Kuching-kemalangan- 11-10-2005

Jenis insiden : kemalangan ( Lori Kayu terbalik)

Jenis kenderaan : Lori Kayu

Lokasi :Jln Kuching ( di bawah bulatan Segambut ) menghala ke KL

Kesan : lorong kiri ditutup menyebabkan kesesakan

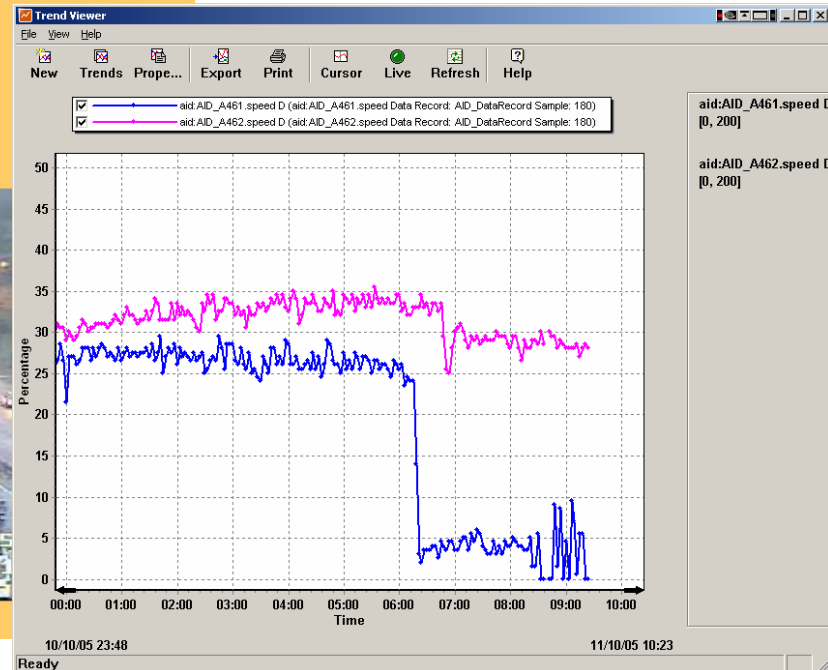
kehadiran direktorat/polis: ada

Masa mula : 0650

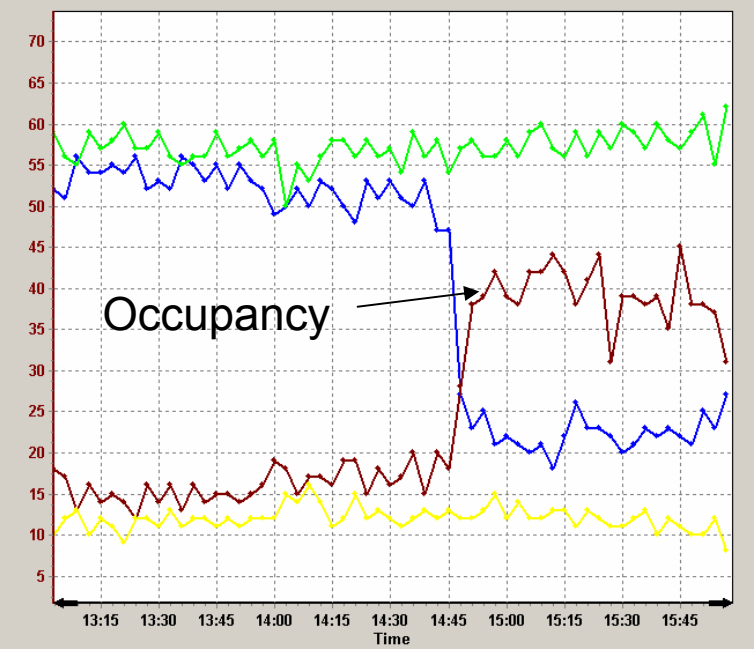
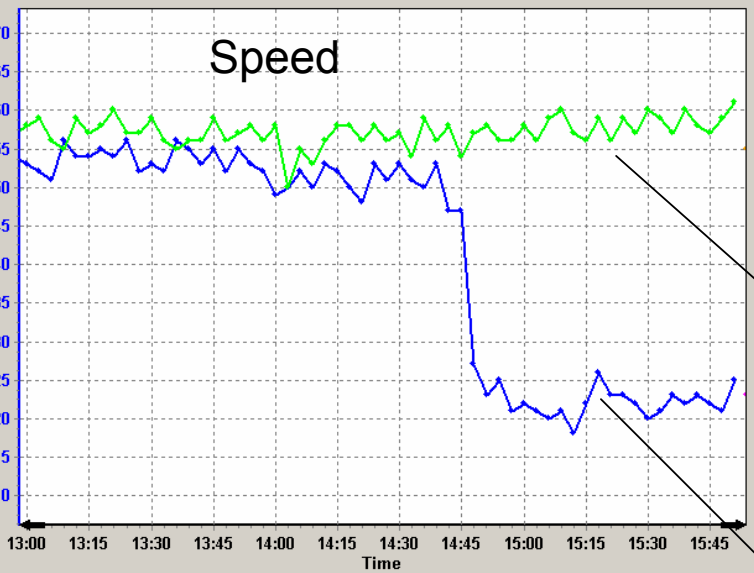
Masa tamat :

