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Multi-modality assessments in promoting sustainable urban traffic



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A model for assessing multi-modal transport maturity, developing recommendations and aligning the action across agencies

Definition of “Transport Maturity”: the integration of IT and communications across the physical infrastructure of multiple transport modes to optimise the network

The Maturity Model is: A qualitative framework for mapping the as-is and to-be, to help identify opportunities and shape a consistent vision. All contributions will be kept anonymous.

The Maturity Model is not : an audit, a measure for transport efficiency, a hidden agenda.

Level 4+ Maturity: has only been achieved by a couple of Transport Authorities globally.

Dimensions Converge: from independent disciplines to a coordinated capability at Level 5

11 dimensions of multimodal transport maturity

..... "Average" City
 Top 3 City: range
 Leading Practice

		Level 1 Silo	Level 2 Centralized	Level 3 Partially Integrated	Level 4 Multimodal Integrated	Level 5 Multimodal Optimized
<i>strategic planning</i>	Planning	Functional Area Planning (single mode)	Project-based Planning (single mode)	Integrated agency wide planning (single mode)	Integrated corridor based multimodal planning	Integrated regional multimodal planning
	Performance Measurement	Minimal	Defined metrics by mode	Limited integration across organizational silos	Shared multimodal system-wide metrics	Continuous system-wide performance measurement
	Customer Management	Minimal capability, no customer accounts	Customer accounts managed separately for each system/mode	Multi-channel account interaction per mode	Unified customer account across multiple modes	Integrated multimodal incentives to optimize multimodal use
<i>real-time information creation capability</i>	Data Collection	Limited or Manual Input	Near real-time for major routes	Real-time for major routes using multiple inputs	Real-time coverage for major corridors, all significant modes	System-wide real-time data collection across all modes
	Data Integration	Limited	Networked	Common user interface	2-way system integration	Extended integration
	Analytics	Ad-hoc analysis	Periodic, Systematic analysis	High-level analysis in near real-time	Detailed analysis in real-time	Multi-modal analysis in real-time
	Payment Methods	Manual Cash Collection	Automatic Cash Machines	Electronic Payments	Multimodal integrate fare card	Multimodal, multi-media (fare cards, cell phones, etc)
<i>real-time intervention capability</i>	Network Ops. Response	Ad-Hoc, Single Mode	Centralized, Single Mode	Automated, Single Mode	Automated, Multimodal	Multimodal Real-time Optimized
	Incident Management	Manual detection, response and recovery	Manual detection, coordinated response, manual recovery	Automatic detection, coordinated response and manual recovery	Automated pre-planned multimodal recovery plans	Dynamic multimodal recovery plans based on real-time data
	Demand Management	Individual static measures	Individual measures, with long term variability	Coordinated measures, with short term variability	Dynamic pricing	Multimodal dynamic pricing
	Traveler Information	Static Information	Static trip planning with limited real-time alerts	Multi-channel trip planning and account-based alert subscription	Location-based, on-journey multimodal information	Location-based, multimodal proactive re-routing

Sample Maturity Model Dimension 10 : Demand Management

▪ Definition:

- Demand management is about the use of incentives (usually financial) to influence the behaviour. Existing, and even potential, transport supply is ultimately constrained, so transport authorities must manage demand by influencing modal shift to achieve sustainable mobility.

- *What is the primary policy driver for demand management; congestion, revenue, modal shift, emissions?*
- *What measures are existing / planned ? – intelligent and soft approaches.*
- *Are there any plans for running a zonal, city-wide, national multi-national (charging) schemes?*
- *How dynamic are these systems ?*

▪ Focus on:

- Is there a consistent view (and understanding of) the alignment between scheme objectives and technology deployed (e.g. ANPR, DSRC, GPS, mobile phone)
- Balance and timing of initiatives - “carrot” before “stick”?

Dynamic Pricing

The I-15 freeway in southern California adjusts pricing on its HOT express lanes every six minutes in order to keep traffic flowing freely at 60 mph.

Peak Incentives Trial in Utrecht, Netherlands

By simply paying frequent travellers 5 Euros a day for not travelling in the morning and evening peaks; a dramatic reduction in rush hour traffic as users sought alternative approach including; car pooling, home working, use of out-of-city offices, off-peak travel, public transport. This simple idea could be made cash neutral by charging the peak users 5 euro (or equivalent) to travel during the peak times..”

