U.S. Department of Transportation
Office of the Assistant Secretary for Research and Technology

Smart Cities and Transportation

New Jersey Transportation Planning Authority
A Symposium on Emerging Technology

April 26th, 2017

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ITS Joint Program Office, OST-R
U.S. Department of Transportation

Overview

- Transportation Challenges
- USDOT Multimodal Collaboration
- ITS Strategic Plan
  - Connected Vehicles
  - Automated Vehicles
  - Smart Cities

Today's Transportation Challenges

Safety

- 35,092 highway deaths in 2015
- 6.3 million crashes in 2015
- Leading cause of death for ages 5-24

Mobility

- 6.9 billion hours of travel delay
- $160 billion cost of urban congestion

Environment

- 3.1 billion gallons of wasted fuel
- 56 billion lbs of additional CO_2

Data Sources:

2015 Motor Vehicle Crashes: Overview, National Highway Traffic Safety Administration (August 2016); 2015 Annual Urban Mobility Report, Texas Transportation Institute (Aug 2015); Centers for Disease Control

Intelligent Transportation Systems Joint Program Office

U.S. Department of Transportation
Federal Highway Administration

U.S. Department of Transportation
Maritime Administration

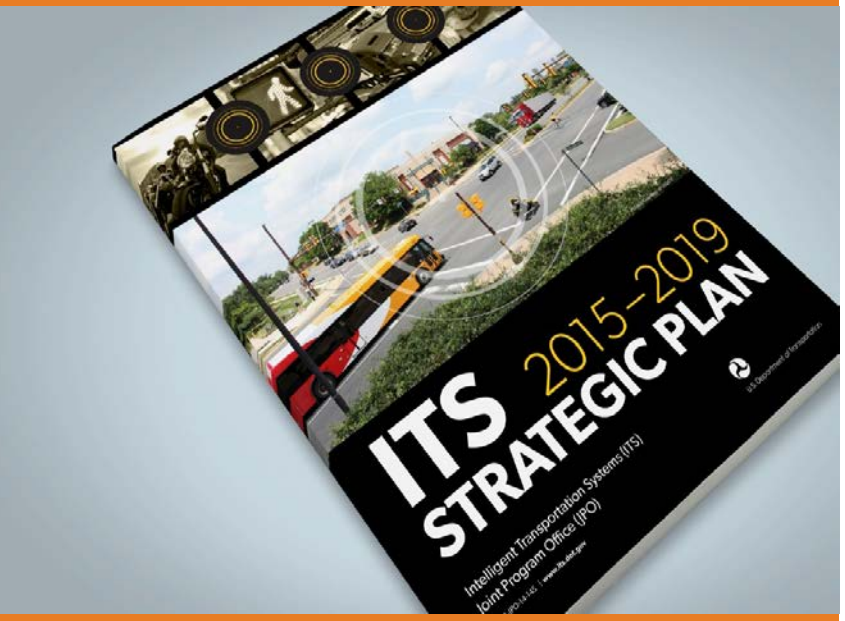
U.S. Department of Transportation
Federal Transit Administration

U.S. Department of Transportation
Federal Motor Carrier Safety Administration

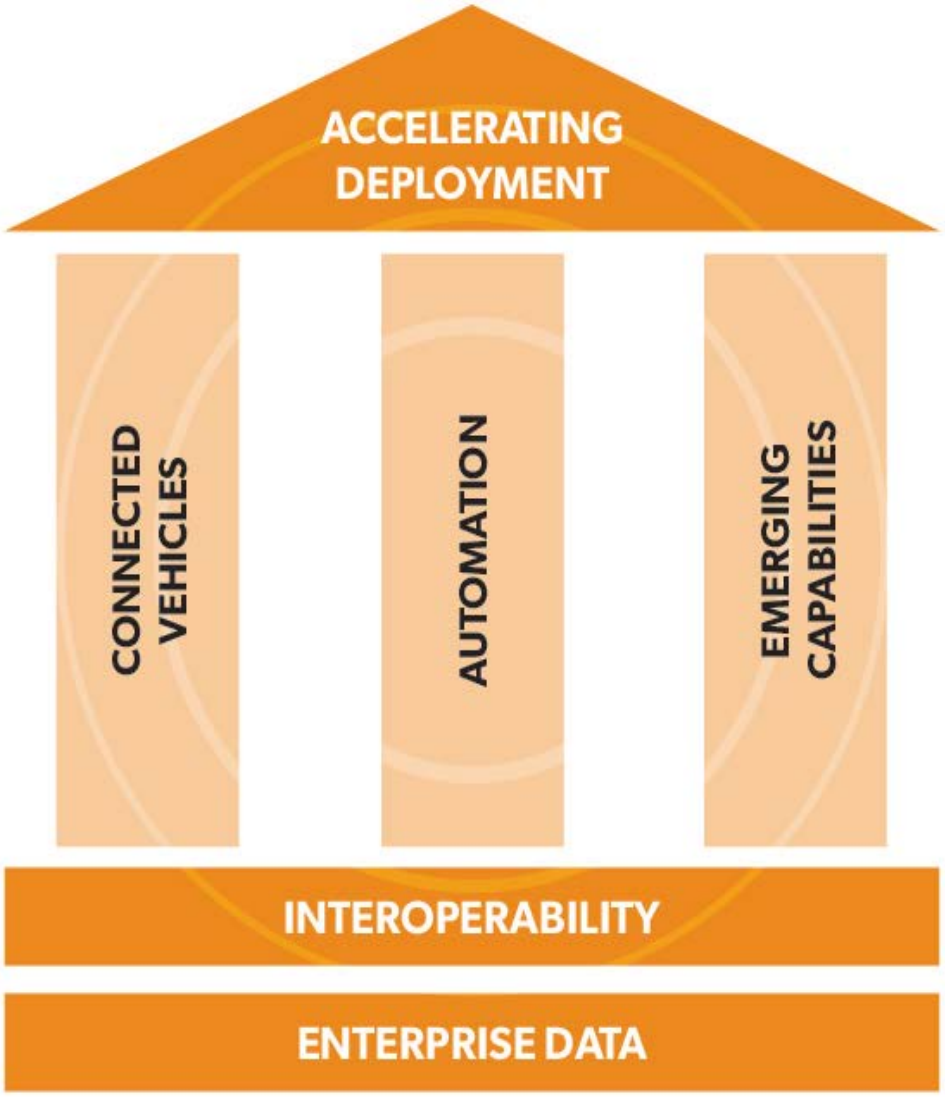
U.S. Department of Transportation
National Highway Traffic Safety Administration

