TSMO and MOD Integration Peer Exchange

Topic #2: Defining MOD and TSMO Overlaps

FEB 12,   2021

Laurie Matkowski
Director of Connected and Automated Vehicle Services
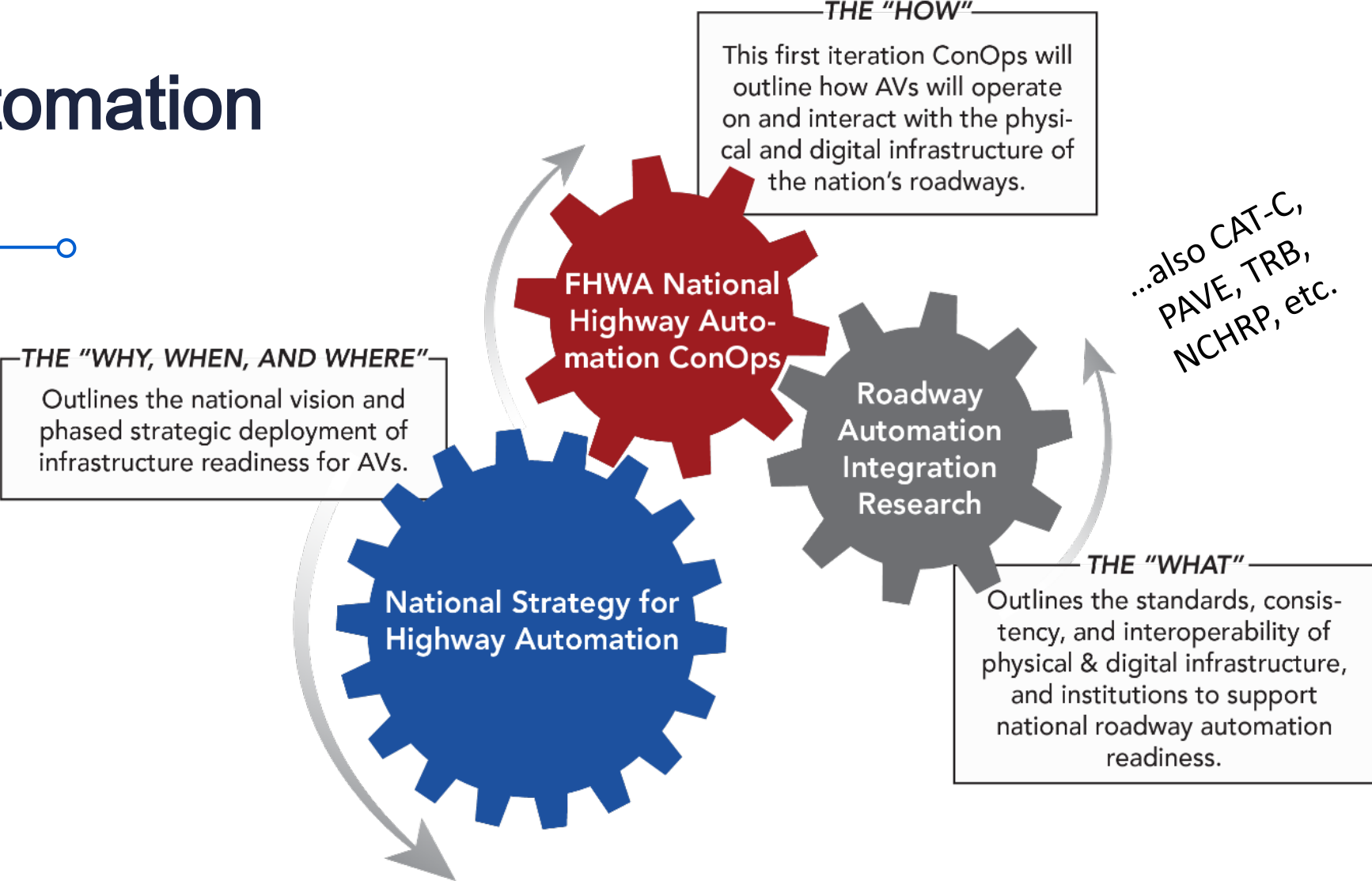
Advanced Mobility: Two Sides of the Spectrum

Gannett Fleming

National Transportation Automation Intersection

- Addressing challenges with 21st century solutions

- Leading transformational improvements to mobility

- Innovation & technology to benefit safety and mobility

THE "HOW"
This first iteration ConOps will outline how AVs will operate on and interact with the physical and digital infrastructure of the nation's roadways.

