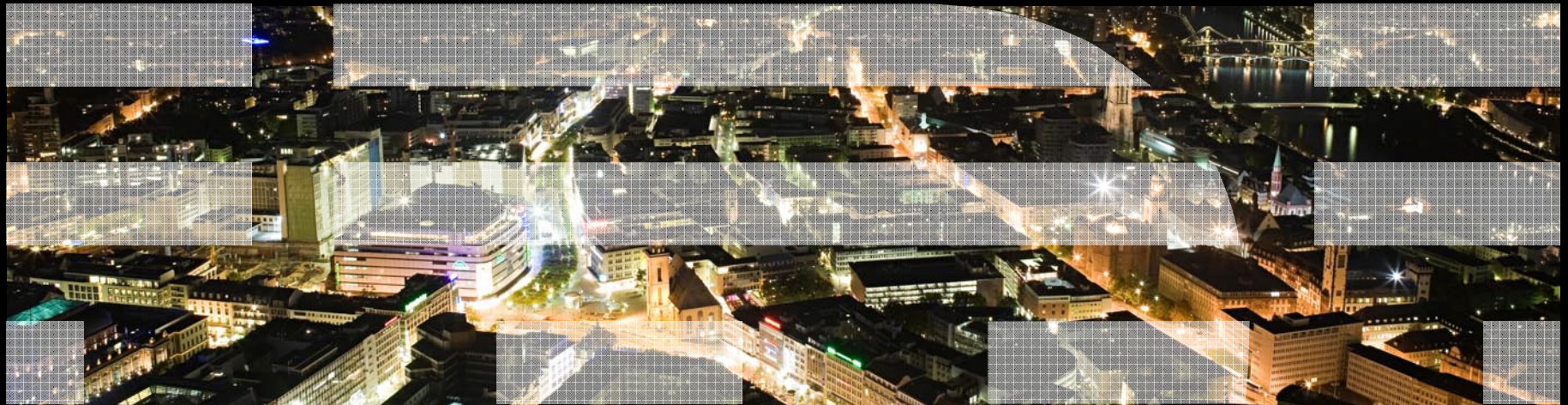Moving Minds: The Next Transportation Infrastructure
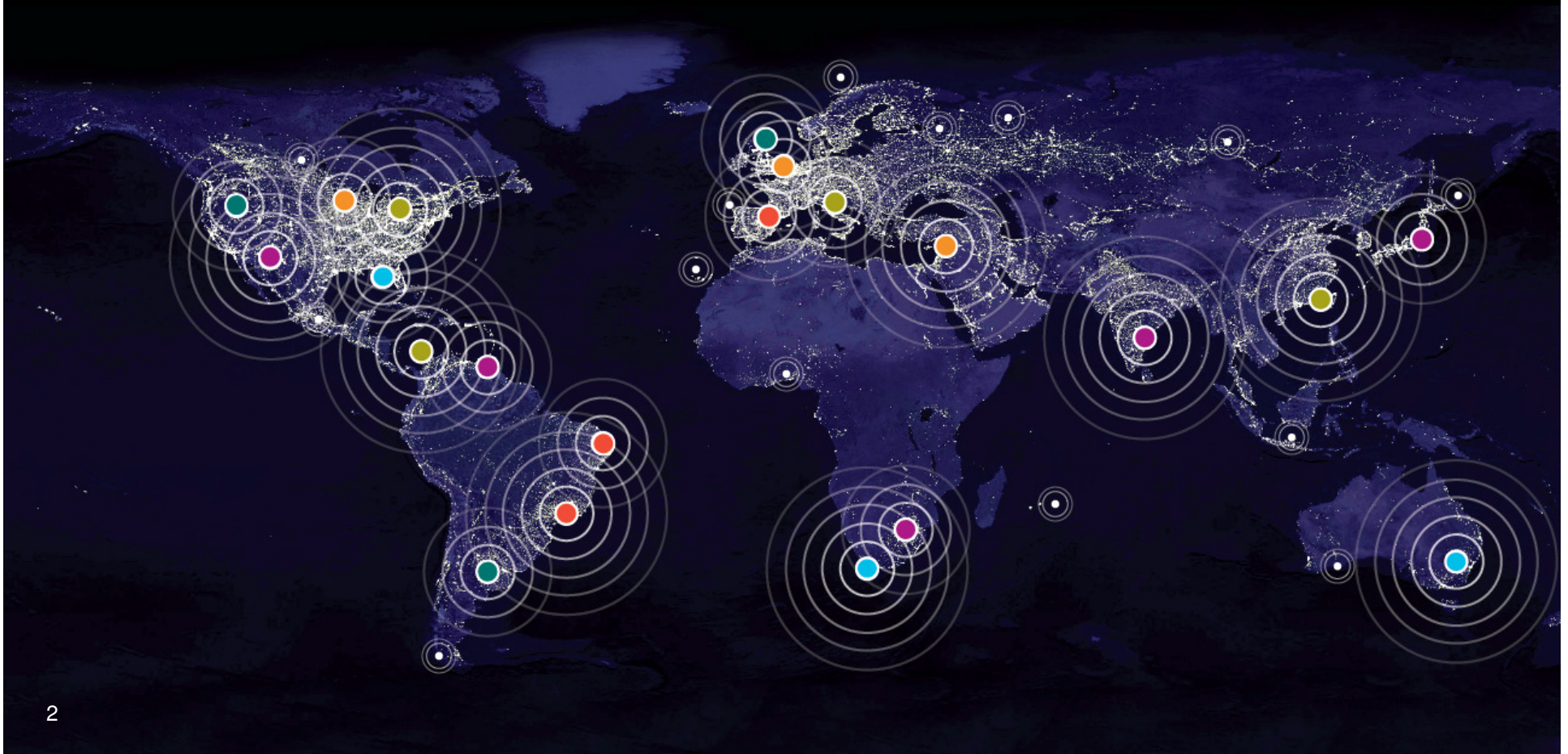
# Intelligent Transportation Systems