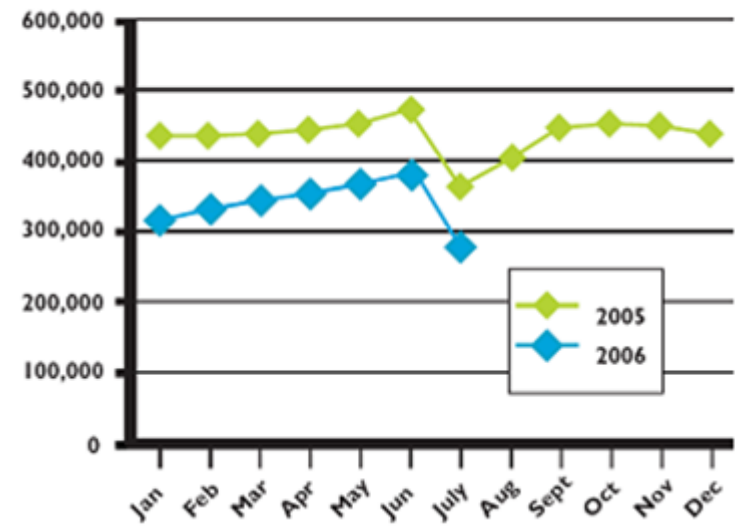


Sample Leading Practice: Matching Demand with Supply

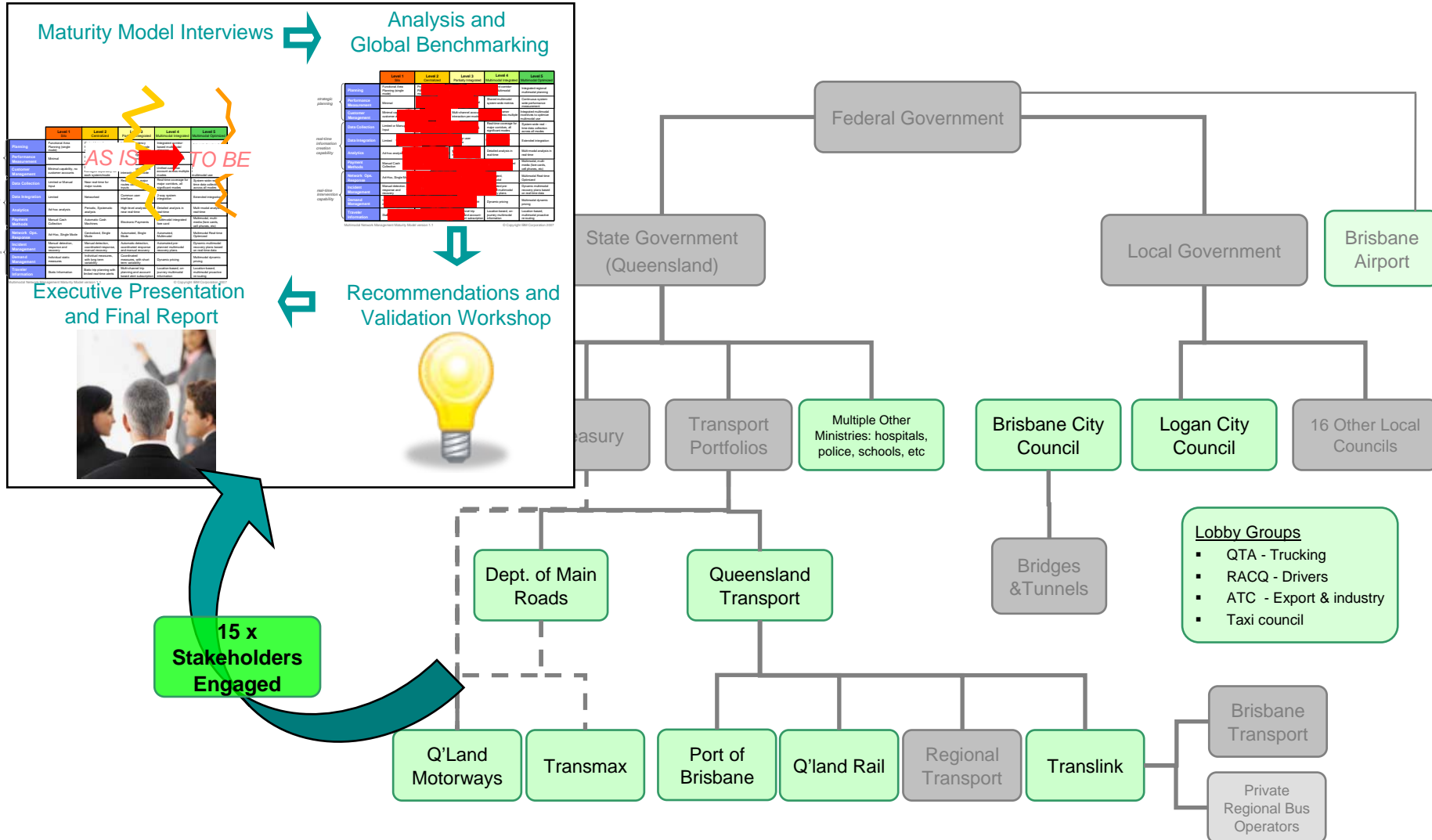
- Client: Swedish Road Administration and City of Stockholm
- Main objective: Reduce congestion by 10%-15% and improve environment and living environment
- Approach: Improve Public Transport capacity, Park & Ride and introduce Congestion charges
- Challenges: Political sensitivity, law change process and public scrutiny