FHWA National Highway Automation ConOps

Roadway Automation Integration Research

…also CAT-C, PAVE, TRB, NCHRP, etc.

THE "WHY, WHEN, AND WHERE"
Outlines the national vision and phased strategic deployment of infrastructure readiness for AVs.

National Strategy for Highway Automation

THE "WHAT"
Outlines the standards, consistency, and interoperability of physical & digital infrastructure, and institutions to support national roadway automation readiness.

Current Major Work

2020 ACTIVE TRANSPORTATION AUTOMATION READINESS PROJECTS

NATIONAL

AASHTO

FHWA

- National Strategy on Highway Automation
- National Roadway Automation Concept of Operations
- FHWA AV Infrastructure Readiness

MULTI-STATE

US Department of Transportation Volpe Center

THE EASTERN TRANSPORTATION COALITION

Regional Assessment of Readiness for Automated Vehicles

RUC west

AV RUC Demonstration

STATE/LOCAL

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

DEPARTMENT OF TRANSPORTATION THE STATE OF NEW JERSEY — NEW JERSEY DEPARTMENT OF TRANSPORTATION

IOWADOT SMARTER | SIMPLER | CUSTOMER DRIVEN

AASHTO National Strategy

The Case for a
National Transportation Automation
Vision and Roadmap

A Report by the AASHTO National Strategy
for Transportation Automation Task Force

SUMMARY REPORT | FEBRUARY 2020

AASHTO

NATIONAL STRATEGY
TRANSPORTATION AUTOMATION
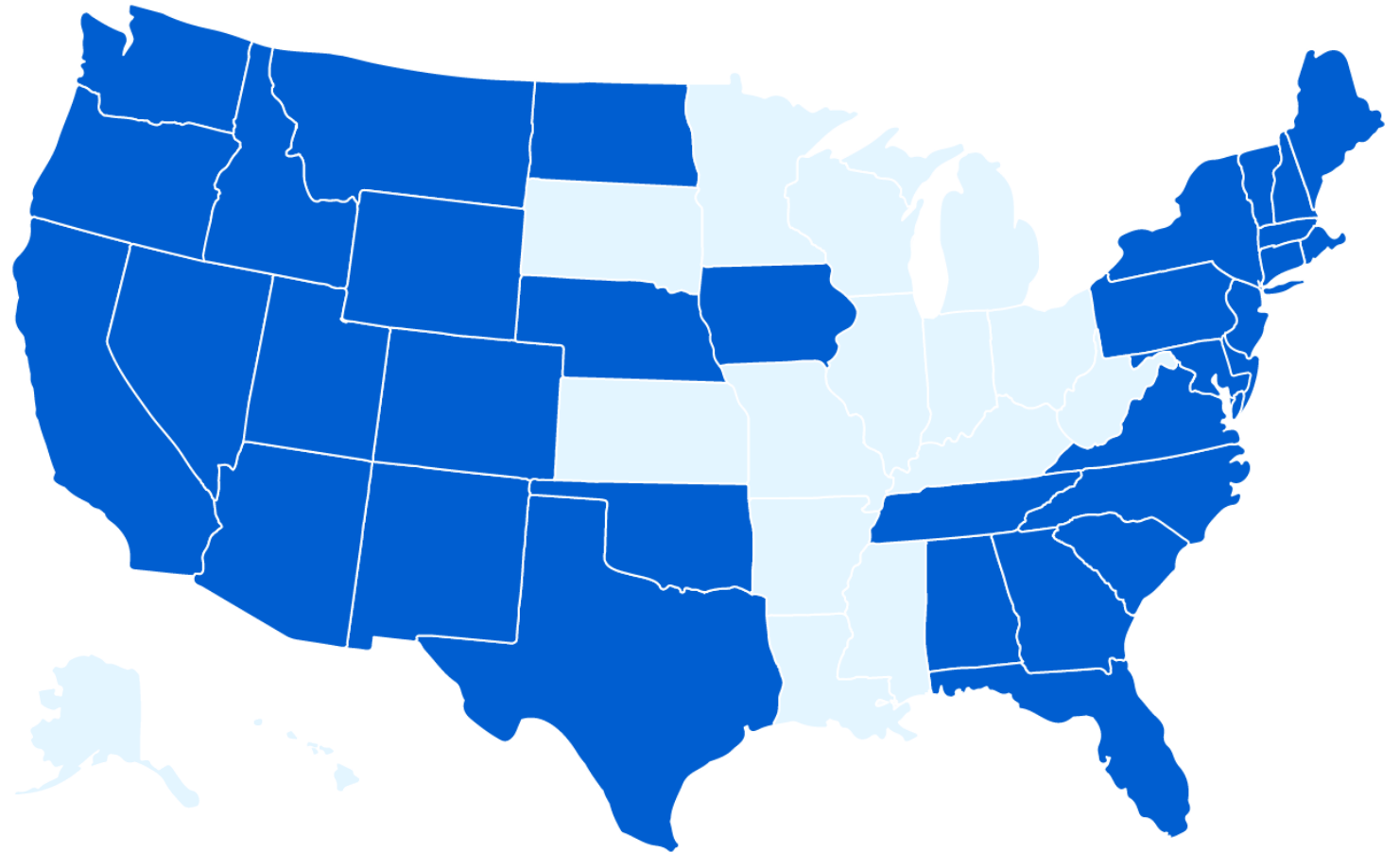
Transformative Outcomes

