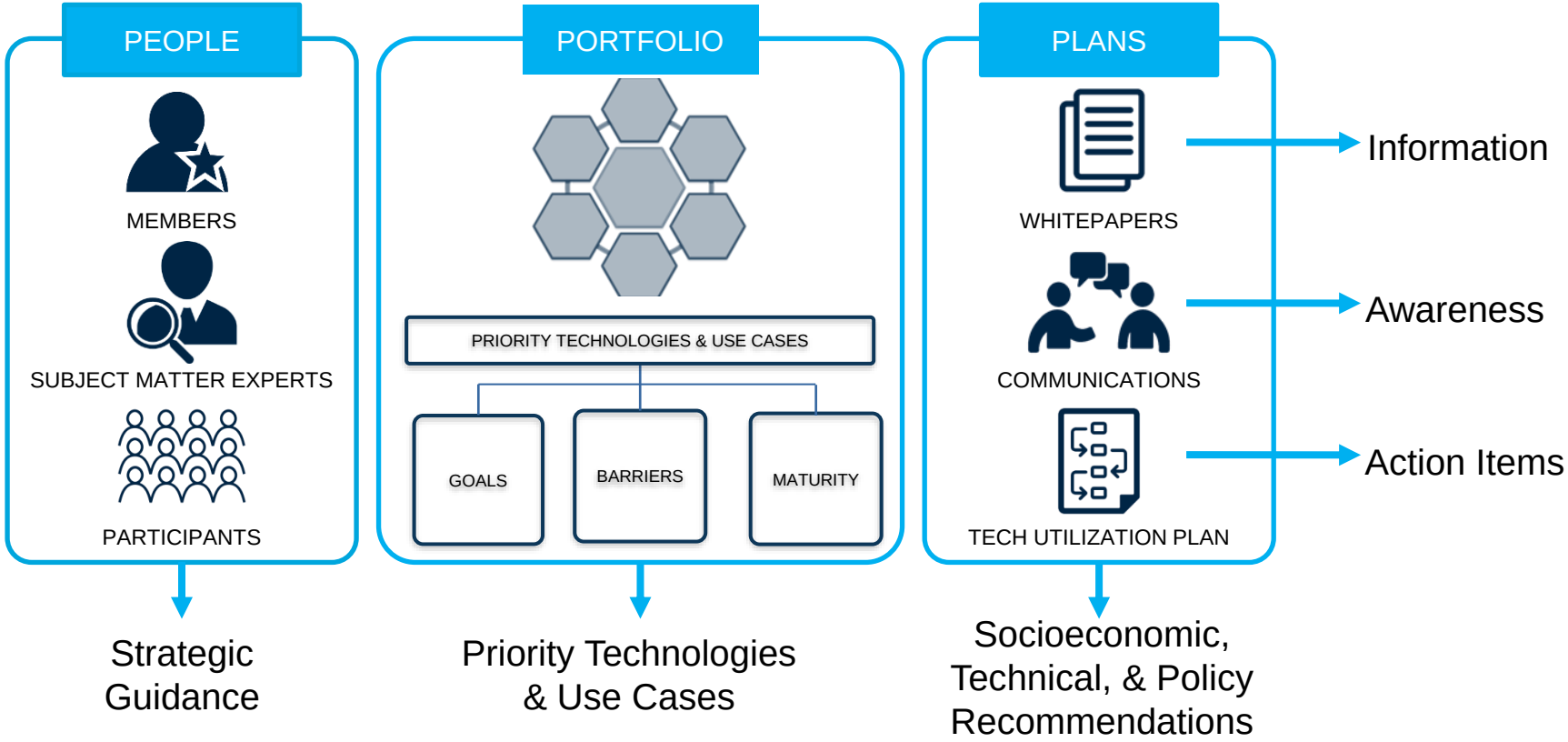
TEXAS TECHNOLOGY TASK FORCE

April 27, 2020

Texas Technology Task Force: Overview



Technology Utilization Plan

>> A strategic document to guide the anticipation and inclusion of advanced technologies for the Texas transportation system and within TxDOT