Catatan:-kenderaan berada di lorong kiri

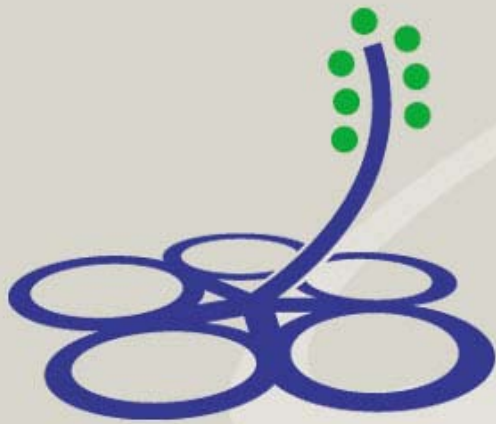
[Jln Kuching- kenderaan rosak1-0655.jpg](#) (37324 bytes) (Download Count: 31)



- aid:AID\_A005.speed D (aid:AID\_A005.speed Data Record: AID\_DataRecord Sample: 180)
- aid:AID\_A005.speed D (aid:AID\_A005.speed Data Record: N/A Sample: Live)
- aid:AID\_A006.speed D (aid:AID\_A006.speed Data Record: AID\_DataRecord Sample: 180)
- aid:AID\_A006.speed D (aid:AID\_A006.speed Data Record: N/A Sample: Live)



# INFORMING THE PUBLIC



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Information  
System

Jenis insiden : banjir

kenderaan terlibat : tiada

Lokasi : jalan kinabalu menuju ke jalan parlimen(bank rakyat jln tangsi)

Kesan : trafik lancar sebab kenderaan tidak banyak

kehadiran direktorat/polis: tiada

Masa mula : 1033

Masa tamat :

catatan: mesej dihantar ke VMS 58

📎 [jalan kuching- banjir-1033.jpg](#) (29217 bytes) (Download Count: 16)



**VMS Controller** [X]

Status | Control | Schedule

VMS\_V058

J.Kinabalu(NB)-to Bltn Bank Negara  
JLN KINABALU (CC10)

Status	:	OK
Scene	:	BJR_3
Mode	:	Override
Brightness	:	Automatic

**BANJIR DI SUSUR  
KE BLTN BANK NEGARA  
IKUT LORONG KANAN**



# Travel Time Messages on VMS



# Traffic Information on Website

www.itis.com.my

Itis - Microsoft Internet Explorer

Integrated Transport Information System (ITIS)

**Info:**  
Now, you can avoid traffic jams and have a smooth journey around Klang Valley with real-time information on road congestion.  
All you need to do is click on a particular road listed below to see its traffic condition.

