

# Smarter Transportation

*Presentation to the CT Transportation Strategy Board*

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***“The world will continue to become smaller, flatter - and smarter. We are moving into the age of the globally integrated and intelligent economy, society and planet. The question is, what will we do with that?”***

***- Sam Palmisano***



The need for progress is clear.

**170 billion**

Kilowatt-hours  
wasted each year by  
consumers due to  
insufficient power  
usage information.

**4.2 billion lost  
hours**

**2.9 billion  
gallons of gas**

Annual impact of  
congested roadways  
in the U.S. alone.

**100 million**

People worldwide  
pushed below the  
poverty line by  
personal healthcare  
expenditures.

For governments, this means leading in the face of global challenges brought on by key drivers.

### **CHANGING DEMOGRAPHICS**

Median ages are rising in the developed countries of Italy, Germany and Japan, but dropping in developing ones such as India.

### **RISING ENVIRONMENTAL CONCERNS**

Societies and governments are becoming more attuned to what the earth can provide and what it can tolerate.

### **GROWING THREATS TO SOCIAL STABILITY AND ORDER**

From terrorism to armed conflict to pandemics to natural disasters, the character of threats is changing.

### **ACCELERATING GLOBALIZATION**

Countries and societies are becoming more economically interdependent across social, political and cultural boundaries, as illustrated by current economic conditions.

### **EVOLVING SOCIETAL RELATIONSHIPS**

Today, governments are expected to deliver results and value through secure, private services that are available anywhere at any time.

### **EXPANDING IMPACT OF TECHNOLOGY**

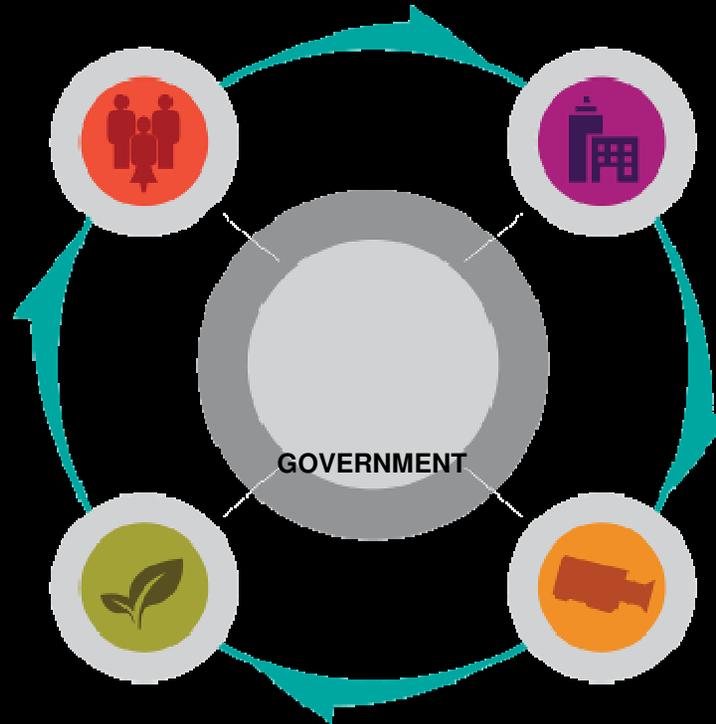
The adoption of the Internet is remaking the landscapes of business, healthcare and government.

Today's imperative: Managing within the current global financial and economic crisis in a way that begins to solve the above challenges and lay a foundation to build a better future.

# Smarter governments are working toward...

## CITIZEN-CENTERED EXPERIENCES

Connecting people to programs based on individual needs—achieving sustainable outcomes while reducing operational costs and maximizing taxpayer value.



## GOVERNMENT ACCOUNTABILITY

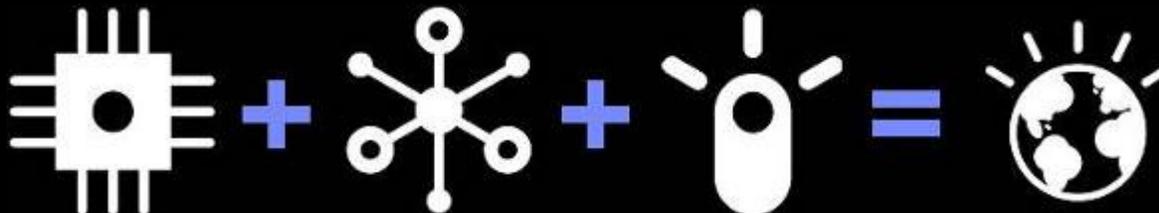
Leveraging business intelligence and planning to improve insight and elevate performance with visibility and control.