Emerging Technology Evaluation

Spring 2019

Best Practices & Lessons Learned

Fall 2019 – Spring 2020

Recommendations & Utilization Roadmap

August 2020

Technology Utilization Plan: Phase I

Prioritization

Goal Assessment

Maturity & Readiness

Use Case Mapping

Barrier Assessment

Timelines for Adoption

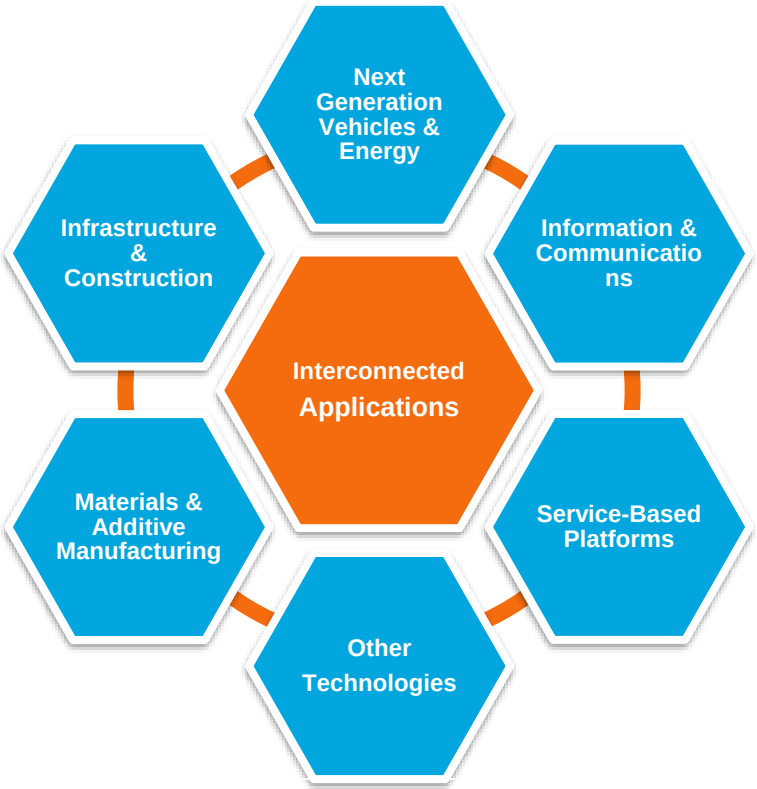
Technology Utilization Plan: Phase I

Next Generation Vehicles & Energy
Automated Vehicles
Connected Vehicles
Electric Vehicles
Unmanned Aerial Vehicles

Infrastructure & Construction
Infrastructure Enhancements
Construction Techniques
Solar Powered Highways

Materials & Additive Manufacturing
Self-Healing Pavements
Nanotechnologies
3D Printing

Other Technologies
Robotics
Virtual/Augmented Reality
Hyperloop



Information & Communications
Cloud Computing
Crowdsourcing
Blockchain
Big Data & Open Data
Cybersecurity
RFID
Cloud & Edge Computing
Data Standards & Interoperability
Machine Learning & AI
Telecommunications

Service-Based Platforms
Mobility on Demand
Micromobility
Transportation Subscription Services
Freight Brokerage
Uber Elevate
Last Mile Delivery