**Events** ▾  
**Incidents** ▾  
**Road Congestion** ▾  
**Road Works** ▾  
**Travel Plan** ▾

**Legend**

- Smooth Traffic
- Slow Moving
- Heavy Traffic

**Tool** | **Map**

ROAD  POSTCODE AREA

**Zone Selection:**  
Please select a zone below to view

- KL CENTRAL
- KEPONG-SELAYANG
- CHERAS-SG BESI
- PJ-SHAH ALAM

or click on map below

**Overview Map**

www.itis.com.my

Integrated Transport Information System (ITIS)

- Events
- Incidents
- Road Congestion**

**Legend**

— Smooth Traffic    
 — Slow Moving    
 — Heavy Traffic

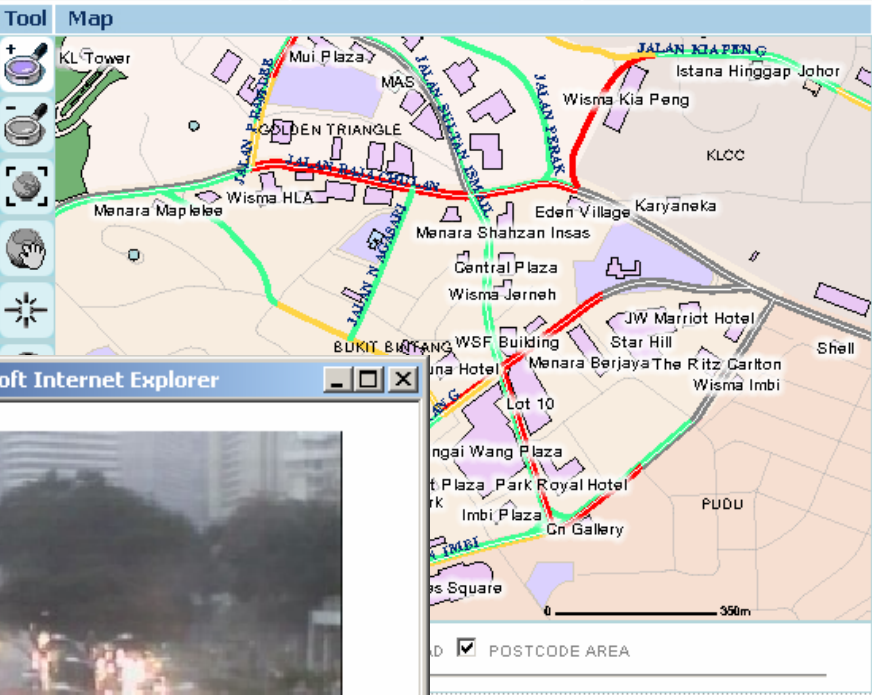
Select RoadName:

Zone Name  
KL CENTRAL

Road Name/JALAN  
BUKIT BINTANG

GO

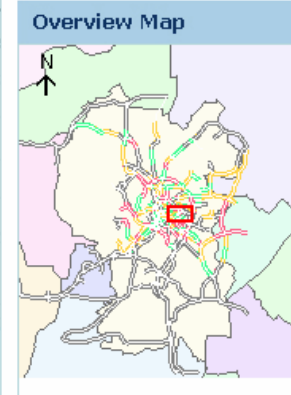
Road Works



Zone Selection:  
Please select a zone below to view

- KL CENTRAL**
- KEPONG-SELYANG
- CHERAS-SG BESI
- PJ-SHAH ALAM

or click on map below



**BUKIT BINTANG Towards JALAN PUDU**

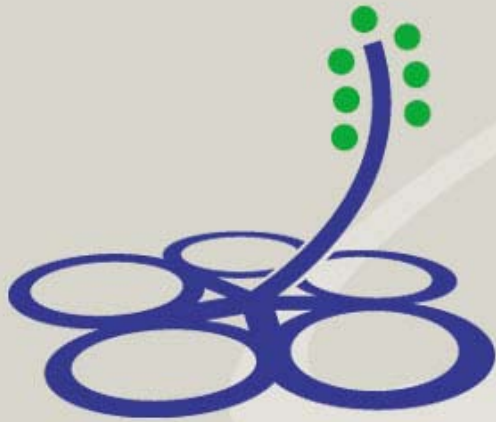
	no data	view cctv
	<b>heavy traffic</b>	none
	<b>slow moving</b>	none
	<b>slow moving</b>	view cctv