Smarter Transportation

Riz Khaliq, IBM Public Sector

IBM

A planet of smarter cities: In 2007, for the first time in history, the majority of the world's population—3.3 billion people—lived in cities. By 2050, city dwellers are expected to make up 70% of Earth's total population, or 6.4 billion people.
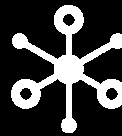
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Smarter Transportation:
A Key Component of a Smarter City
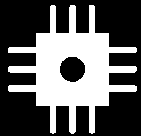
INSTRUMENTED

We now have the ability
to measure, sense and
see the exact condition
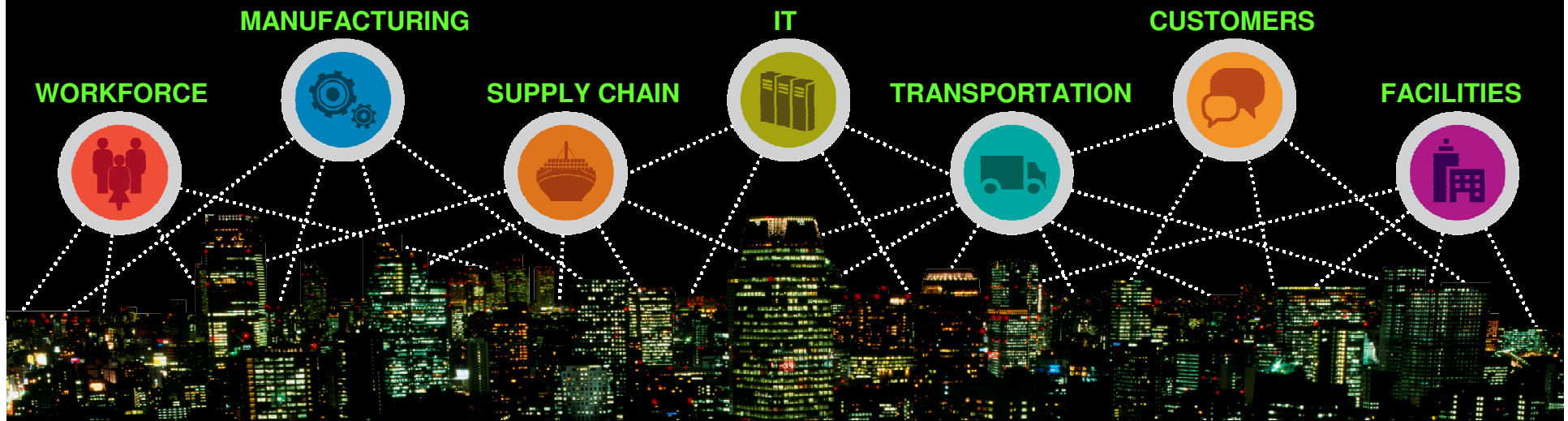of practically everything.

INTERCONNECTED

People, systems and
objects can communicate
and interact with each
other in entirely new ways

INTELLIGENT

We can respond to changes
quickly and accurately,
and get better results
by predicting and optimizing
for future events.