Technology Utilization Plan: Phase I

Autonomous Vehicles

Connected Vehicles

Electric Vehicles

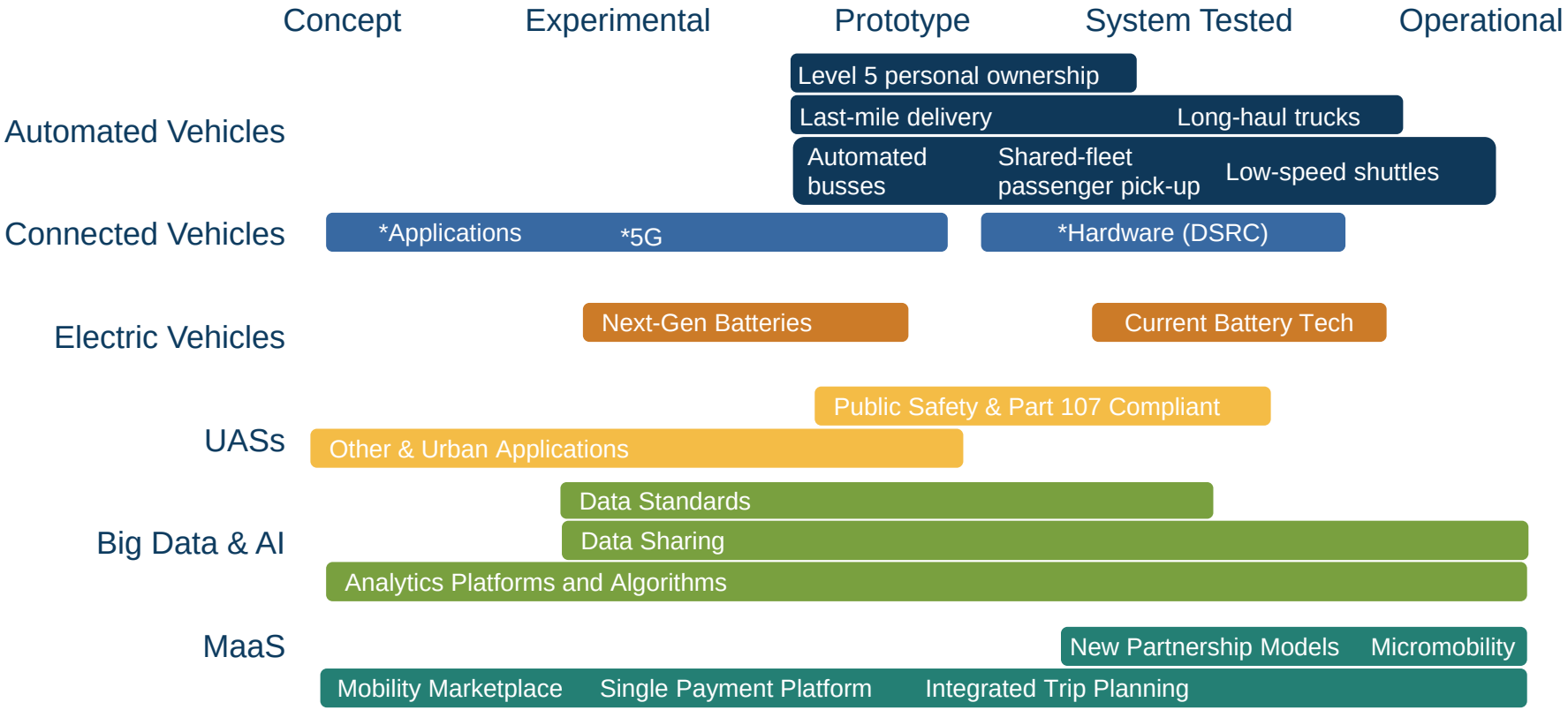
Big & Open Data

Mobility as a Service

Unmanned Aerial Vehicles

Priority Technologies: Phase I(Goal Assessment)

Priority Technologies: Phase I (Technology Maturity)