**BUKIT BINTANG Towards JALAN TUN RAZAK**

	no data	view cctv
--	---------	-----------

# Improvements / Traffic Engineering / Planning

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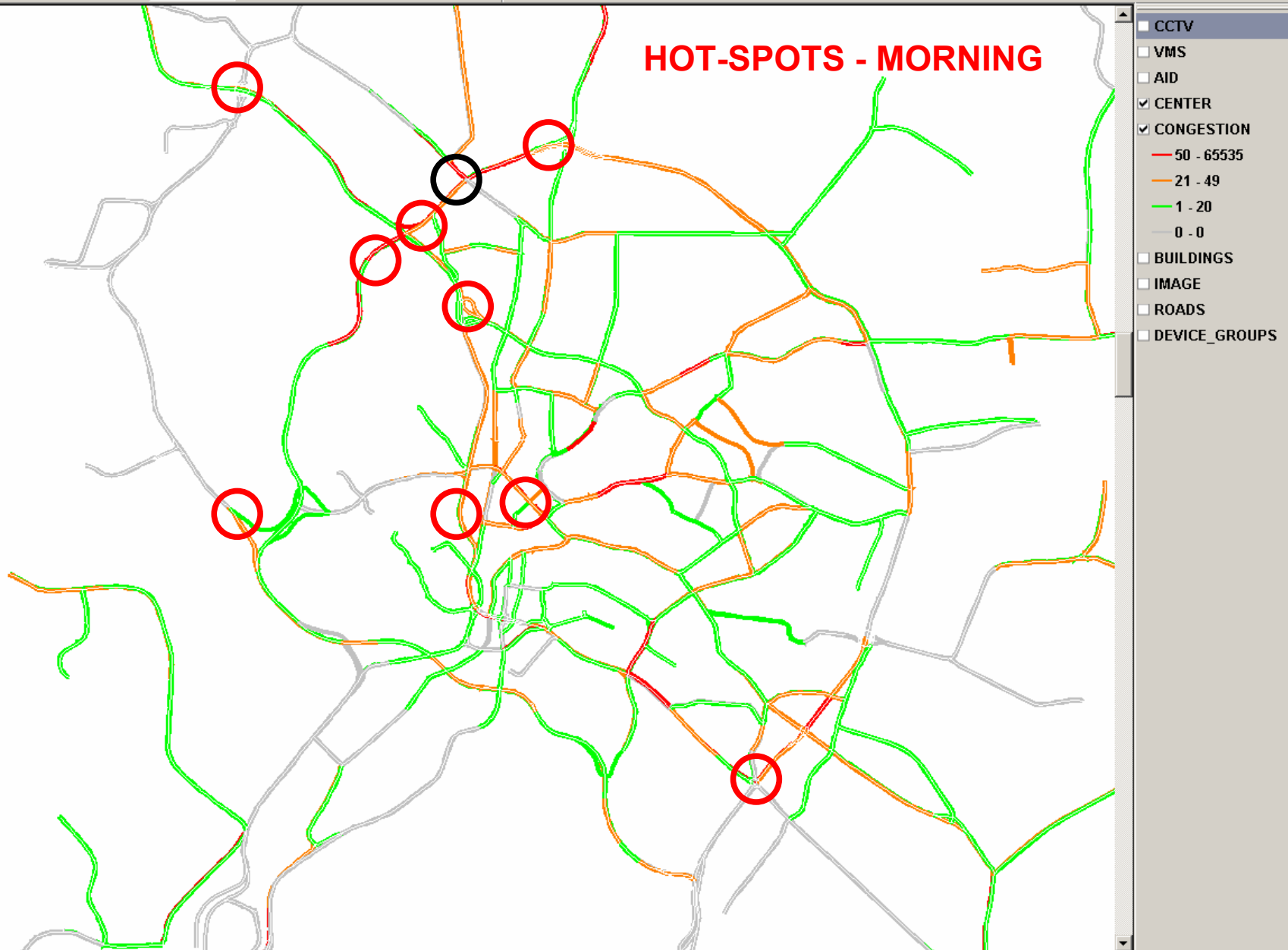
