

Joint ITU/UNECE Workshop on “Intelligent Transport Systems in Emerging Markets – drivers for safe and sustainable growth”

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ITS Deployment and Integration in the Kingdom of Saudi Arabia

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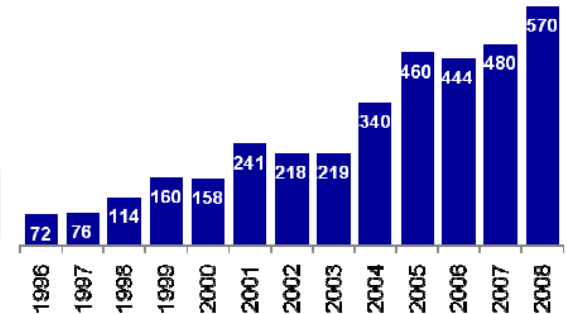


Background and Introduction

■ Key Issues

- ➔ Economic Growth
- ➔ Car Ownership Levels
- ➔ No Public Transport
- ➔ Traffic Safety
- ➔ Congestion Levels
- ➔ Environmental Issue

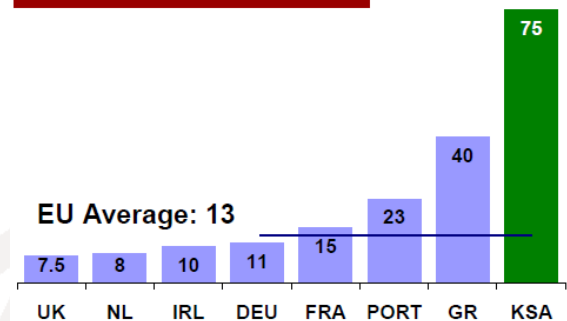
New Cars (x 1.000)



Source: Statistical Yearbook of Saudi Arabia 2008

Five fold increase of new cars between 1998 and 2008

Fatalities per billion vehicle km



Number of fatalities nearly 6 times higher than EU average

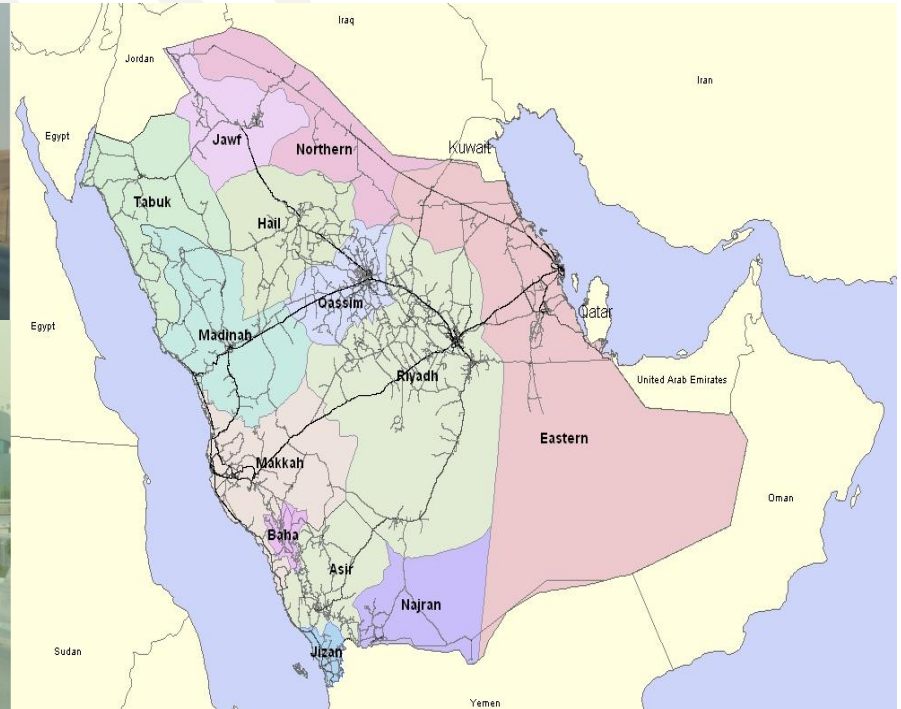
Background and Introduction

■ MOT Response

- Refine strategic plan of the MOT for ITS development to address these issues
- Achieved through establishing the ITS Deployment and Integration Plan
- The findings of this study culminated in a long list of potential ITS projects