Autonomous Vehicles

Lyft & Aptiv Deployment
Las Vegas, NV

Volvo and Nanyang Technological University (NTU) Singapore

TuSimple & USPS
Dallas, TX – Phoenix, AZ

Connected Vehicles

NYC Connected Vehicle Pilot
New York, NY

THEA Connected Vehicle Pilot,
Tampa Bay, FL

Ford 5G Testing
Dearborn, MI

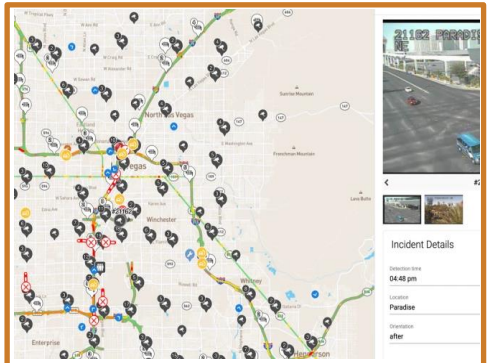
Electric Vehicles

Battery Technology
National Labs

West Coast Electric
Highway

Electric Bus Fleet
Los Angeles

Big & Open Data



WayCare
Las Vegas, NV

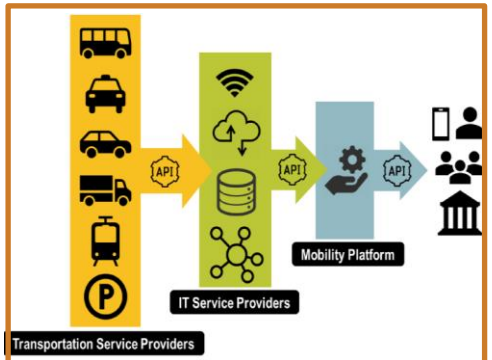
City of Seattle Privacy
Seattle, WA

CCPA & GDPR

Mobility as a Service

DART & Uber On-Demand
Dallas, TX

Free Transit
Kansas City



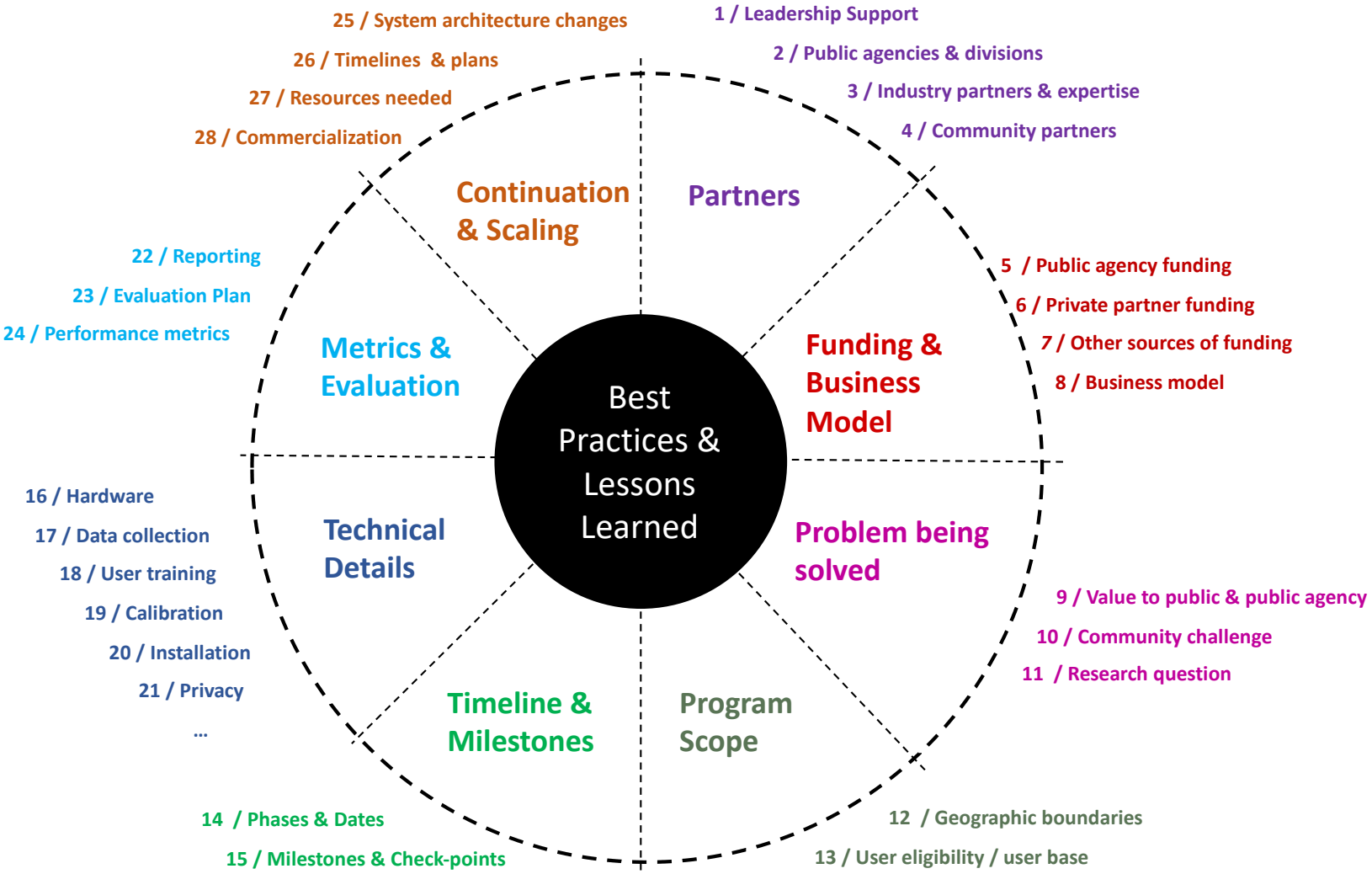
MaaS Platforms

Unmanned Aerial Vehicles

Amazon Urban Air Delivery
Las Vegas, NV

Urban Air Mobility

North Carolina DOT
UAS Program


Best Practices & Lessons Learned
Partners
1 / Leadership Support
2 / Public agencies & divisions
3 / Industry partners & expertise
4 / Community partners
Funding & Business Model
5 / Public agency funding
6 / Private partner funding
7 / Other sources of funding
8 / Business model
Problem being solved
9 / Value to public & public agency
10 / Community challenge
11 / Research question
Program Scope
12 / Geographic boundaries
13 / User eligibility / user base
Timeline & Milestones
14 / Phases & Dates
15 / Milestones & Check-points
Technical Details
16 / Hardware
17 / Data collection
18 / User training
19 / Calibration
20 / Installation
21 / Privacy
...
Metrics & Evaluation
22 / Reporting
23 / Evaluation Plan
24 / Performance metrics
Continuation & Scaling
25 / System architecture changes
26 / Timelines & plans
27 / Resources needed
28 / Commercialization

Technology Utilization Plan (Other Technologies)

Hyperloop

Blockchain