$8 T
Economic Costs
and Societal
Harm of
Crashes[9]

32 B
Gallons of
Wasted Fuel[8]

346,626
Traffic
Fatalities[12]

78 B
Total Hours of
Delay[8]

$1.4 T
Economic
Costs of
Congestion[8]

Enhance
economic
competitive-
ness

Better air
quality

Enhanced
safety

Improve
mobility

Improve
supply chain
efficiency

**10 Year Impacts
(2008-2017)**

10 Year Estimated Impacts:
Sources: NHTSA; TTI

**Opportunities for the
Next Decade**

AASHTO National Strategy: Business Case

GLOBAL ECONOMIC COMPETITIVENESS & GROWTH

- Improve supply chain efficiency
- Reduce costs of traffic congestion
- Reduce cost of crashes
- Improve mobility for underserved groups
- Improve workforce capabilities

NATIONAL SECURITY & EMERGENCY MANAGEMENT

- Military readiness
- Logistics mobility
- Improve mass evacuations
- Coordinated emergency management
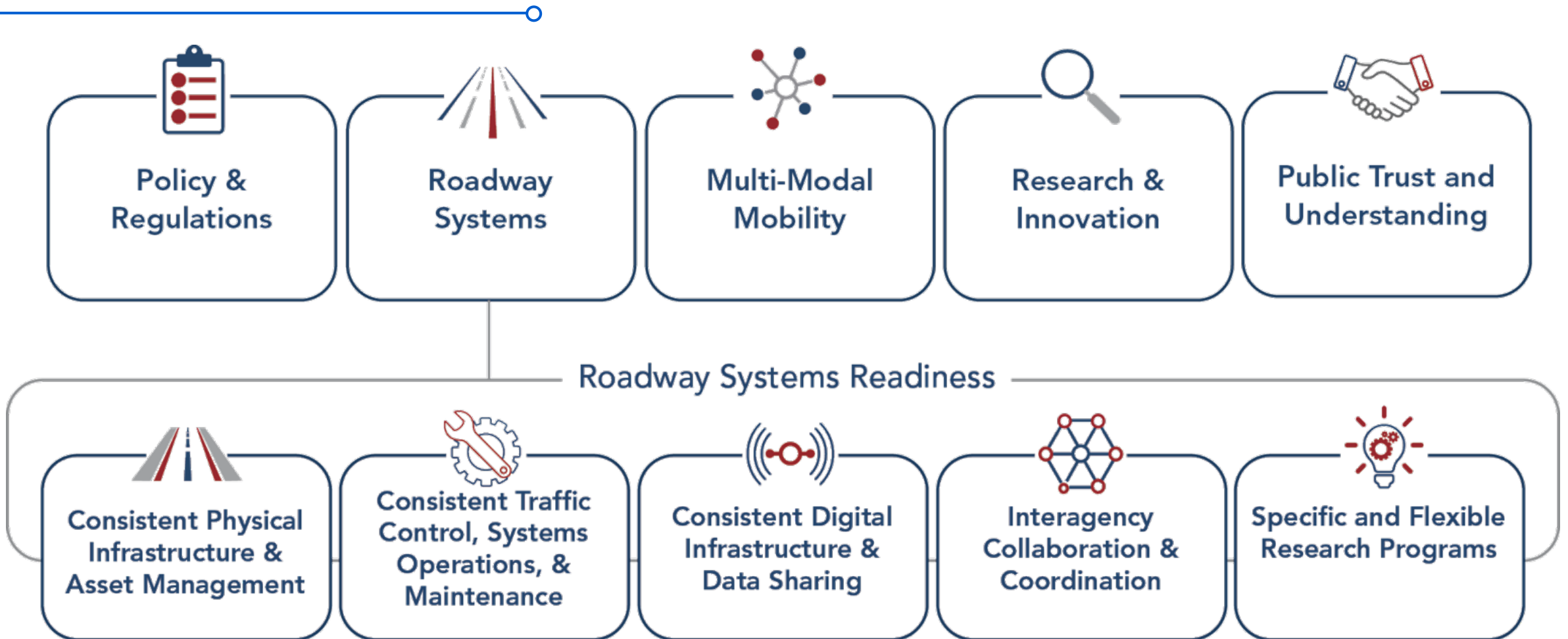- System resiliency