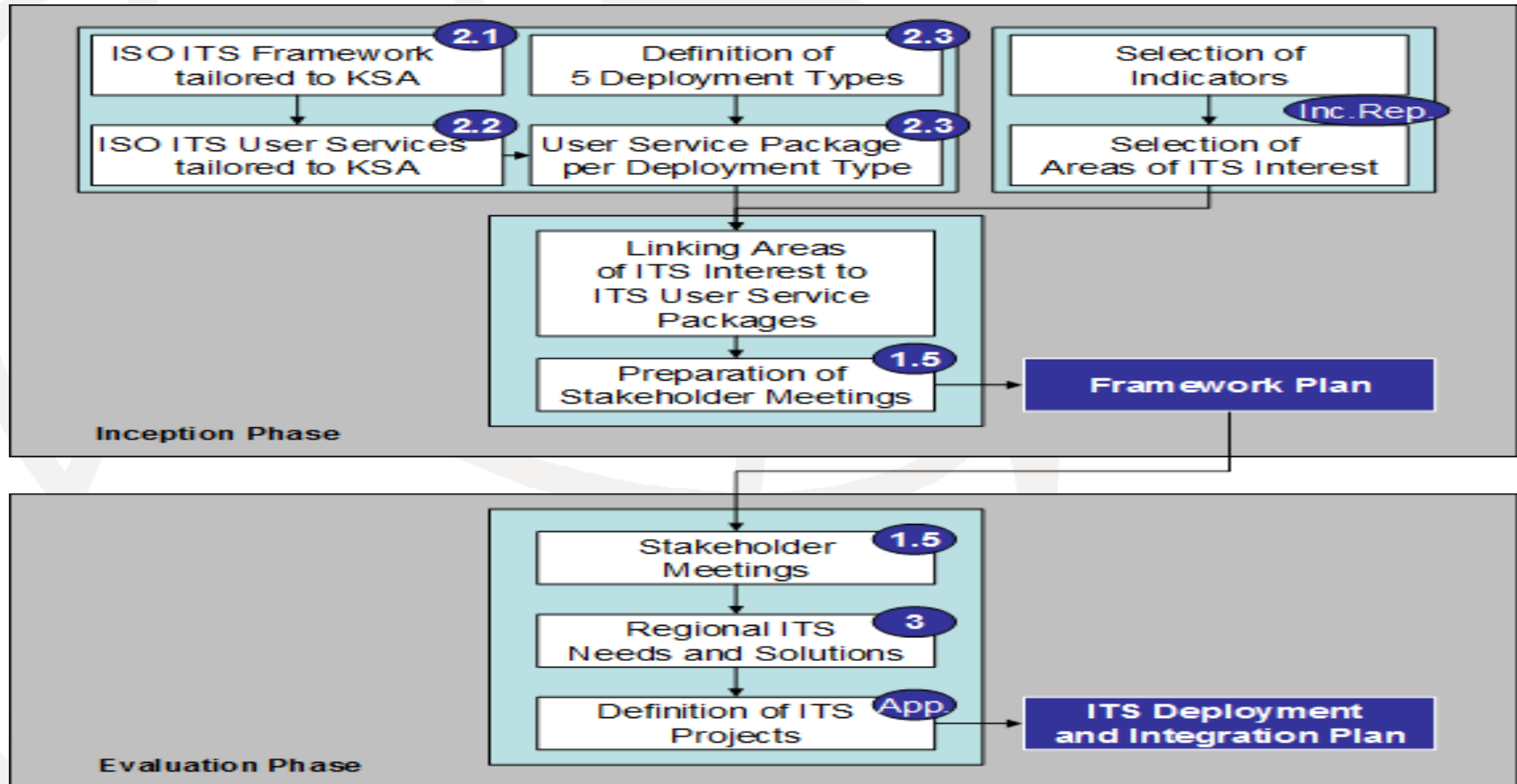
Background and Introduction

- Study area was the national highway network of currently 56,000 km of roads, built and maintained by MOT