- V2V Rulemaking
- Standards
- V2I Guidance
- Cybersecurity
- Standards
- Big Data
- SCMS: Security Credential Management System
- Training
- Connected Vehicle Pilots
- Research Grants
- Research
- Evaluation

Strategic Plan
Program Categories

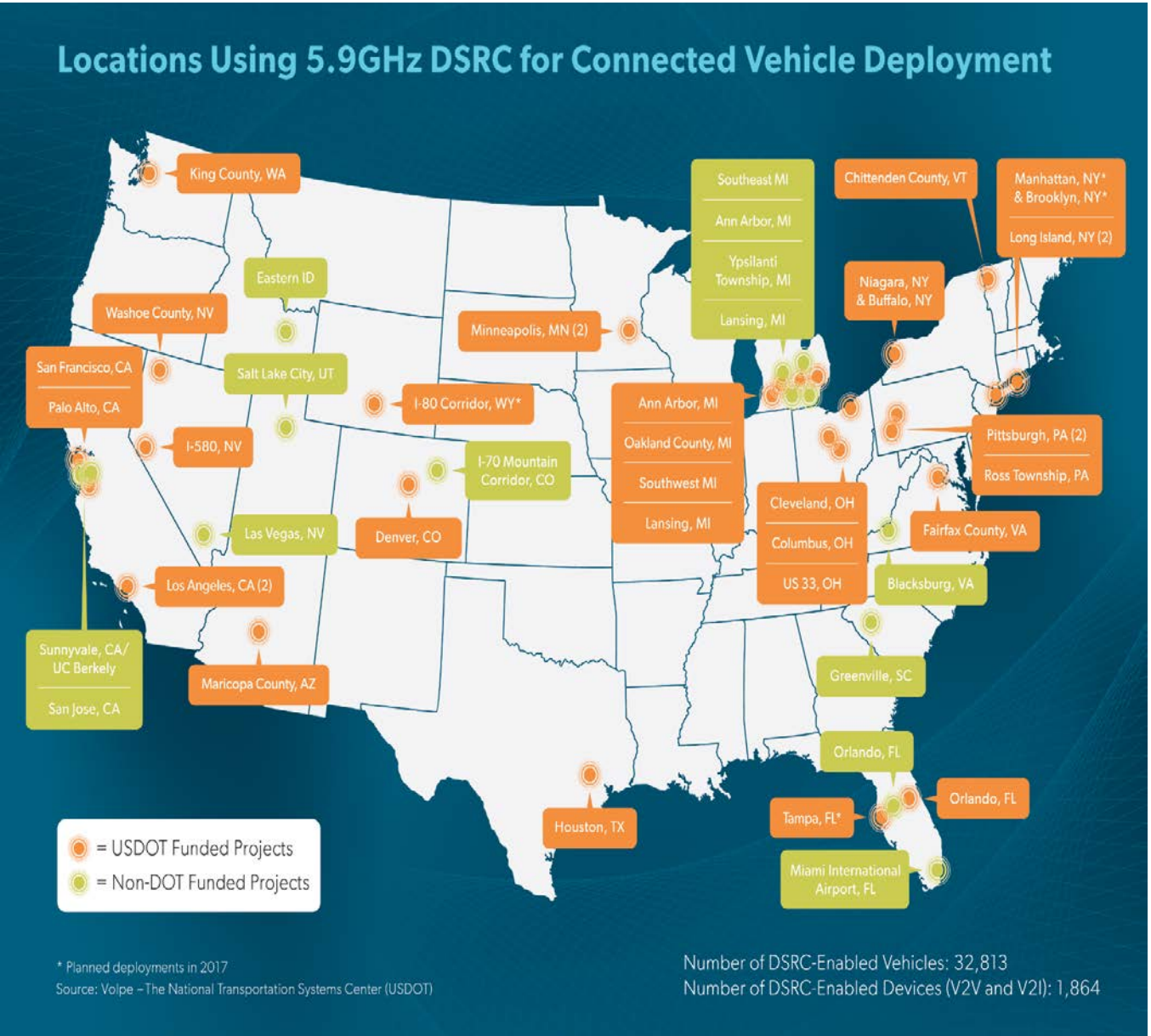


http://its.dot.gov/strategicplan/index.html




Imagine a Transportation System in which
VEHICLES CAN SENSE & COMMUNICATE
Things That You Can't.

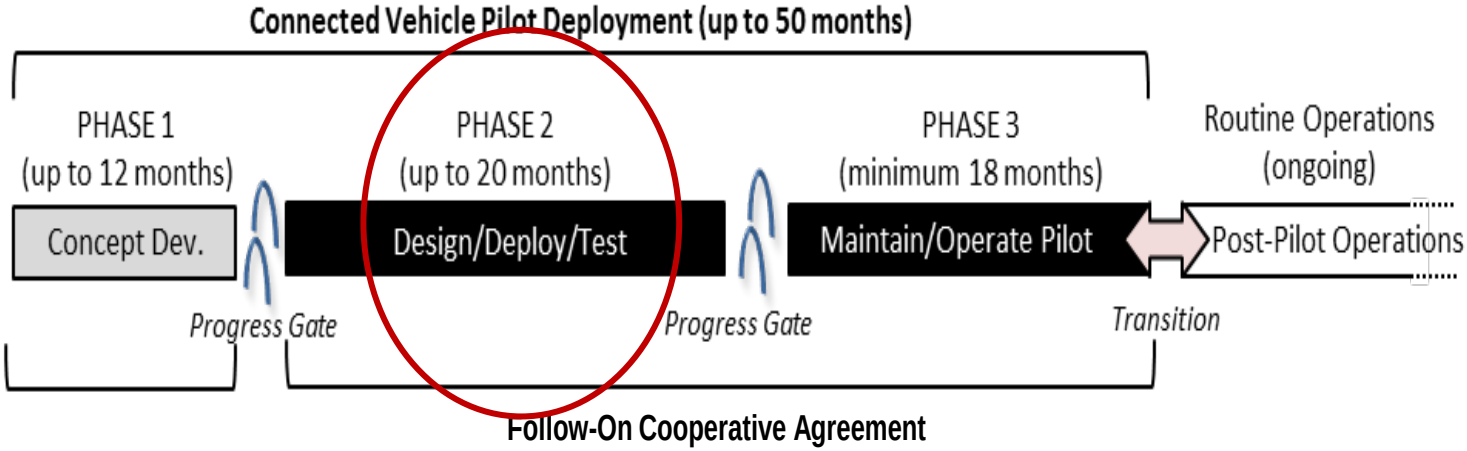
Connected Vehicle Deployment in the U.S.



USDOT Deployment Efforts:

- NHTSA V2V Light Vehicle Notice of Proposed Rulemaking
- Connected Vehicle Pilots: New York City, Tampa, and Wyoming
- Professional Capacity Building: Webinars, Peer-to-peer, and Classroom Training
- Open Data Resources
- Connected Vehicle Help Desk
- Security Credential Management System
- Connected Vehicle Architecture
- V2I Deployment Coalition
- 5.9 GHz UNII Device Testing
- SmartColumbus
- FAST Act: ATCMTD Initiative

