INOVAÇÃO NA INFRAESTRUTURA URBANA

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São Paulo 19 de Setembro 2017

Um Circulo virtuoso para as Cidades

Cidades In

Wi-Fi

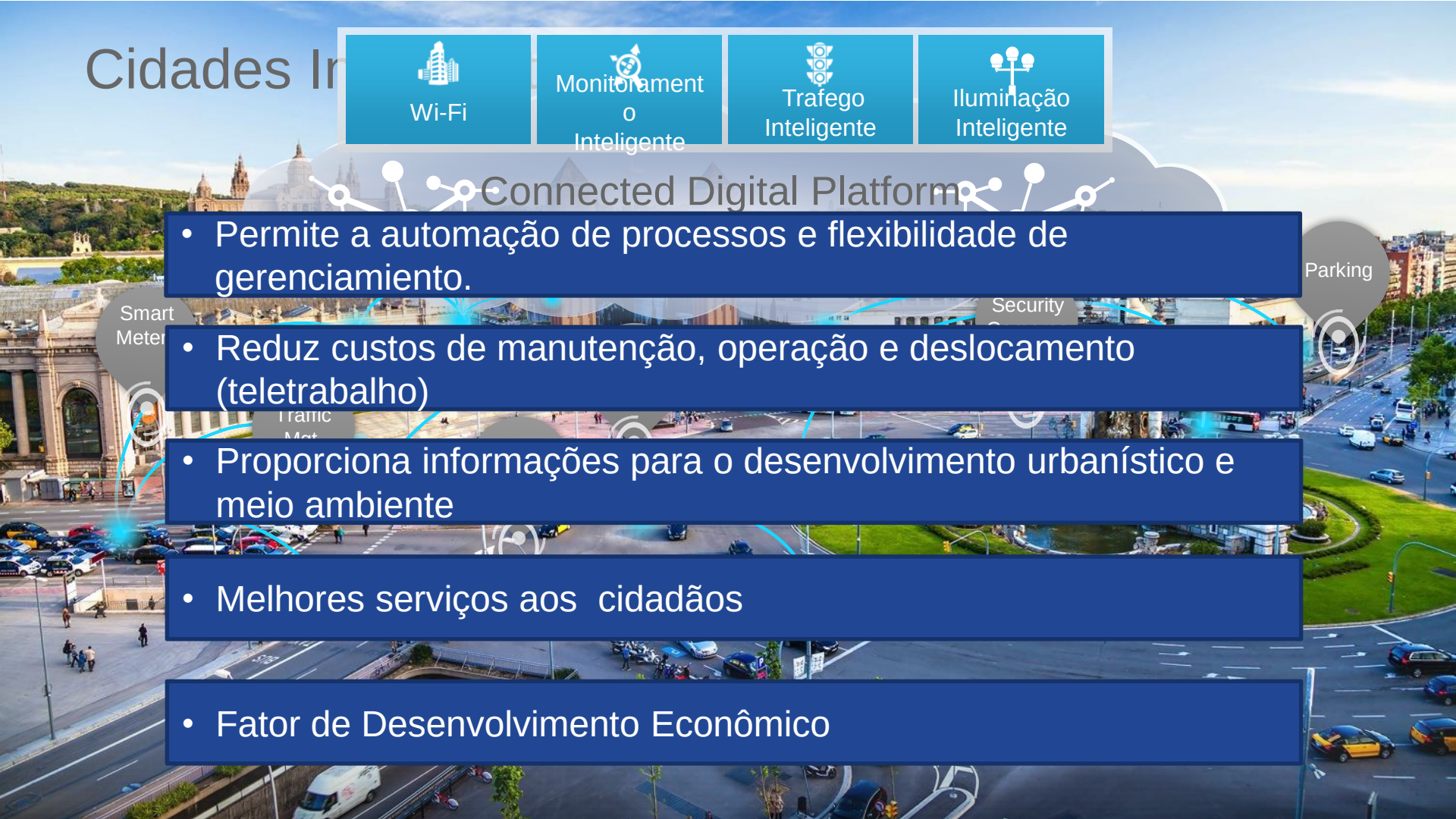
Monitoramento Inteligente

Trafego Inteligente

Iluminação Inteligente

Connected Digital Platform

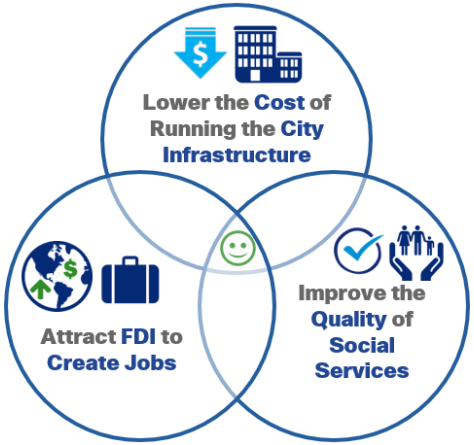
- Permite a automação de processos e flexibilidade de gerenciamiento.
- Reduz custos de manutenção, operação e deslocamento (teletrabalho)
- Proporciona informações para o desenvolvimento urbanístico e meio ambiente