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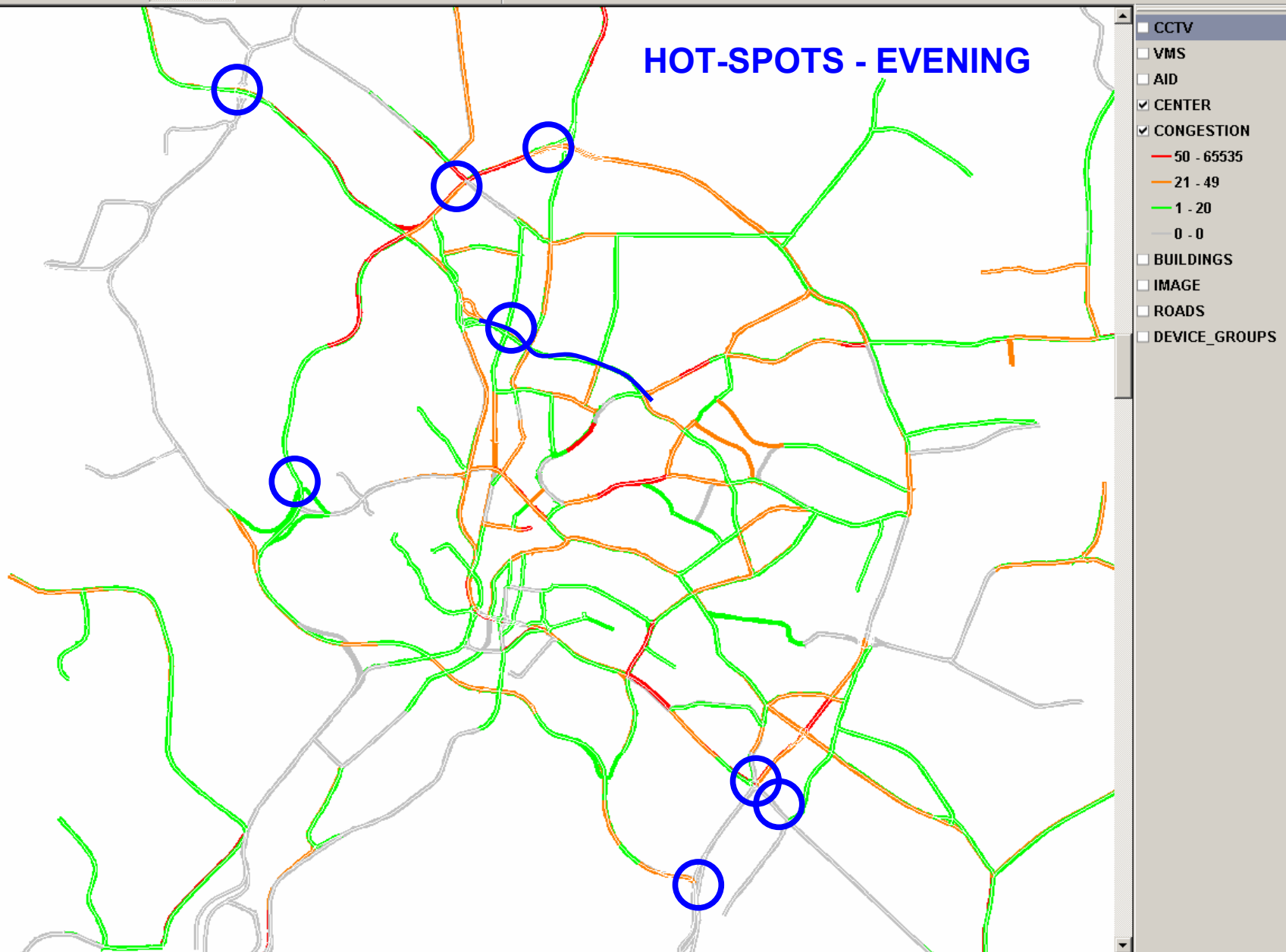
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Transport  
Information  
System