## GREEN GOVERNMENT FOR A GREENER PLANET

Deploying environmentally responsible operations, from energy efficiency and conservation to transportation management and the pursuit of renewable resources.

## SENSE AND RESPOND CAPABILITIES

Enabling defense and law enforcement organizations to achieve situational awareness, increased speed of command and combat superiority.



The opportunity for progress is clear.

**15%**  
reduction in  
peak loads

**Utility networks:**  
Pacific Northwest  
National Laboratory

Consumers decreased their overall peak load on the grid by 15% when offered the opportunity to save an average of 10% on their electricity bills.

**20%**  
less traffic

**Traffic system:**  
Stockholm, Sweden

The city cut traffic by 20%, lowered emissions by 12% and reported 40,000 additional daily users of public transportation.

**\$30 million**  
in cost  
savings

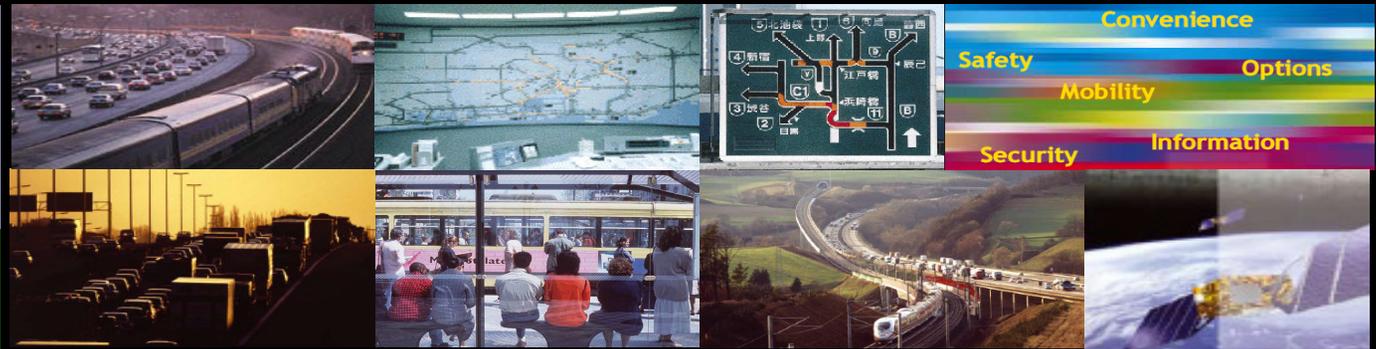
**Smarter healthcare:**  
University of Pittsburgh  
Medical Center

This renowned academic medical center projects a \$30 million reduction in capital and operating cost reductions over eight years, enabling it to meet an ambitious clinical agenda

# Smarter Transportation: IBM Intelligent Transportation Systems

## Innovation & Business Transformation Consulting

- Holistic analysis of ITS projects using IBM maturity model
- Focus on transport authority's IT framework: use of open standards, SOA
- Enable common solution components e.g. CRM, payment systems, enforcement
- Framework for future solutions, e.g. parking management, Pay As You Drive insurance



## Road User Charging and Tolling (RUC)

- Technology and services assets that scale across highway / city / national schemes
- Design, build and operate schemes
- On board units, detection and validation, software platform/rating engine, financial clearing house, Business Process Services

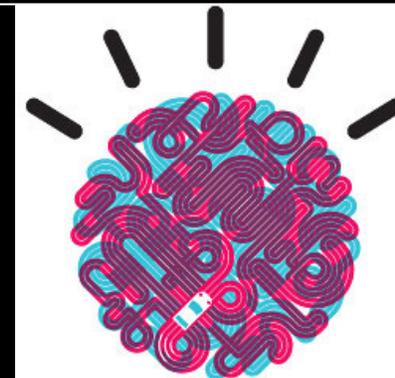
## Integrated Fare Management (IFM)

- Transit payment system
- Cross-modal / inter-modal capability
- Universal/Integrated transportation accounts
- Extendable to other services, e.g. parking, retail, identification