- Melhores serviços aos cidadãos
- Fator de Desenvolvimento Econômico



Smart Cities is a ***Journey***, not a Destination

It is not about Technology, it is about the People, the Citizens

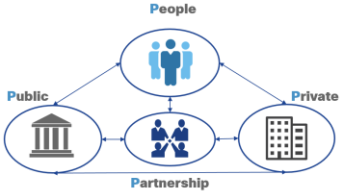
How do you deliver a better city to the citizens?



1. Initiative across all departments to get buy-in

2. Ecosystem

3. PPPP



4. Cross-Department Budget

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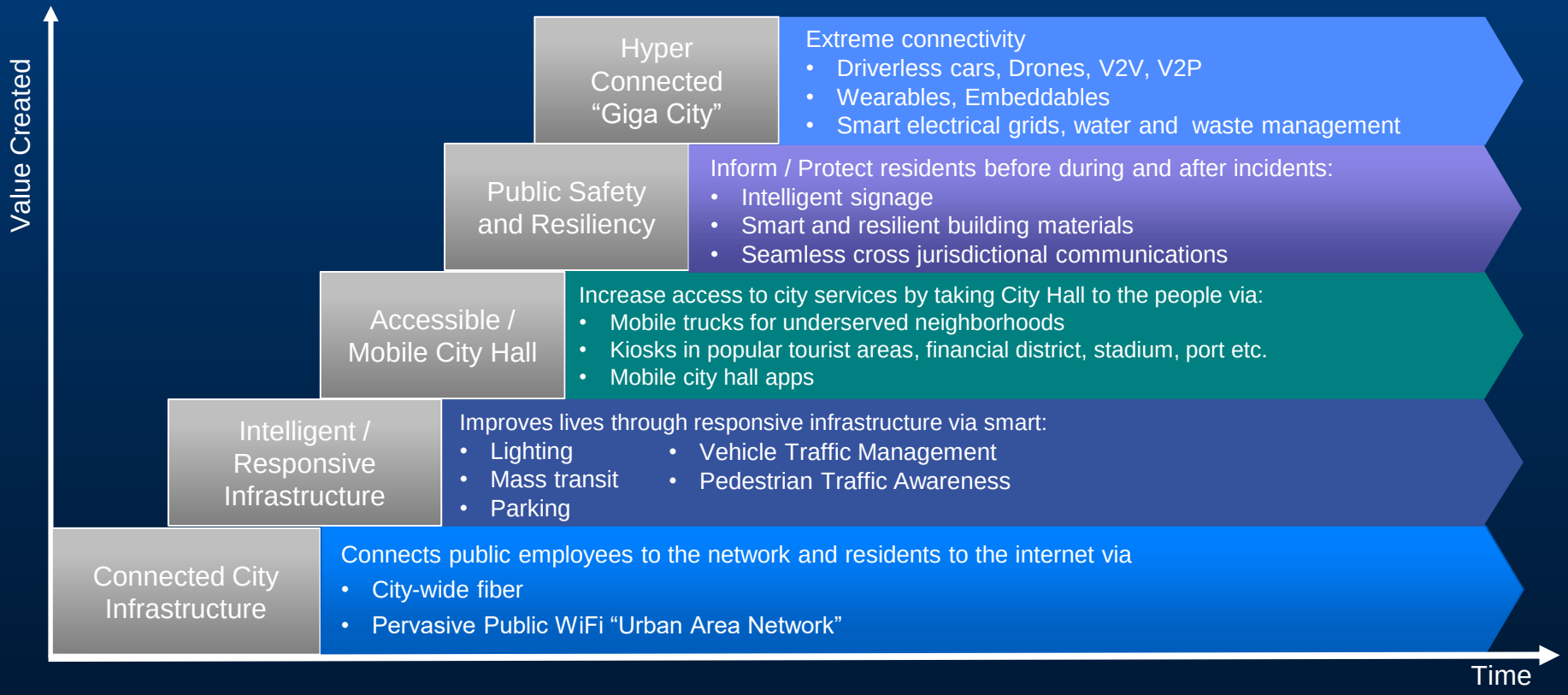
Digital City: The Journey