Methodology and Activities

■ ITS Deployment Plan Development



Methodology and Activities

■ Tailored ITS User Services

ITS Service Domains	ITS Service Groups	ITS User Services	Examples of ITS Tools / Components
Traveller Information	Pre-trip information	Pre-trip info traffic, incidents, road works	Website, Radio, Smartphone
	On-trip information	On-trip info traffic, incidents, road works	VMS/DMS, Radio, SatNav
	Dynamic road warning	Road geometry information and over speed warning - roadside	Speed detection, VMS
Traffic Management and Operations	Traffic management and control	Traffic monitoring - detection and confirmation	Volume/speed/congestion detection, CCTV
		Traffic information and guidance	DMS, Radio, SatNav
		Variable speed management	VMS, SatNav
		Traffic counting and classification	Detection
	Transport related incident management	Incident detection & confirmation (including water level monitoring in underpasses)	Detection, CCTV
		Incident information for emergency services	Interfaces to other control centres
	Demand Management	Ramp metering	Detectors, traffic signals
		HGV access management	VMS/DMS
		Hard shoulder running	VMS/DMS, CCTV
	Transport infrastructure maintenance management	Work zone safety management	DMS
Freight Transport	Commercial vehicle pre-clearance	Commercial vehicle pre-clearance (e.g. international border crossings)	Electronic freight documentation system
	Automated roadside safety inspection	Weigh in motion	WiM system, VMS/DMS, signals
Emergency	Emergency vehicle management	Emergency vehicle traffic mngmnt support	Website, SatNav, VMS/DMS
	Hazardous materials (HAZMATs) and incident notification	HAZMAT vehicle tracking and tracing	OBU/RFID, Tracking system
Transport Related Electronic Payment	Transport related electronic financial transaction	Electronic toll collection	OBU with GPS, Smartcard system
Weather Monitoring	Weather monitoring and information	Road weather monitoring and information (sandstorm, rain), fog detection and warning, cross wind detection and warning	Detection, Interfaces, VMS/DMS, Radio, SatNav

Methodology and Activities

- Deployment Types for ITS Projects:
 - ➔ Type 1: Urban Expressway
 - ➔ Type 2: Inter-Urban Expressway
 - ➔ Type 3: Tunnel
 - ➔ Type 4: Border Crossing
 - ➔ Type 5: Network Wide Project



Type 1



Type 2



Type 3

Methodology and Activities

■ ITS User Service Packages

ITS User Services	Suitable ITS Tools / Components	Deployment Type				
		Urban Expressway	Inter-Urban Expressway	Tunnel	Border	Network Wide System
Pre-trip information on traffic, incidents and road works	Website, Radio, Smartphone	X			X	X
On-trip information on traffic, incidents and road works	VMS/DMS, Radio, SatNav	X	X	X	X	X
Road geometry information and over speed warning – roadside	Speed detection, VMS		X	X		
Traffic monitoring - detection and confirmation	Volume/ speed / congestion detection, CCTV	X		X	X	
Traffic information and guidance	DMS, Radio, SatNav	X		X	X	
Variable speed management	VMS, SatNav	X				
Traffic counting and classification	Detection					X
Incident detection & confirmation (including water level monitoring in highway underpasses)	Detection, CCTV	X	X	X		
Incident information for emergency services	Interfaces to other control centres	X		X		
Ramp metering	Detectors, traffic signals	X				
HGV access management	VMS/DMS	X				
Hard shoulder running	VMS/DMS, CCTV	X				
Work zone safety management	DMS	X	X			
Commercial vehicle pre-clearance (e.g. international border crossings)	Electronic freight documentation system				X	
Weigh in motion	Wim system, VMS/DMS, signals					X
Emergency vehicle traffic management support	Website, SatNav, VMS/DMS	X				
HAZMAT vehicle tracking and tracing	OBU/RFID, Tracking	X		X		
Electronic toll collection	OBU with GPS, Smartcard				X	
Road weather monitoring/ information (sandstorm, rain), fog detection/ warning, cross wind detection and warning	Detection, Interfaces, VMS/DMS, Radio, SatNav	X	X			