PUBLIC HEALTH & SAFETY

- Reduce fatal and serious injury crashes
- Better air quality
- Enhance safety for vulnerable users
- System sustainability
- First responder safety

CORROLLARY TECHNOLOGICAL ADVANCEMENT

- Support telecommunications and connectivity
- Advance automation and artificial intelligence
- Scalable electric vehicle infrastructure
- Support for connected devices and Smart Cities

AASHTO National Strategy: Readiness Categories

| Policy & Regulations | Roadway Systems | Multi-Modal Mobility | Research & Innovation | Public Trust and Understanding |

Roadway Systems Readiness

| Consistent Physical Infrastructure & Asset Management | Consistent Traffic Control, Systems Operations, & Maintenance | Consistent Digital Infrastructure & Data Sharing | Interagency Collaboration & Coordination | Specific and Flexible Research Programs |

AASHTO National Strategy: Readiness Categories

CONSISTENT PHYSICAL INFRASTRUCTURE & ASSET MANAGEMENT

- Structural Integrity
- Pavement condition
- Bridge capacity
- Roadway geometry

CONSISTENT TRAFFIC CONTROL, SYSTEMS OPERATIONS, & MAINTENANCE

- Pavement Marking Standards
- Traffic signals phasing/timing, countdown status
- Active traffic control systems management
- Managed Lane strategies

CONSISTENT ACTIVE DIGITAL INFRASTRUCTURE & DATA SHARING

- Fiber Optics
- Connectivity to/from AVs
- Cybersecurity
- Historic, regulatory, real-time, future data sharing
- Scalable data analytics
- Digital mapping
- Data specifications

CONSISTENT MULTI-AGENCY OPERATIONS INSTITUTIONS

- Build/mature existing institutions
- Consistency & standards
- Information sharing
- Workforce development

FOCUSED AND NIMBLE RESEARCH & DEVELOPMENT

- Dedicated R&D program
- National vision and roadmap should inform R&D needs
- Focus SHRP 3 on automation readiness
- More R&D on underserved users and markets

AASHTO National Strategy: Phased Approach

National Network Highway Systems

Urban & Metro Mobility Services

Multi-Modal Systems

Concurrent Strategic Deployment

Building Smarter Infrastructure: Leveraging TSMO

Infrastructure …with**INSIGHTS**

Catalyzing a Bold Vision
Creating a more affordable, sustainable and equitable communities through TSMO, MOD and improved public service delivery.

Digitally Transforming Government Operations
At an annual net savings to states and municipalities.

Providing an Innovative Platform for New Technologies
Such as big data computing and artificial intelligence.

Virtually Linking Government Service Sectors
This will enhance public benefit.