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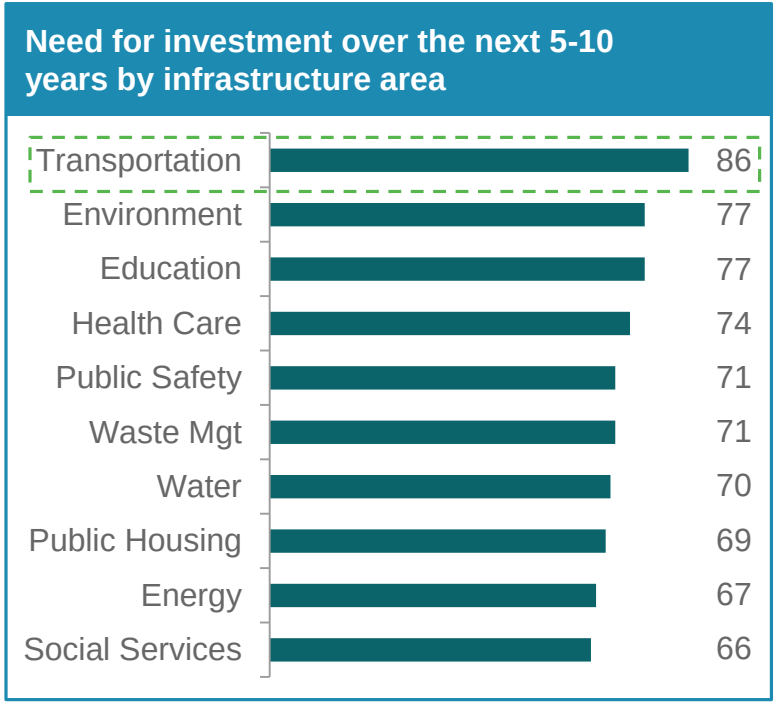
Connected Roadways

Trends and Challenges

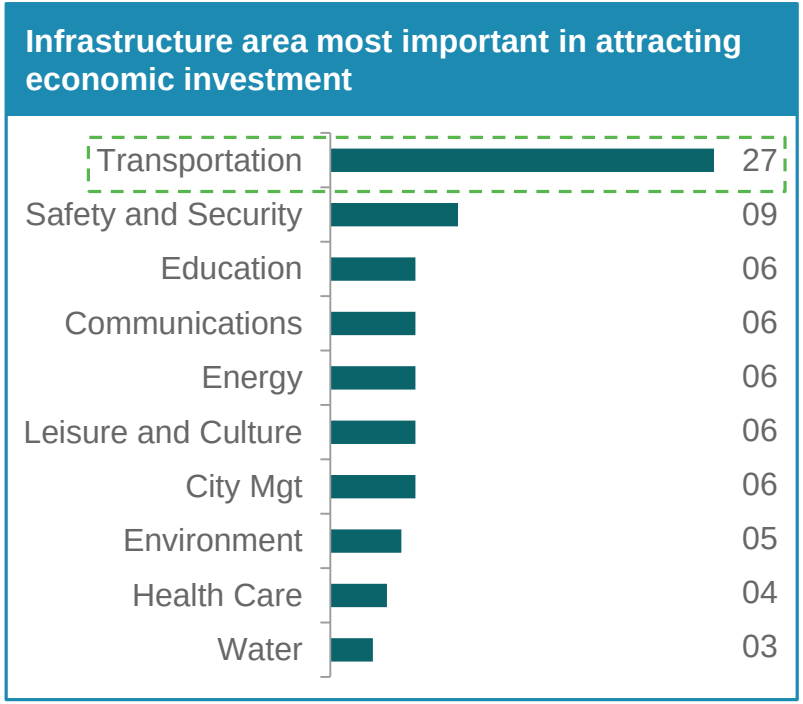
August 13th 2017

Transportation: The Top Priority for Cities

Need for investment over the next 5-10 years by infrastructure area



Infrastructure area most important in attracting economic investment



Source: WEF 2009, Survey of public and private sector stakeholders across world's top 25 cities