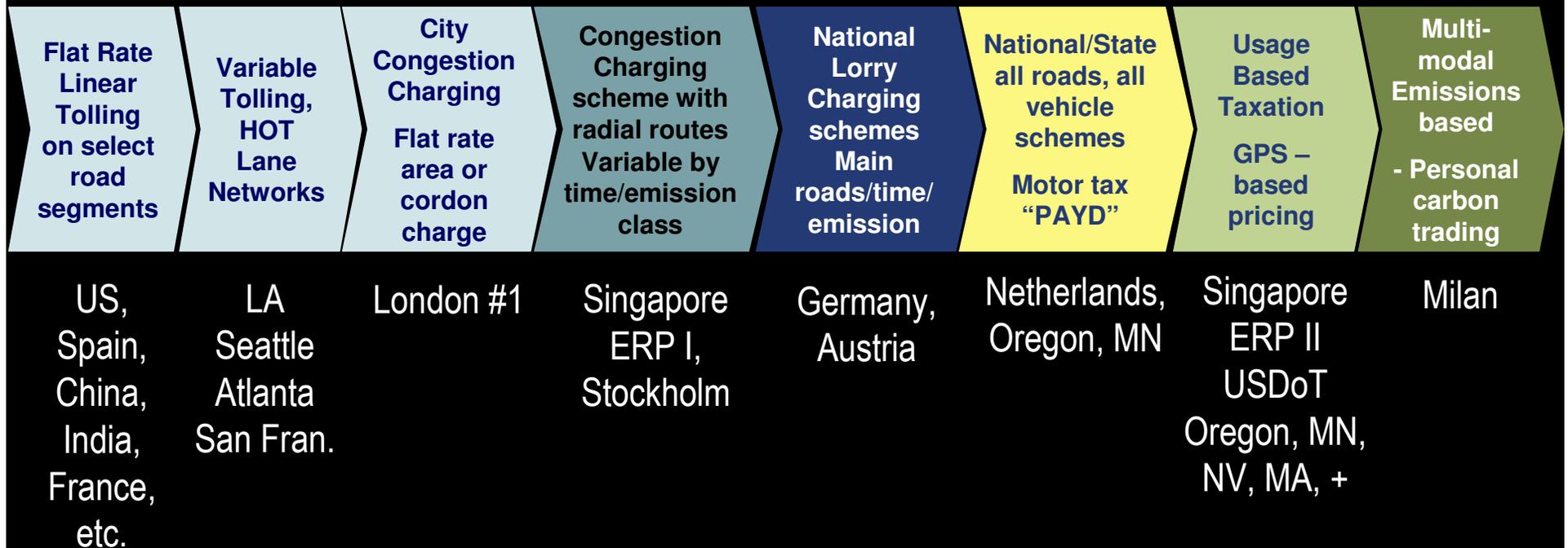
## Transport Info Management (TIM)

- End-user traveler advice e.g. internet, 511, PDAs etc
- Asset Management
- Emergency Management
- Network Analytics and Optimization
- Cross-modal / inter-modal information