# Identifying Traffic Congestion Hot-Spots



# Identifying Traffic Congestion Hot-Spots



# Installation of Flexi-poles to eliminate Q-jumping



# Identifying Accident Prone Locations





# EVENT MANAGEMENT



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Information  
System

# ASEAN Summit





# ASEAN Summit



020 CCTV\_C028 09:00:22  
J.P RAMLEE 14-12-05



020 CCTV\_C028 08:59:17  
J.P RAMLEE 14-12-05



020 CCTV\_C028 09:01:26  
J.P RAMLEE 14-12-05  
Call 03 6272 1007  
for the ideal design



# ASEAN Summit





# ASEAN Summit

**jalan Yew - kenderaan rosak - 1534 - 121205**

Jenis insiden : Kenderaan rosak

Lokasi : Jalan Yew menghala ke Tun Razak

kehadiran polis : tiada

Kesan : Trafik perlahan

Masa mula dikesan: 1534

Masa tamat :

catatan: Kenderaan berhenti di lorong kiri jalan

[079 Jalan Yew - kenderaan rosak.jpg](#) (49434 bytes) (Download Count: 7)



# ASEAN Summit



Taxis parked  
day before as  
well



# National Day (Hari Kebangsaan)

MapViewer - [Map]  
File Edit View  
Select

**SELAMAT HARI  
KEMERDEKAAN KE-48  
"KERANAMU MALAYSIA"**



**LALUAN MASUK KE KLCC  
DITUTUP- IKUT ARAHAN  
POLIS TRAFIK**



**PENUTUPAN JALAN KE  
D/MERDEKA & KLCC  
BERMULA 7MLM 30/8/05**



**JLN S/ISMAIL DEPAN  
S/WANG PLAZA DITUTUP  
IKUT ARAHAN POLIS**



**JLN S/ISMAIL DEPAN  
S/WANG PLAZA DITUTUP  
ELAKKAN JLN IMBI**



**JLN S/ISMAIL DEPAN  
S/WANG PLAZA DITUTUP  
JLN HANG TUAH SESAK**



**LALUAN KE DATARAN  
MERDEKA DITUTUP- IKUT  
ARAHAN POLIS TRAFIK**



30 August 2005: 1:40PM



# KL Marathon

074 CCTV C078

J. SYED PUTRA

07:07:19

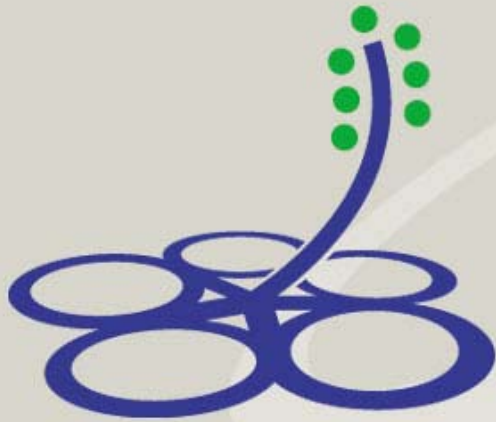
05-03-06



# KL Marathon



# ROAD MAP – THE WAY FORWARD



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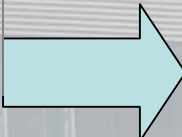


# Road Map for the Long Term Development of the TMC

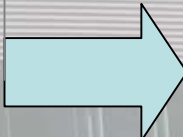
**Inception Period /  
Develop Multi-Agency  
Working Platforms.**



**Move to Command  
and Control of Road  
Traffic / Develop field  
presence**



**Move to Multi-Modal  
Transport Operations**



**Develop into Regional  
Transport Centre**



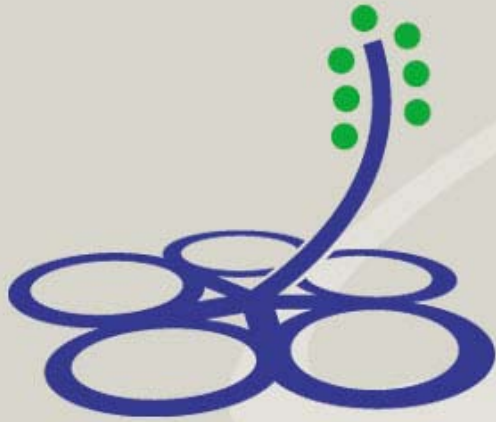
**Develop into National  
Transport Centre**



*“National Aspiration ..... World class Transport Management Centre”*



# Thank You



# ITIS

*The Clear Way To Go*

Integrated  
Transport  
Information  
System