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Global Trends Driving Changes in Transportation

Technology

Increasing Connectivity

Network Convergence

IT in the Operational Domain

Socio Economic

Growing pressure to provide safer roads + mass transit

New revenue opportunities for roadside/ station services

Increased urbanization & congestion

Policy

Safety & Security Mandates

Disparity between regions & countries

Sustainability

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Today's Transportation Challenges

Safety

- More than a million people die each year on the world's roads.
- Over 33,000 highway deaths and 5.6 million crashes occur in the U.S. alone.
- Accidents on roadways are leading cause of death for ages 15-29.

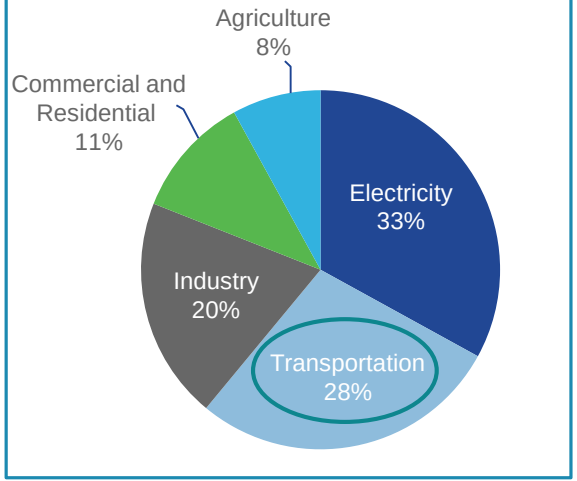
Mobility

- Now over one billion cars are on roads worldwide.
- Congestion causes 5.5 billion hours of travel delay.
- $101 billion cost of urban congestion in U.S.
- Drivers in top ten congested cities in UK waste over 55 hours per year in traffic

Environment

- 2.9 billion extra gallons of wasted fuel in U.S. due to congestion
- Transportation creates nearly 1/3 of greenhouse gas emissions in the U.S.

Total Greenhouse Gas Emissions by Economic Sector in 2011



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São Paulo is driving the traffic modernization

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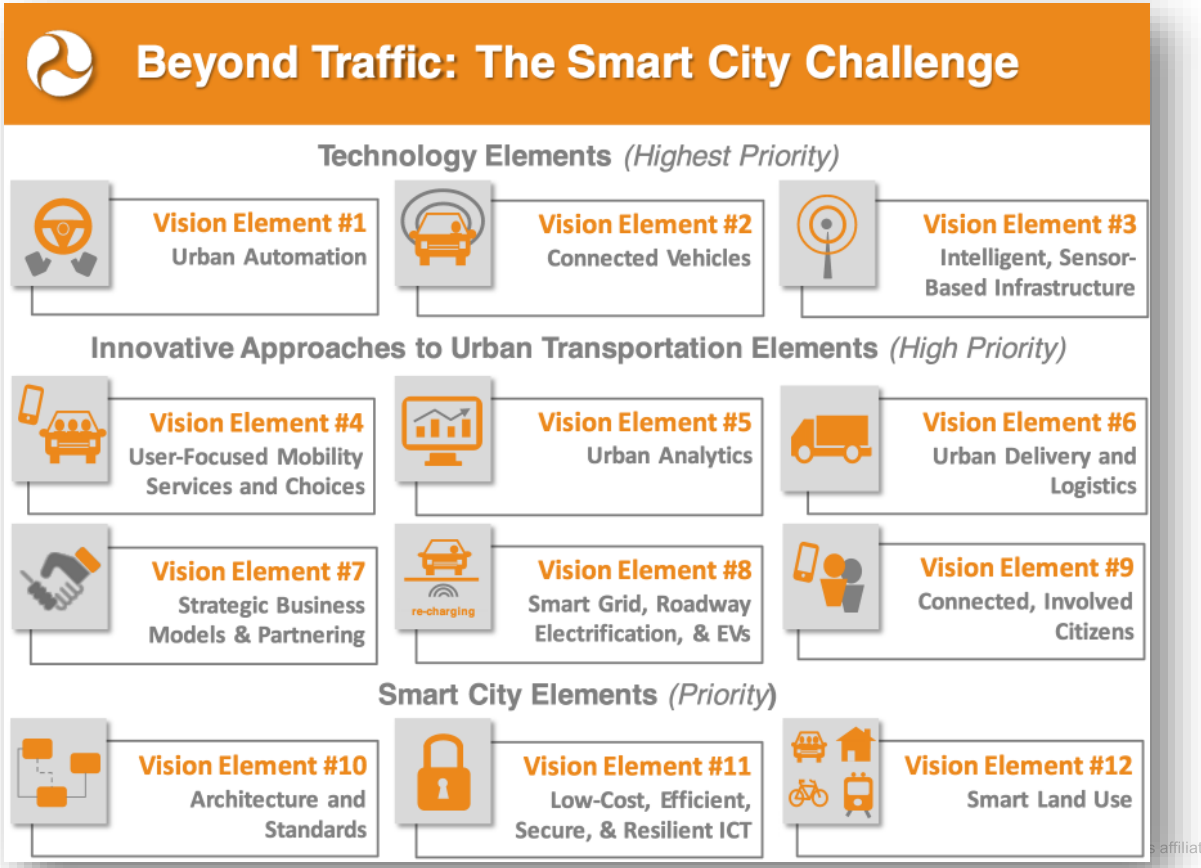
Transit Infrastructure as a driver for SMART CITIES