Connected Vehicle Pilot Deployment Program



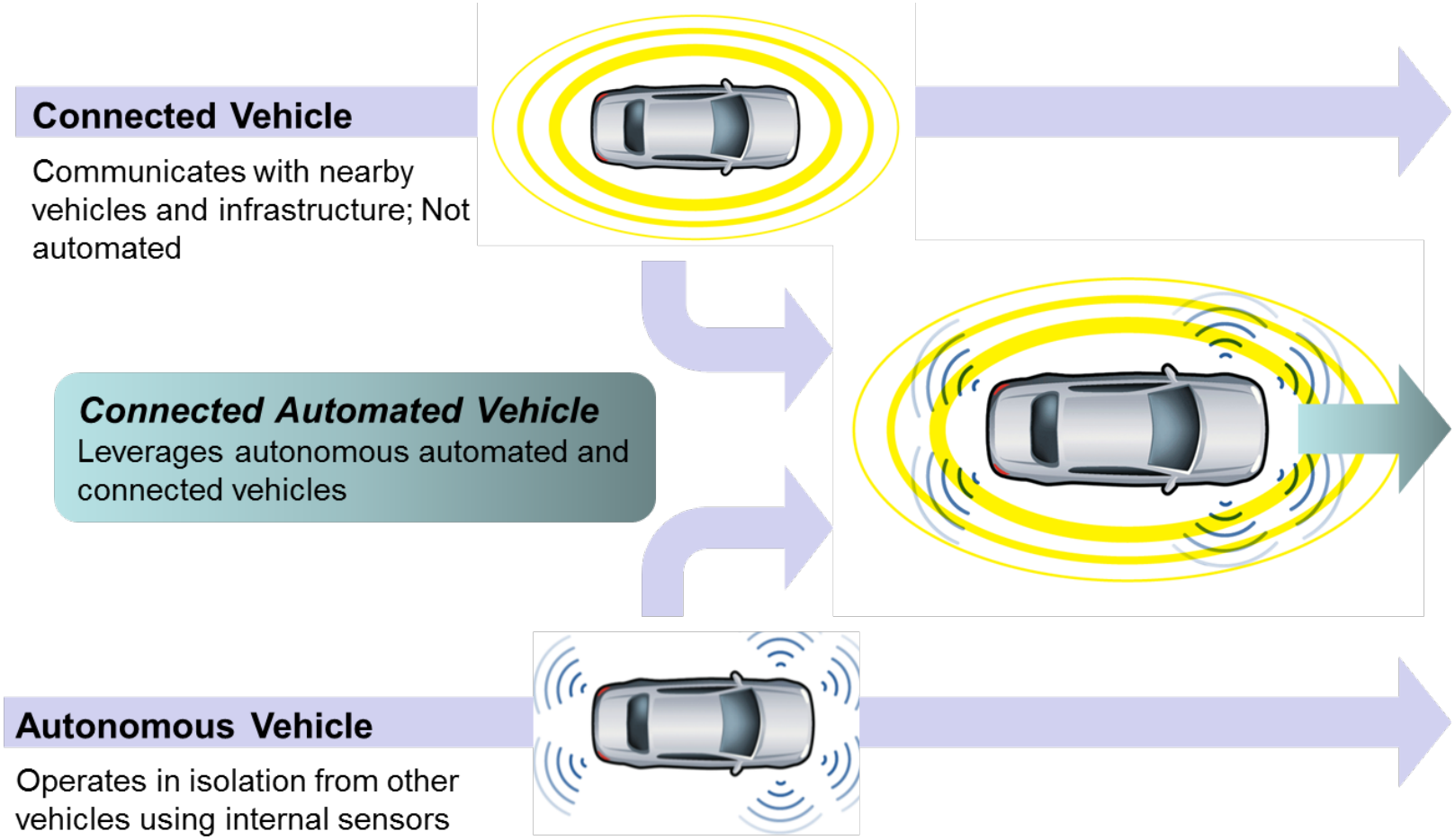
PILOT SITES

New York City

ICF/Wyoming

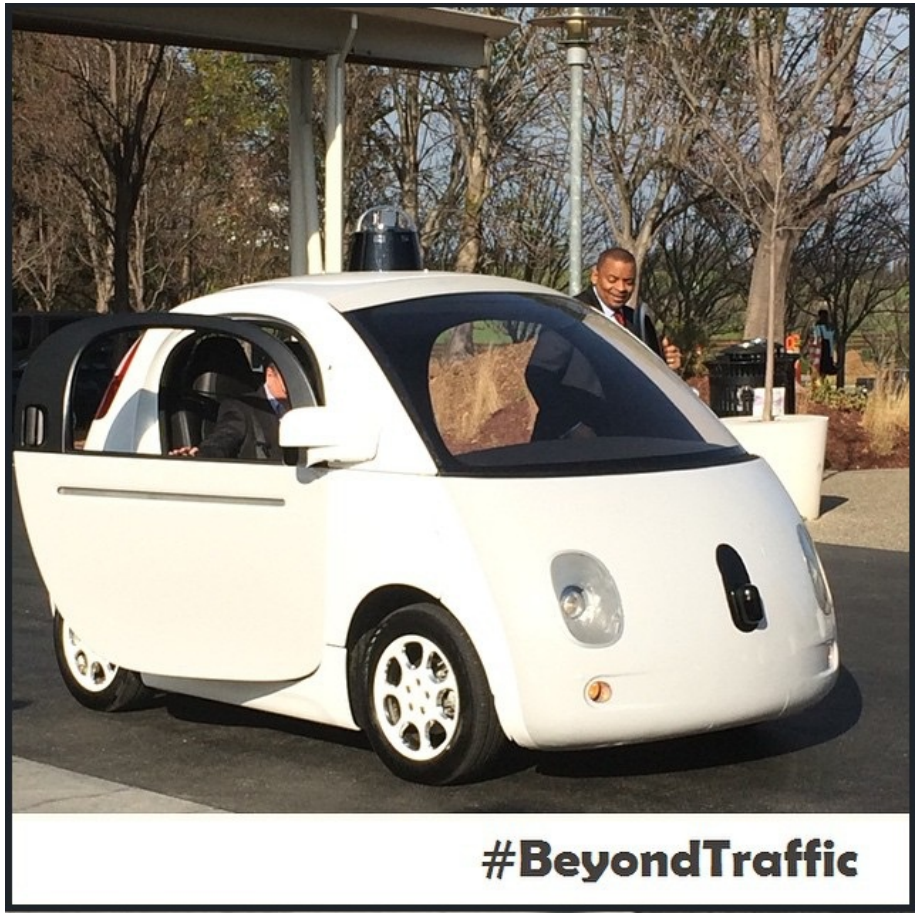
Tampa (THEA)