Virtual Reality

5G

Recommendations & Strategies

- Conduct further research
- Deploy a pilot
- Prepare a Division and/or District for implementation
- Recommend a policy action

Technology Utilization Plan: Phase III

Recommendations & Strategies

Action Items

Stakeholder & Partnership Plans

Resources

Discussion Questions

- Are there other pilot programs or technology initiatives that should be covered?
- What information is most useful to help form recommendations and strategies?
- What timeframe should the research team focus (short-term vs. long-term)?

TEXAS TECHNOLOGY TASK FORCE

Critical Topics in Transportation Technology

A SERIES OF WHITE PAPERS

AV SAFETY EVALUATION

Looking at current regulations and safety frameworks for AVs, lessons learned from aviation certification can be utilized for unified AV safety evaluation.

RURAL CHALLENGES & OPPORTUNITIES

Examining mobility opportunities and access to health and general services, rural residents face unique challenges not seen by all Texans.

WORKFORCE IMPACTS

Exploring the impact that vehicular automation may have on jobs, disputes about worker designation in the gig economy, and telework.

DATA PRIVACY

Diving into the tradeoffs related to data sharing and privacy, start with privacy principles and move beyond policies and regulations.

AV Safety Evaluation

Lessons Learned from Aviation Certification

AV Safety Evaluation

Key Topics

CENTRAL SET OF SAFETY PRINCIPLES

REVIEW OF STANDARDS AND ASSESSMENTS

PUBLIC AND CONSUMER EDUCATION

AV Safety Evaluation

Key Topics

CENTRAL SET OF SAFETY PRINCIPLES

Facilitate the creation and promotion of a central set of safety principles

REVIEW OF STANDARDS AND ASSESSMENTS

Realize need for continuous review and update of safety standards and assessments