MANUFACTURING

IT

CUSTOMERS

WORKFORCE

SUPPLY CHAIN

TRANSPORTATION

FACILITIES

Transportation Influencers Model

Traditional

Opportunity to innovate

Macro Demand Influencers

Information & Customer Management

Transport Infrastructure Supply

Demand Management

Population & Economy

Spatial Development

Environment

Strategy & Planning

Funding mechanisms

Build Infrastructure

Simulation & Modeling

Dynamic Information Management

Customer Interaction

Mobile Workforce

Innovative Pricing

Ride Sharing and Transit Incentives

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Multimodal Transportation Maturity Model

		Level 1 Silo	Level 2 Centralized	Level 3 Partially Integrated	Level 4 Multimodal Integrated	Level 5 Multimodal Optimized
strategic planning	**Planning**	Functional Area Planning (single mode)	Project-based Planning (single mode)	Integrated ... wide planni... mode)		Integrated regional multimodal planning
	Performance Measurement	Minimal	Defined metrics by mode	Lim... acro... 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 acc... interaction per mo...	...ner ...s multiple	Integrated multimodal incentives to optimize multimodal use
real-time information creation capability	**Data Collection**	Limited or Manual Input	Near real-time for major routes			System-wide real-time data collection across all modes
	Data Integration	Limited	Networked			Extended integration
	Analytics	Ad-hoc analysis	Periodic, Systematic analysis	...	Detailed analysis in real-time	Multi-modal analysis in real-time
	Payment Methods	Manual Cash Collection	Automatic Cash Machines	Electronic Payments		Multimodal, multi-media (fare cards, cell phones, etc)
real-time intervention capability	**Network Ops. Response**	Ad-Hoc, Single Mode	Centralized, Single Mode	Automat... Mode		Multimodal Real-time Optimized
	Incident Management	Manual detection, response and recovery	Manual detection, coordinated respons... manual recovery		Automated pre-planned multimodal recovery plans	Dynamic multimodal recovery plans based on real-time data
	Demand Management	Individual static measures	Individual me... with long term variability		Dynamic pricing	Multimodal dynamic pricing
	Traveler Information	Static Information	Static trip planning limited real-time a...	...unt-...ription	Location-based, on-journey multimodal information	Location-based, multimodal proactive re-routing

• • • • • •   *"Average" City*

██████   *Top 3 City: range*

████████   *Leading Practice*

IBM Intelligent Transportation Systems Offerings
Encompass a variety of strategies to deliver results

- Transportation Strategy and Planning
- Transportation Maturity Model
- Total Cost of Ownership Model

Transportation Advisory Services

- Integrated payment solutions for multiple transportation modes
- Shared Back office across multiple cities
- Cloud Infrastructure

Integrated Fare Management

ITS Solutions

Innovative Transportation Pricing

- Single Highway/Bridge Tolling
- Network of Tolled Highway (incl. HOT networks)
- City Congestion Charging
- Usage Based Pricing/Taxation

Transportation Information Management

- Improved Network Management
- Real Time Multimodal Traveler Information
- Performance Management and Reporting
- Traffic Prediction and Analytics
- Asset Management
- Visualization
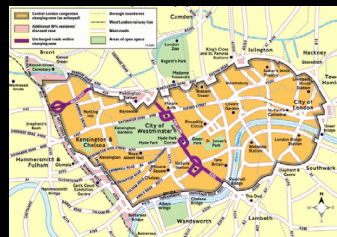
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Selected IBM ITS Projects

Stockholm Congestion Charging

Prime responsibility for the design, implementation and operation of the scheme

London Congestion Charging

Provision of a new enhanced central system and scheme operation for 5 yrs from Nov 09

Singapore Pricing, Traffic Prediction

- Built central system infrastructure in 1998
- Delivered an innovative "real time" traffic prediction tool
- Supporting LTA with trials for the implementation of a full Time Distance Place scheme

Land Transport Authority

Dublin Transit Automatic Fare Collection

- Multimodal fare management system
- Single smart card usable across multiple providers of transportation services
- Project to start in October 2008

Brisbane Electronic Toll Collection

- A shared system that will allow of the centralized operation of five separate toll highways
- Each tolled facility will have the flexibility of setting its own variable toll rates

QUEENSLAND MOTORWAYS

LA County MTA DIOS

- Control inventory without jeopardizing parts availability and service levels
- Reduced inventory by 28% for the Pilot inventory sample of $15.4M

M

Amtrak Reservation Systems

- Support the infrastructure for Amtrak's reservation system as well as the corporation's entire computing infrastructure
- Ticket volumes processed via the Web, telephone, and ticket counter channels, makes it one of the largest systems of its kind in the rail industry.

AMTRAK

Inter-operable Fare Collection Back Office system, Dubai

- System specification
- Procurement and Tender evaluation
- Program management office

هيئة الطرق والمواصلات
ROADS & TRANSPORT AUTHORITY
RTA

Thank You

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