Connectivity Unleashes the Full Potential of Automated Vehicles



USDOT Automation Policy and Deployment Initiatives

- JPO automation research
- Smart City Challenge
- NHTSA Automation Policy Guidance
- FMCSA ITE CMV workshop
- FHWA Automation Vision
- FAST Act: Advanced Transportation and Congestion Management Technologies Deployment Initiative
- Advisory Committee on Automation in Transportation (ACAT)

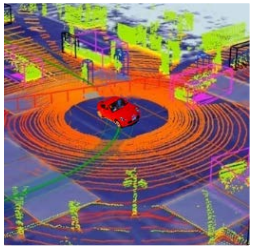


http://www.nhtsa.gov/About+NHTSA/Press+Releases/dot-initiatives-accelerating-vehicle-safety-innovations-01142016

Advanced Technologies and Smart Cities

Technology convergence will revolutionize transportation, dramatically improving safety and mobility while reducing costs and environmental impacts

- Connected Vehicles
- Vehicle Automation



Connected-Automated Vehicles

- Internet of Things
- Machine Learning
- Big Data
- Sharing Economy

Smart Cities

Benefits

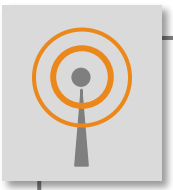
- Order of magnitude safety improvements
- Reduced congestion
- Reduced emissions and use of fossil fuels
- Improved access to jobs and services
- Reduced transportation costs for gov't and users
- Improved accessibility and mobility

The Smart City Challenge Vision Elements

Technology Elements *(Highest Priority)*

Vision Element #1
Urban Automation

Vision Element #2
Connected Vehicles



Vision Element #3
Intelligent, Sensor-Based Infrastructure

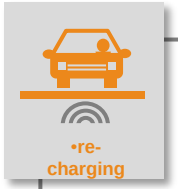
Innovative Approaches to Urban Transportation Elements *(High Priority)*