- Results
 - Car trips to down town area was reduced by 25%
 - Traffic queuing times fell by up to 50%.
 - Journey times were faster and more predictable
 - Less than half of the former car trips became public transport passenger
 - Stockholm bus timetables were re-written to take improvements to traffic flow into account
 - Pollution levels in the city fell by 10% and 15%
 - Commercial traffic increased efficiency
 - Revenue used for improving transport service level
- Scheme was re-launched in August 2007 after the public referendum voted in favour of the system

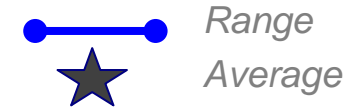
Number of vehicle passages into and out of the inner-city



Project Approach

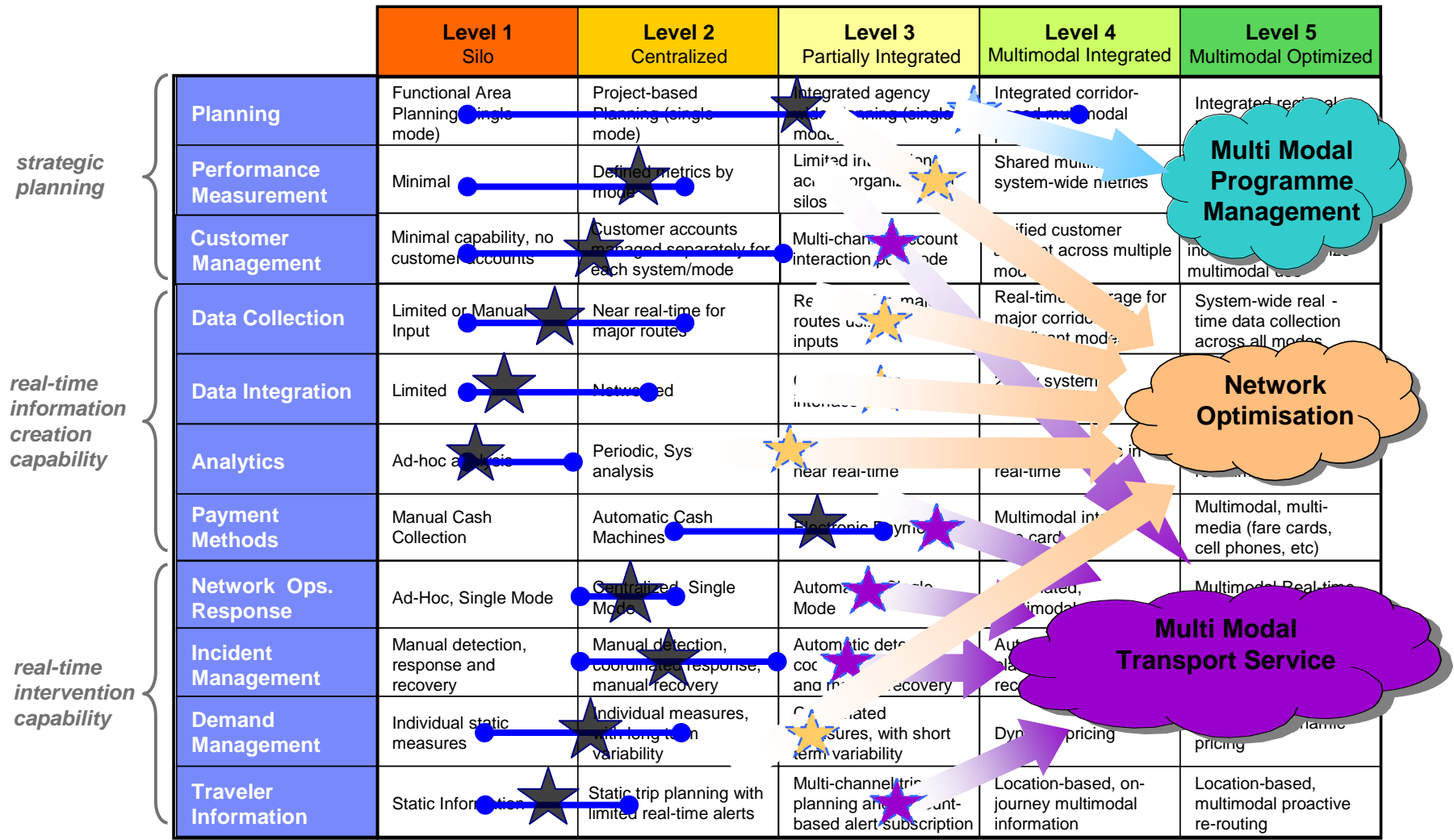


Sample Gap Analysis

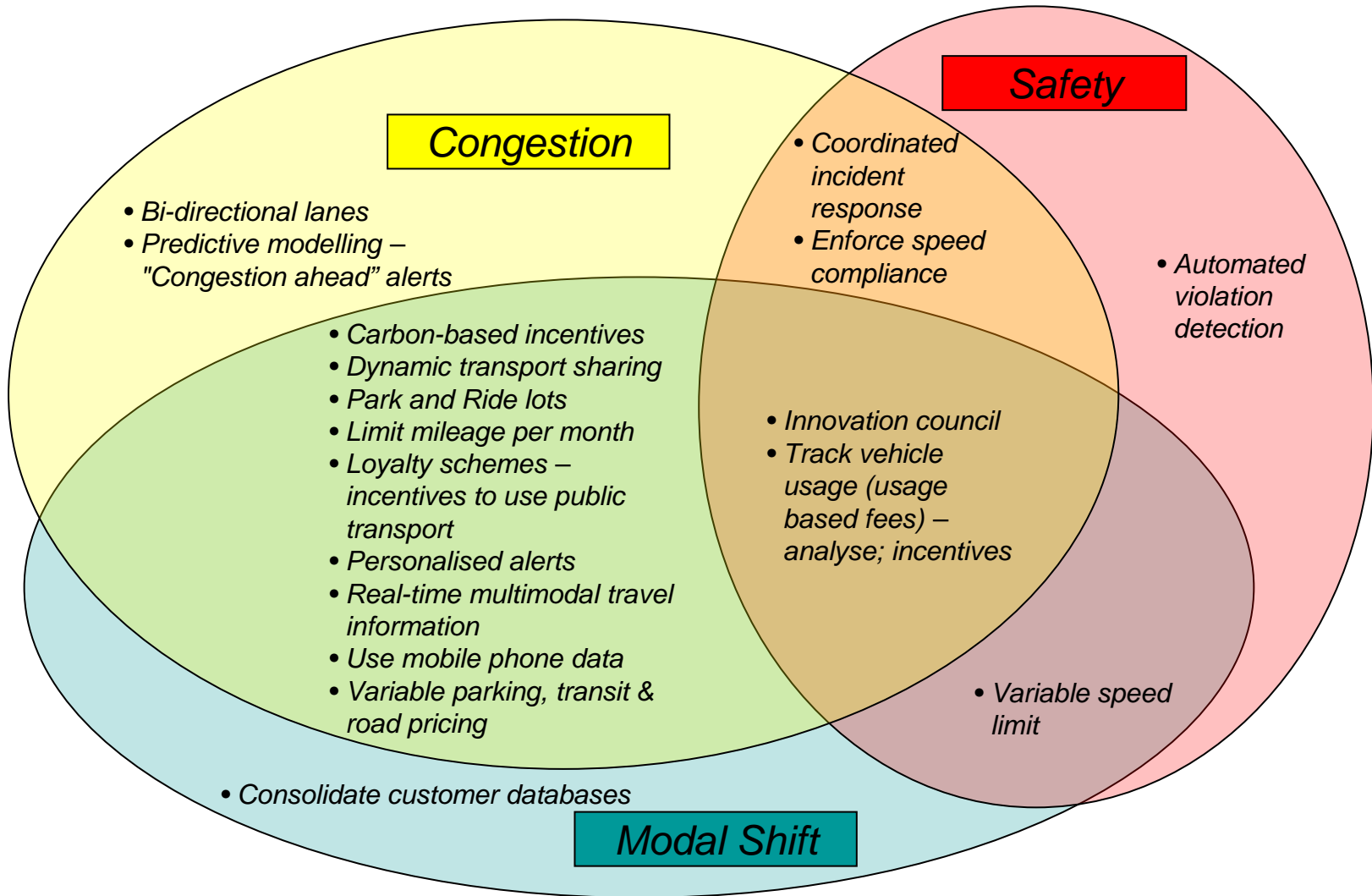


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Sample Themes Mapping



Typical derivables



Experiences

- **Multimodal transport maturity model was developed to aid assessment and development of recommendations for transport authorities and their stakeholders.**
- **Particularly effective in aligning strategy and execution, where responsibility for strategy, policy setting and execution is divided between different agencies.**
- **Encourages thinking of transportation as a system: managing demand, multimodality, intermodal shifts, policy decisions, non-transport domain dependencies.**