# Smarter Tolling



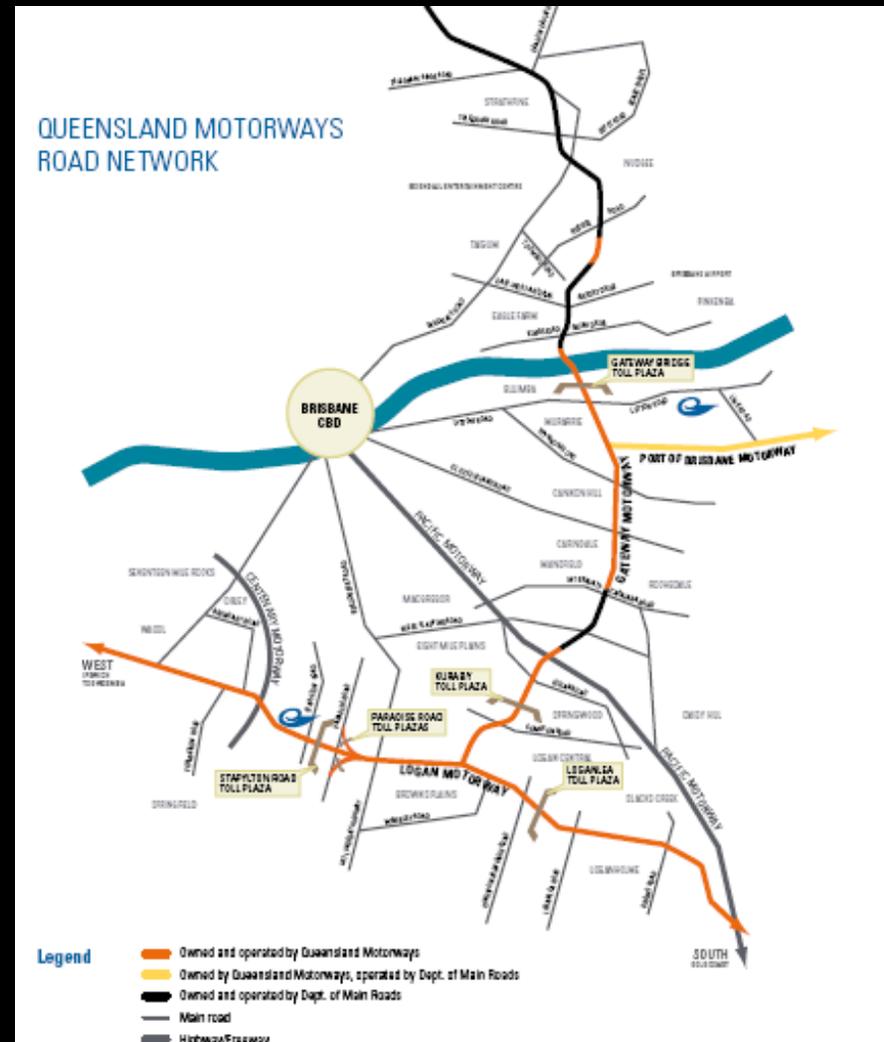
# Road User Charging – Technology Enabled Policy Implementation



# Smarter Tolling in Brisbane, Australia

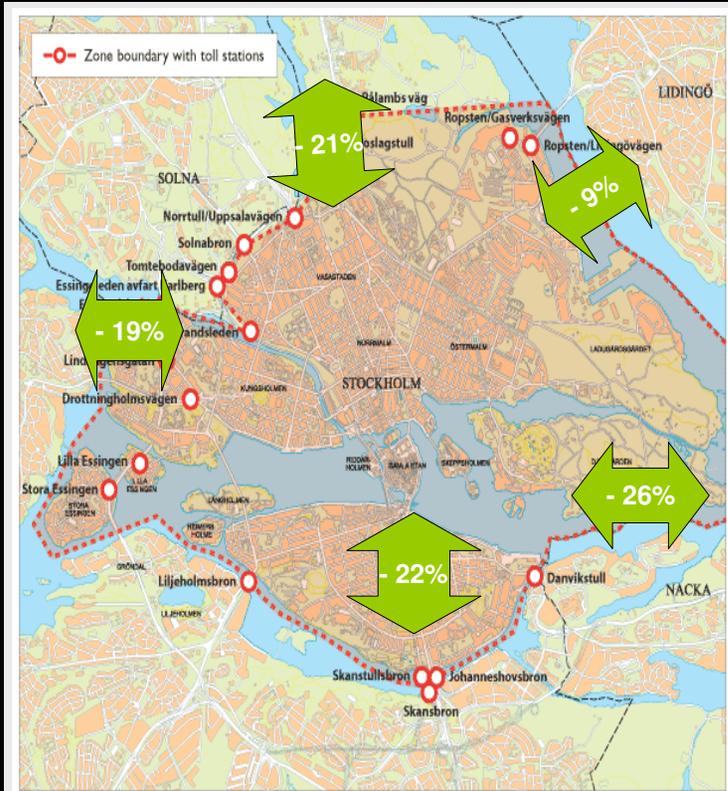


- Queensland Motorways, Ltd. is Australia's Largest Toll Road & Bridge DBMO
- Over 69 million vehicles now travel on their road network; in 2008/09, over 76 million vehicles are anticipated
- Shared Services Tolling System that integrates multiple toll systems to run on a single system
- Move from cash toll-booths to open road/free-flow tolling
- Built on IBM's Stockholm / London ITS Model



# Stockholm Congestion Charging Program

Complex solution deployed in 13 months with a fixed launch date under significant public scrutiny