Vision Element #4
User-Focused Mobility Services and Choices

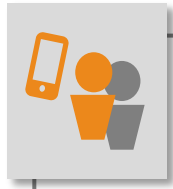
Vision Element #5
Urban Analytics

Vision Element #6
Urban Delivery and Logistics

Vision Element #7
Strategic Business Models & Partnering

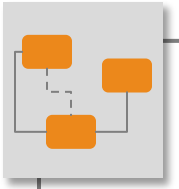


Vision Element #8
Smart Grid, Roadway Electrification, & EVs



Vision Element #9
Connected, Involved Citizens

Smart City Elements *(Priority)*

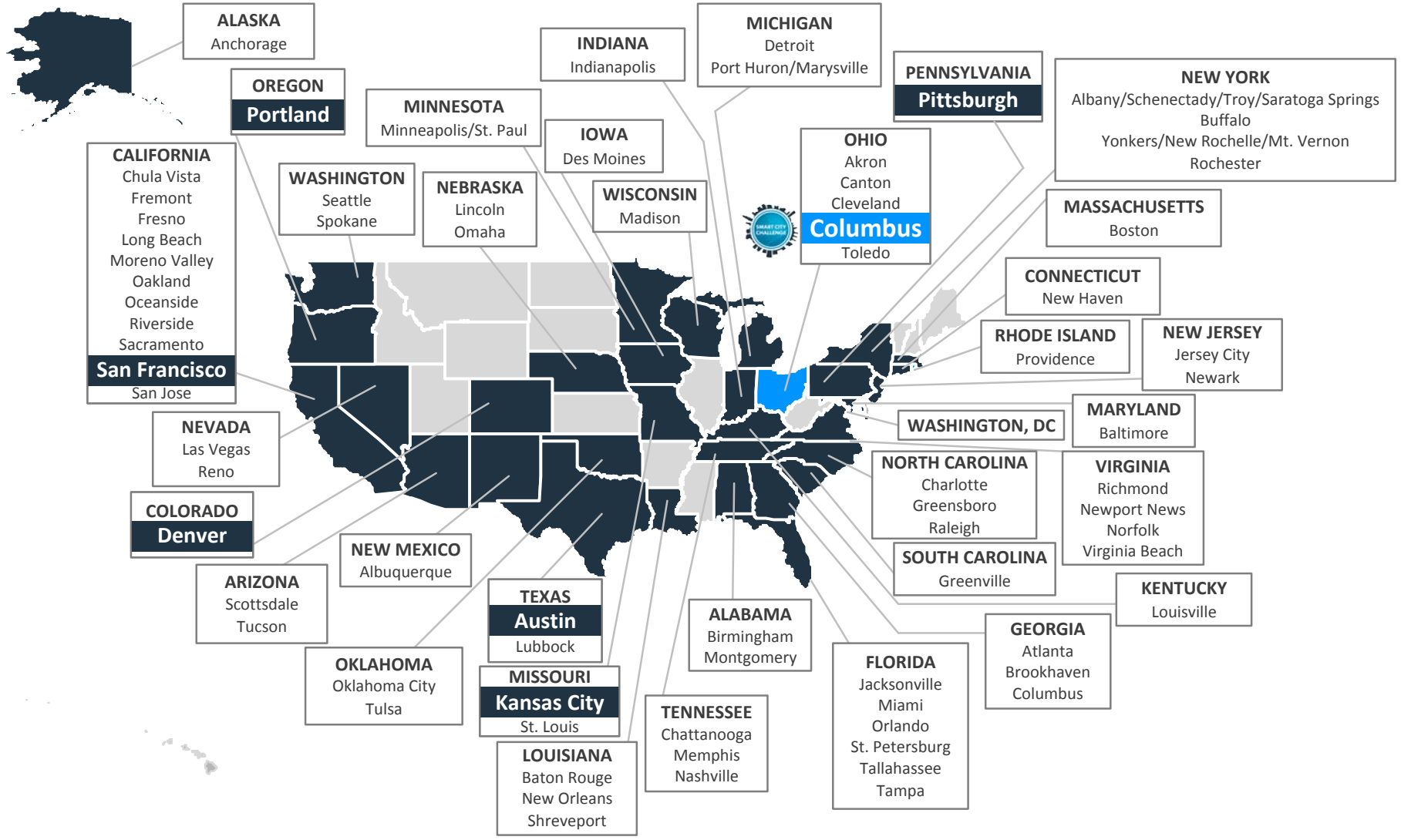


Vision Element #10
Architecture and Standards

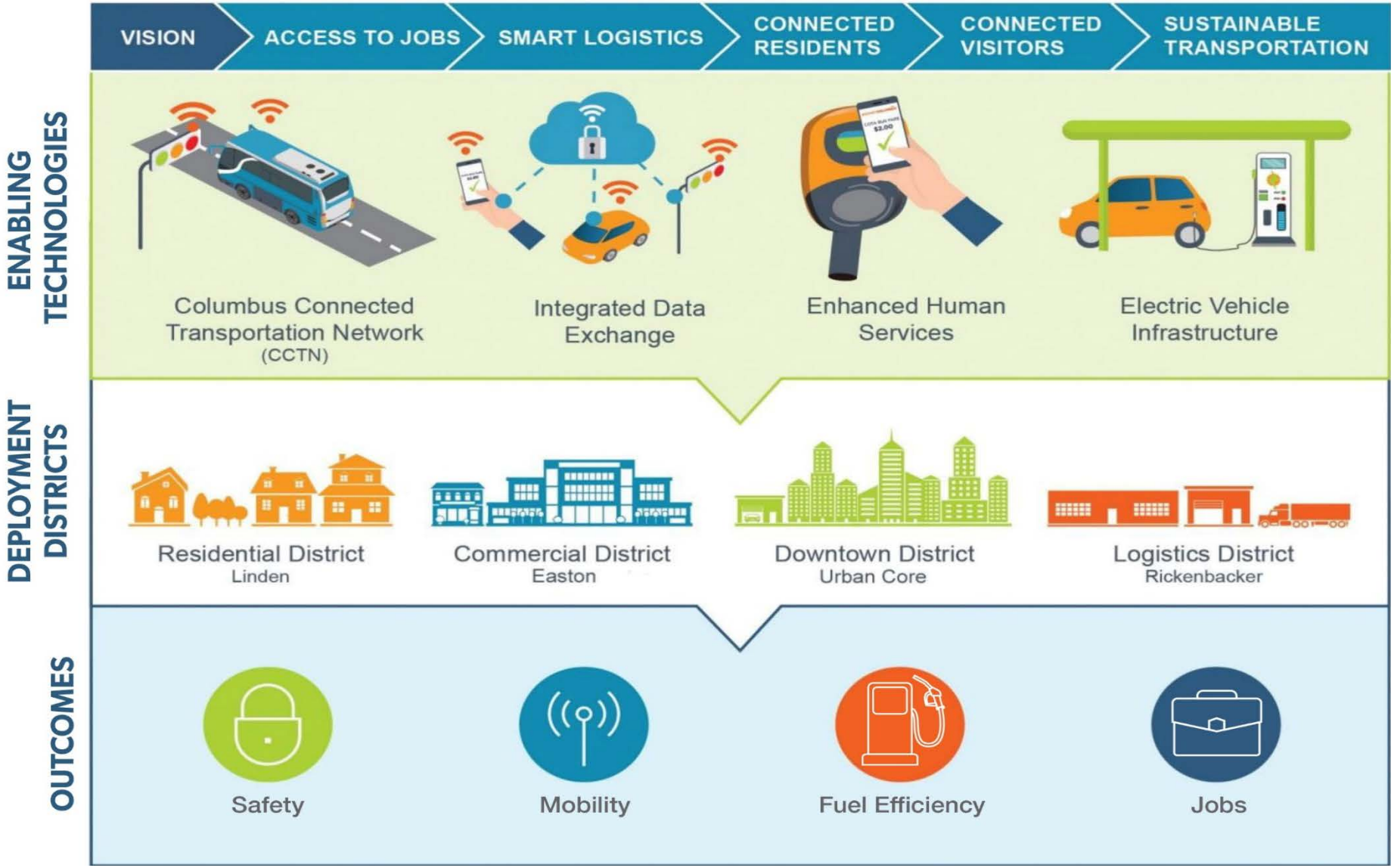
Vision Element #11
Low-Cost, Efficient, Secure, & Resilient ICT