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Why Going "Digital" is Important For Transportation Now

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City Wide Network – Phase 1 – Foundation for Future Services

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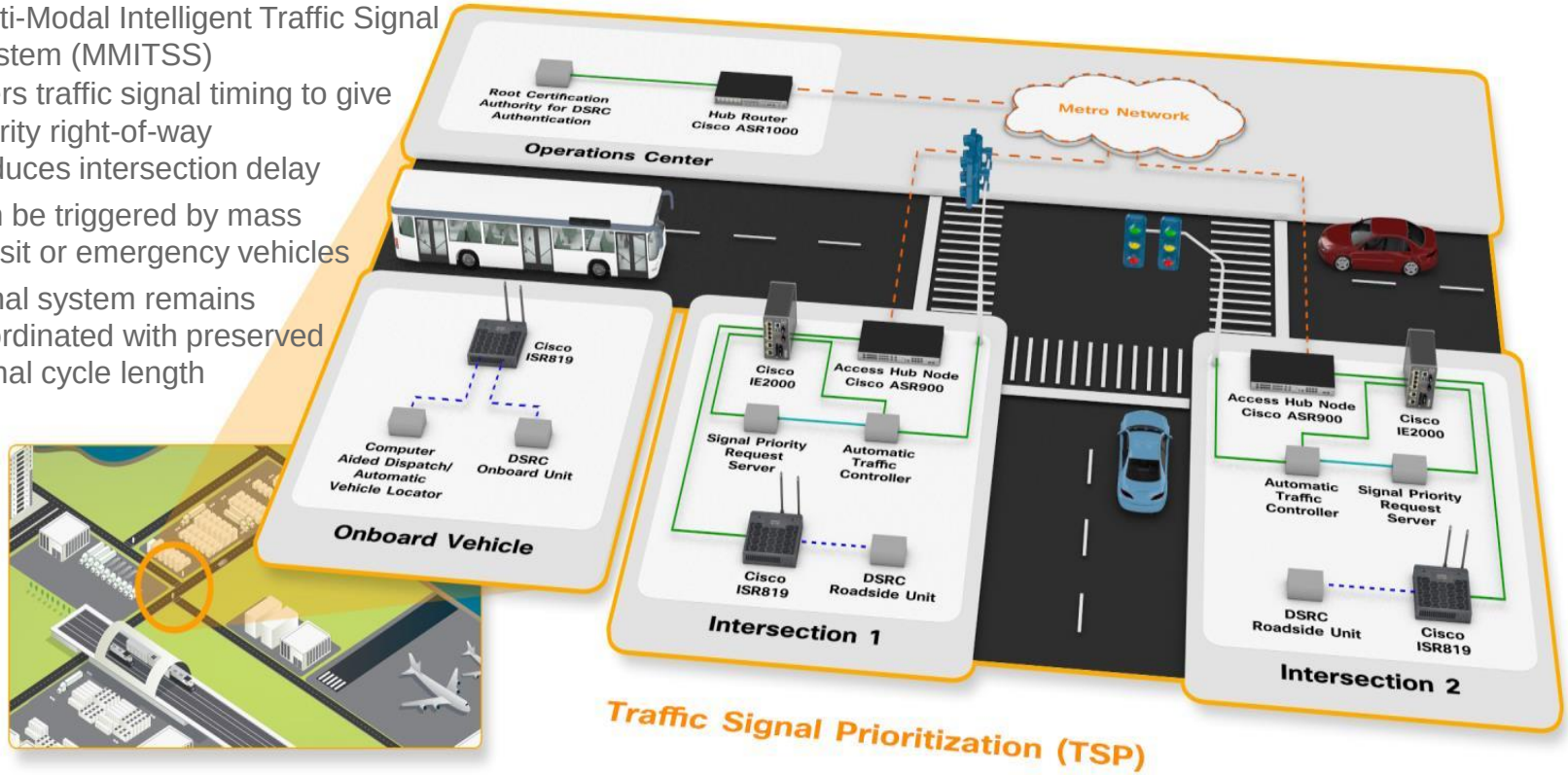
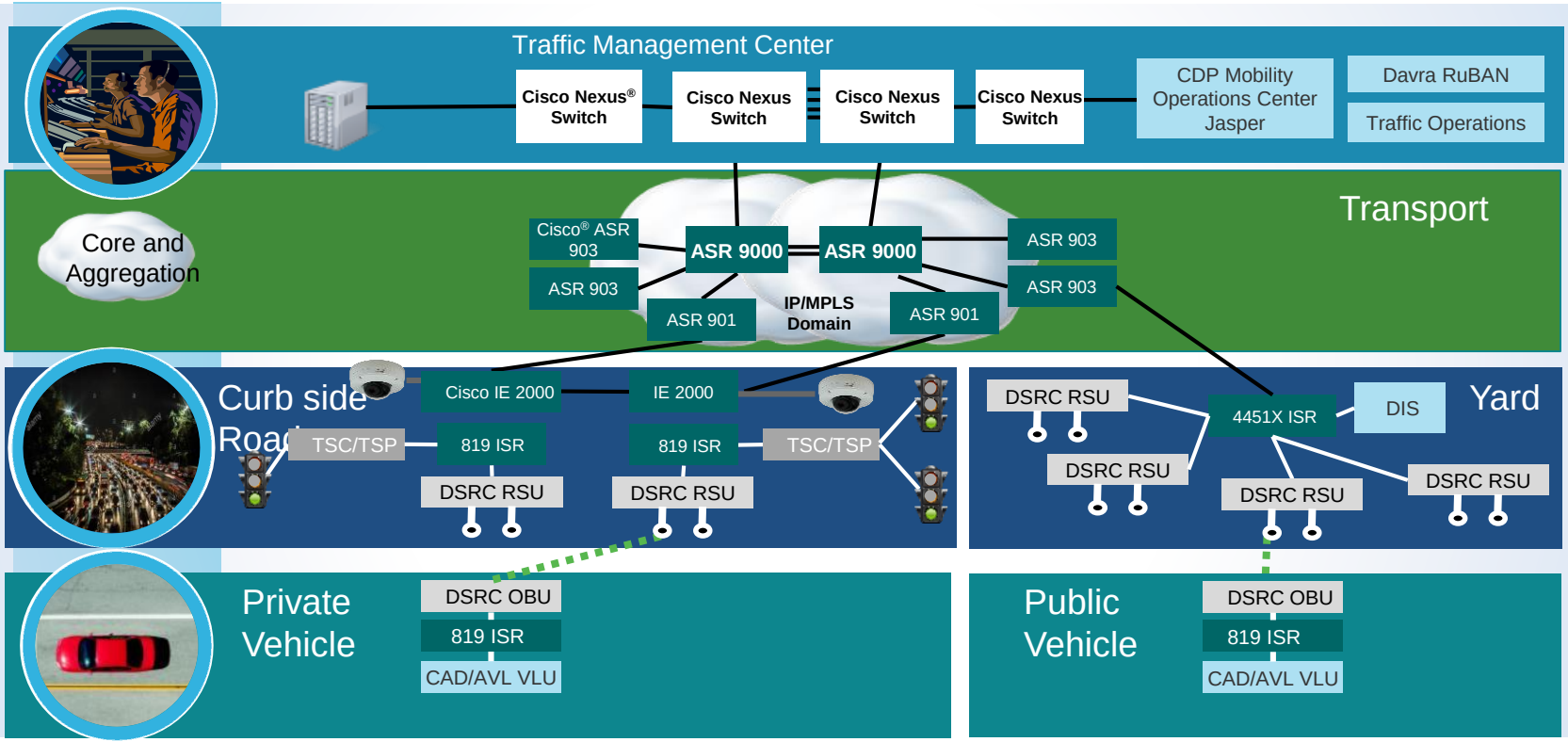
Integrated Traffic Signal Prioritization (TSP) – Phase 2 – Integration & Coordination