- Trial period Jan 2006 – July 2006
- Referendum September 2006
- Decision made to make scheme permanent
- Re-started August 2007

## Volumes/Scale

- 81 charged lanes; 350,000 passages per day = 850,000 photos per day
- 1,000,000 user accounts = 110,000 payments per day
- 1,000 - 2,000 calls per day

## Performance

- 99.96 % system availability
- Very low number of failed charges

## Impacts

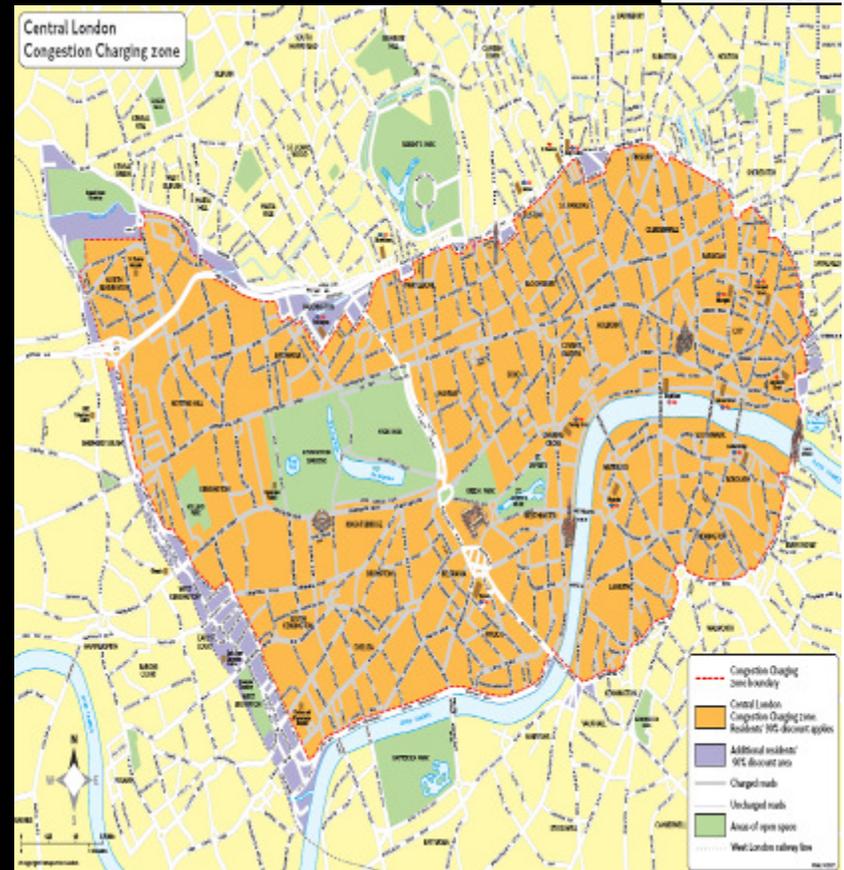
- Traffic reduced by 22%; 15% reduction in emissions
- 40,000 new daily public transport passengers
- Bus time tables redesigned for increased average speed
- Inner-city retailers trade up 6%
- Attitudes changed from negative to positive



## Stockholm Video

## London Congestion Charging Scheme

- **A zone-based congestion charging system with operating hours of 7AM – 6:30PM. There is a charge to drive or to park on a public street in the charging zone**
- **The charge is £8 if it is pre-paid or paid by midnight on the travel day or £10 if you pay by midnight the following day.**
  - A fine of £100 is assessed if congestion charge is not paid by midnight the following day
- **Multi-channel payment options:**
  - Online, retail outlets, mail, telephone, SMS text message from a mobile phone, internet kiosks
- **The charge is enforced by a network of cameras. The cameras are not a charging mechanism, but primarily an enforcement mechanism**



## Eindhoven Usage Based Pricing Proof of Concept

- **IBM and partners running a 6 month long Proof-of-Concept in support of Usage-Based Road Pricing schemes**
- **20-50 cars outfitted with GPS-based On Board Units**
- **IBM solution processing all GPS-based data to determine usage-based tariff to be collected**
- **Key elements of Proof-of-Concept**
  - Data Integrity & Privacy
  - GPS-based technologies - interoperability with multiple GPS systems (SatNav, Specialized On Board Units, etc.)
  - Back-office system scalability