INTERNET OF THINGS

TELE-HEALTH & EDUCATION + ECONOMIC DEVELOPMENT

OPERATION CENTERS

AUTOMATED TRANSPORTATION

REAL-TIME & PREDICTIVE ALERTS

CLEAN ENERGY SYSTEMS

5G & HIGH-SPEED INTERNET CONNECTIVITY

SMART ROADWAYS

ADVANCED ROADWAY ENGINEERING

VERTICAL MOBILITY SERVICES
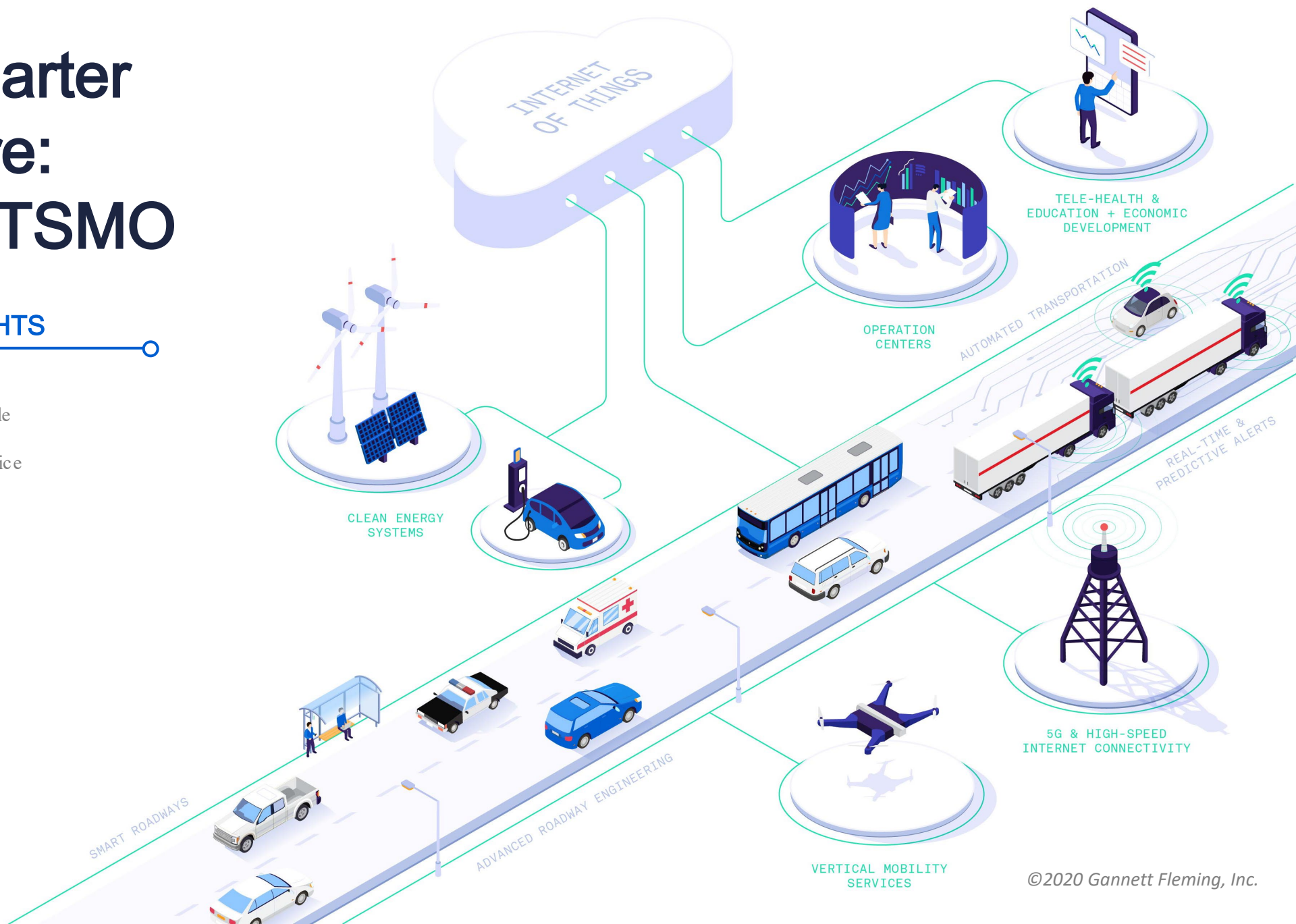
Thank You!

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Gannett Fleming