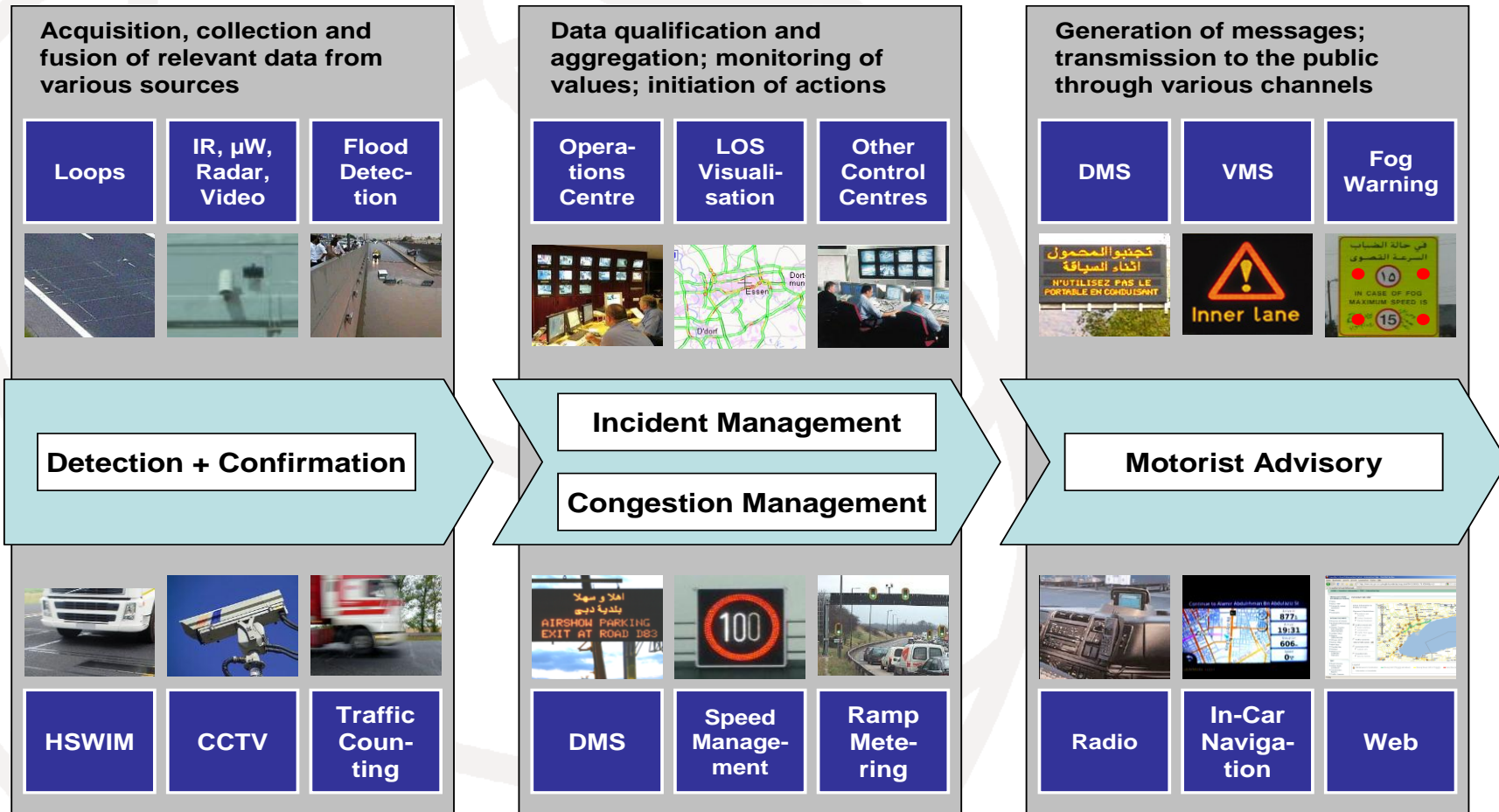
Results and Recommendations

■ Traffic Management Strategies

Traffic Management Strategy	Explanation
Detection and confirmation	To monitor and manage the traffic flow on the road network through roadside surveillance devices. This includes analysing in real time data collected from the traffic monitoring surveillance and sensor equipment. The ability to continuously detect traffic and measure the traffic situation is the basis for any further management or information system. Detection comprises also other traffic impacting issues, e.g. fog, floods.
Incident management	To detect and respond to various incidents in the transport network to reduce the impacts of such incidents.
Motorist Advisory	To provide information to road users by roadway equipment such as variable message signs, a traffic information web site and or highway advisory radio. A wide range of information can be provided including traffic and road conditions, road closure and detour information, incident in-formation, and emergency alerts and driver advisories.
Traffic Congestion Management	To maintain the movement of vehicles through the road network also under peak traffic conditions. This includes automated and manual decision-making processes that improve address traffic flows or assist in the response to real-time incidents on the road network.

Results and Recommendations

Strategies and related ITS Tools



Contact and Further Information

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Further Information:

www.mot.gov.sa/ar/roads/Pages/ITS.aspx