- Multi-Modal Intelligent Traffic Signal System (MMITSS)
- Alters traffic signal timing to give priority right-of-way
- Reduces intersection delay
- Can be triggered by mass transit or emergency vehicles
- Signal system remains coordinated with preserved signal cycle length



Connected Vehicle Network – Phase 3 – Future Proof Infrastructure



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Intelligent Transportation Architecture

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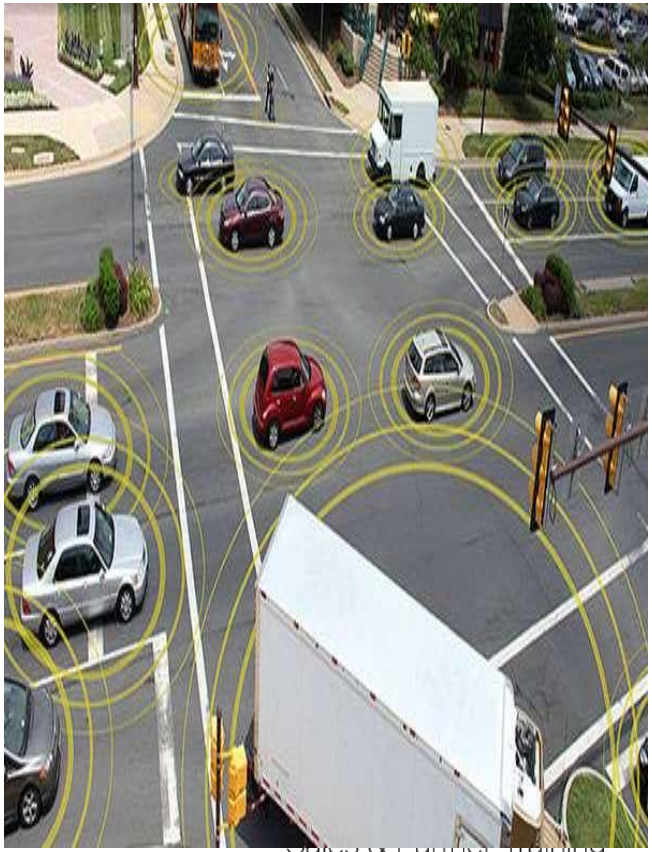
Dedicated Short Range Communication (DSRC)

- Two-way secure wireless communication system
  - short to medium range
- Standardization
  - IEEE802.11p used for DSRC. IEEE 1609 WG defines DSRC wireless communications standards for Wireless Access in Vehicular Environments (WAVE)
  - SAE J2735 defines the messaging schema implemented over DSRC to enable V2I and V2V data exchanges
  - SAE J2945 defines minimum performance requirements for DSRC systems
- Benefits
  - Designated License Bandwidth
  - Fast Network Acquisitions
  - Low Latency
  - High Reliability
  - Priority of safety application
  - Interoperability
  - Security and Privacy



ITS Global Standards

Center-to-Center
IEEE 1512.x, TMDD
Emergency Management
Traffic management

Center-to-Field
NTCIP
Traffic management

Vehicle-to-Vehicle
IEEE 802.11P, IEEE 1609.x, SAE J2735
Cooperative collision avoidance

In-Vehicle
SAE J1760, SAE J2366/x, SAE J2395
Data Collection
Information display

Vehicle-to-Infrastructure
ASTM E2213, IEEE 802.11P, IEEE 1609.x, SAE J2735
Road hazard alerts
Traveler information

Reference Projects New York City

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