Vision Element #12
Smart Land Use

Smart City Challenge

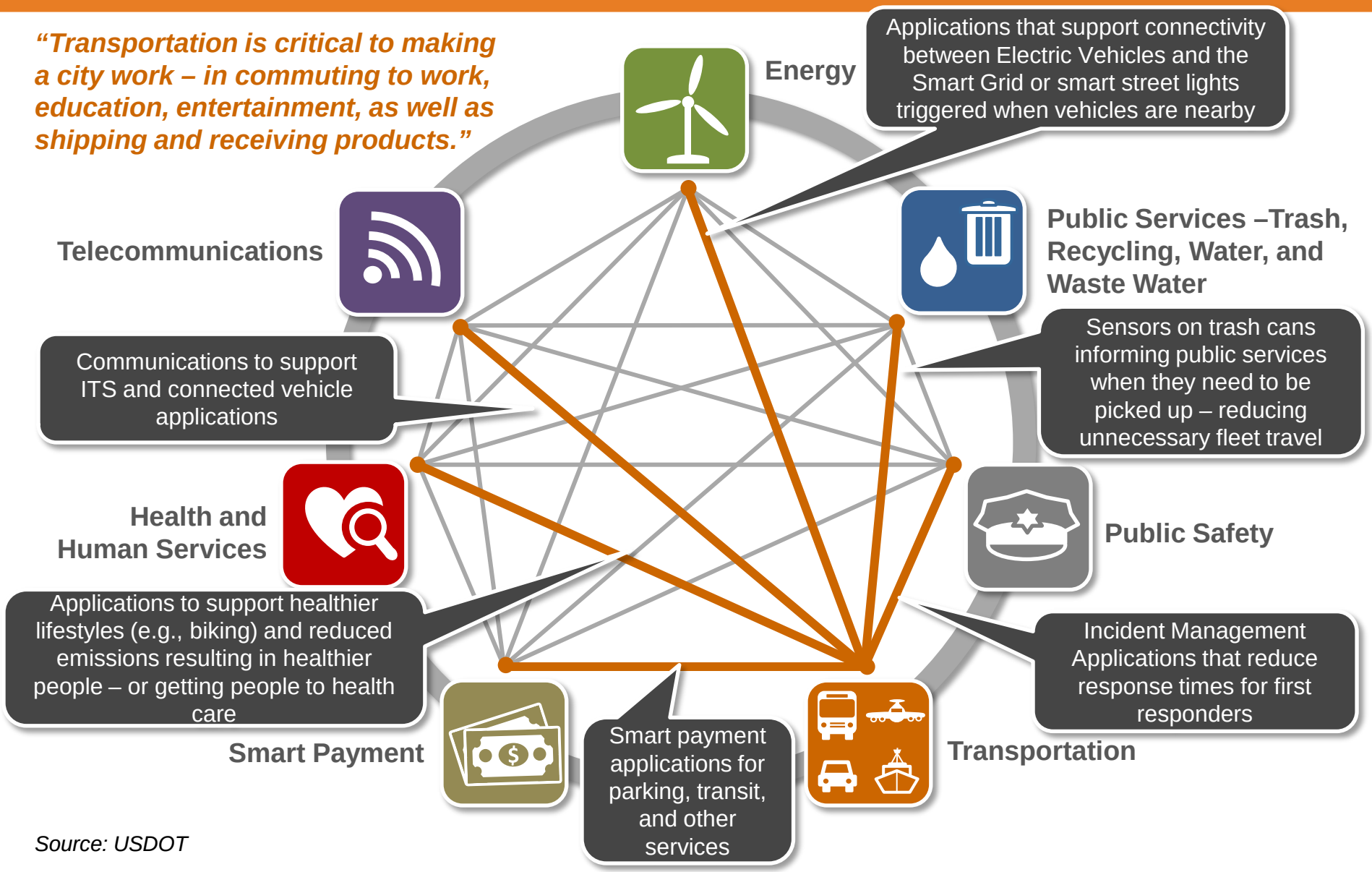


SmartColumbus



Transportation in a Connected City – and More

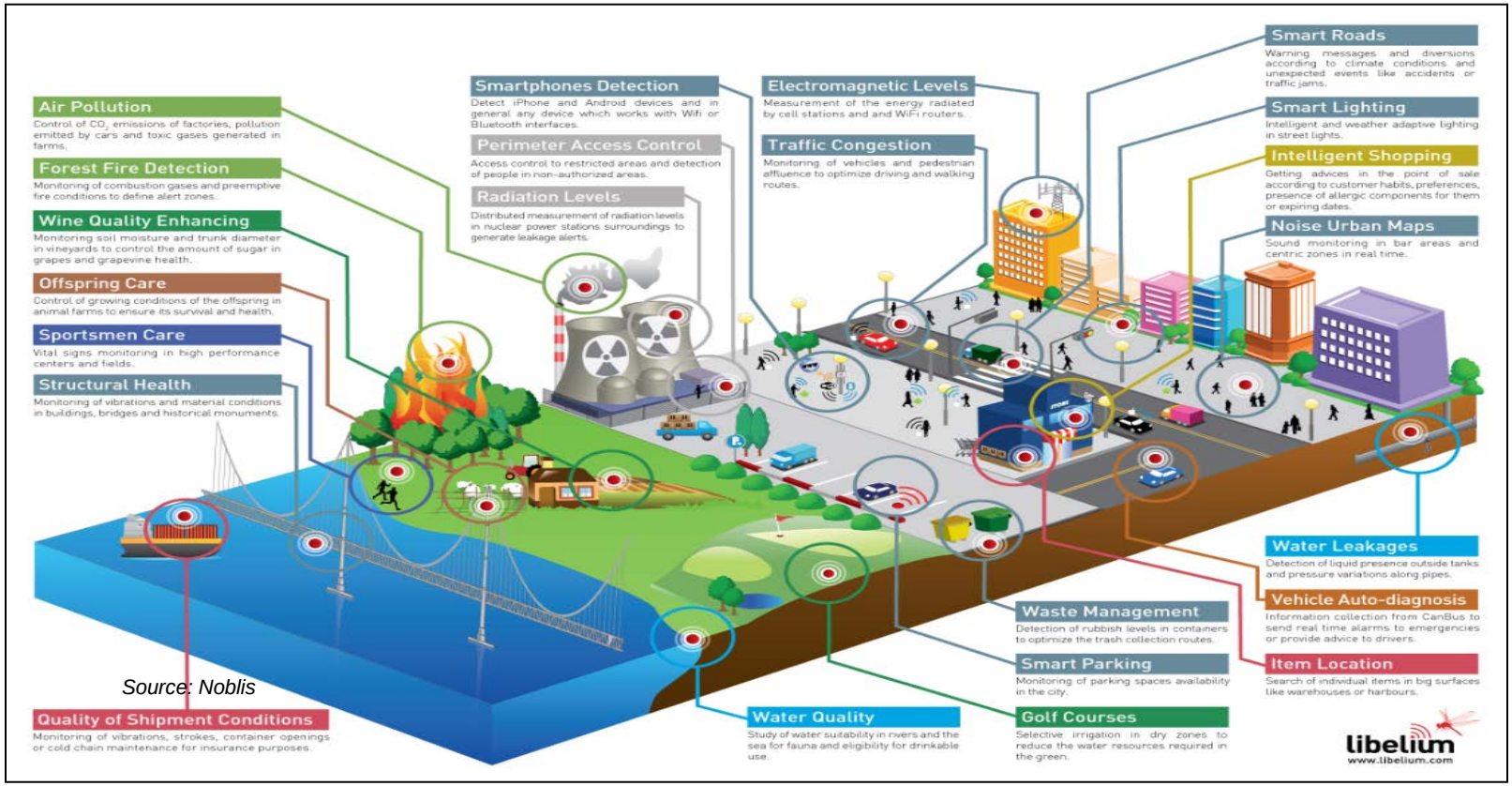
"Transportation is critical to making a city work – in commuting to work, education, entertainment, as well as shipping and receiving products."



Source: USDOT

Beyond Transportation – Internet of Things (IoT)

- A digital “nervous” system for the things that comprise our surroundings
- Pervasive sensors and actuators on fixed and mobile devices
- Data made widely accessible via networks



Source: Noblis

• by 2020 there will be **50 to 100 billion ’things’** connected to the Internet…*

For More Information

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