PUBLIC AND CONSUMER EDUCATION

Increase public communication & trust

AV Safety Evaluation

Key Topics

CENTRAL SET OF SAFETY PRINCIPLES

Facilitate the creation and promotion of a central set of safety principles

REVIEW OF STANDARDS AND ASSESSMENTS

Realize need for continuous review and update of safety standards and assessments

PUBLIC AND CONSUMER EDUCATION

Increase public communication & trust

AV Safety Evaluation

Key Topics

CENTRAL SET OF SAFETY PRINCIPLES

Facilitate the creation and promotion of a central set of safety principles

REVIEW OF STANDARDS AND ASSESSMENTS

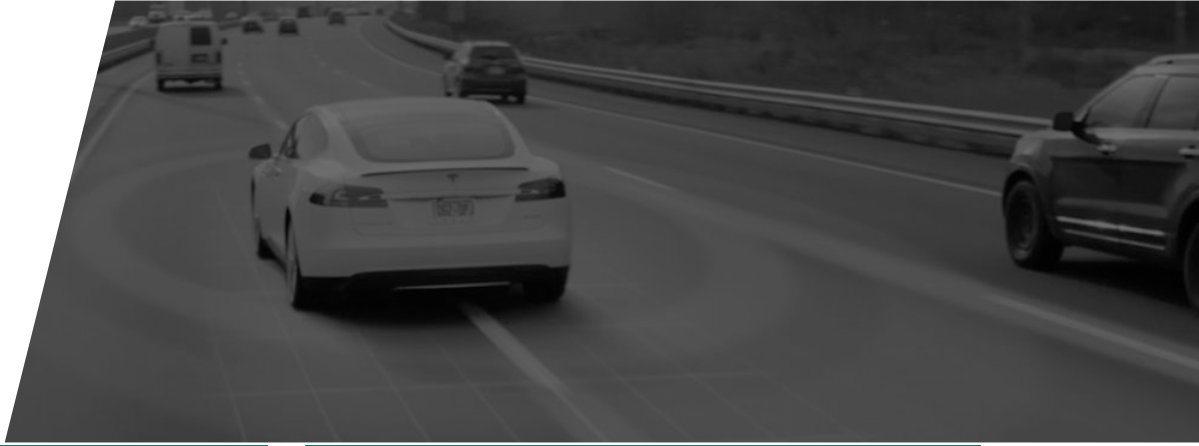
Realize need for continuous review and update of safety standards and assessments

PUBLIC AND CONSUMER EDUCATION

Increase public communication & trust

AV Safety Evaluation

A Closer Look



Design

Aircraft Certification Offices (ACO)

- Design approval and certificate management
- Engineering and Analysis questions

- Department of Transportation

Production

Manufacturing Inspection District Office (MIDO)

- Production approval and Certification
- Manufacturing Designee Oversight

- Department of Public Safety

Airworthiness

Inspectors locate within or near Major airlines

- Each aircraft inspected and given airworthiness certificate
- Can be tested through approved list of flight tests

- Department of Public Safety
- Department of Motor Vehicles

AV Safety Evaluation Key Takeaways

- Creation of Safety Principles
- Standards and Safety Assessment Procedures
- Consumer and Public Education
- Development of Training and Licensing Materials
- Work with Governor’s Task Force on AV Safety

Transportation Equity for Rural Texans

Challenges and Opportunities

Transportation Equity for Rural Texans

Key Topics

MOBILITY FOR RURAL RESIDENTS

HEALTH SERVICES

BROADBAND CONNECTIVITY

I guess I could hitchhike. Or I could find me a donkey and a sled. At 81 years old, it'd be pretty hard to walk to Round Rock, now wouldn't it?

- Rockdale, TX

Transportation Equity for Rural Texans

Key Topics

MOBILITY FOR RURAL RESIDENTS

Promote enhanced mobility opportunities and trip planning services

HEALTH SERVICES

Realize need for bringing services to residents

BROADBAND CONNECTIVITY

Improve connectivity in rural areas

Transportation Equity for Rural Texans

Key Topics

MOBILITY FOR RURAL RESIDENTS

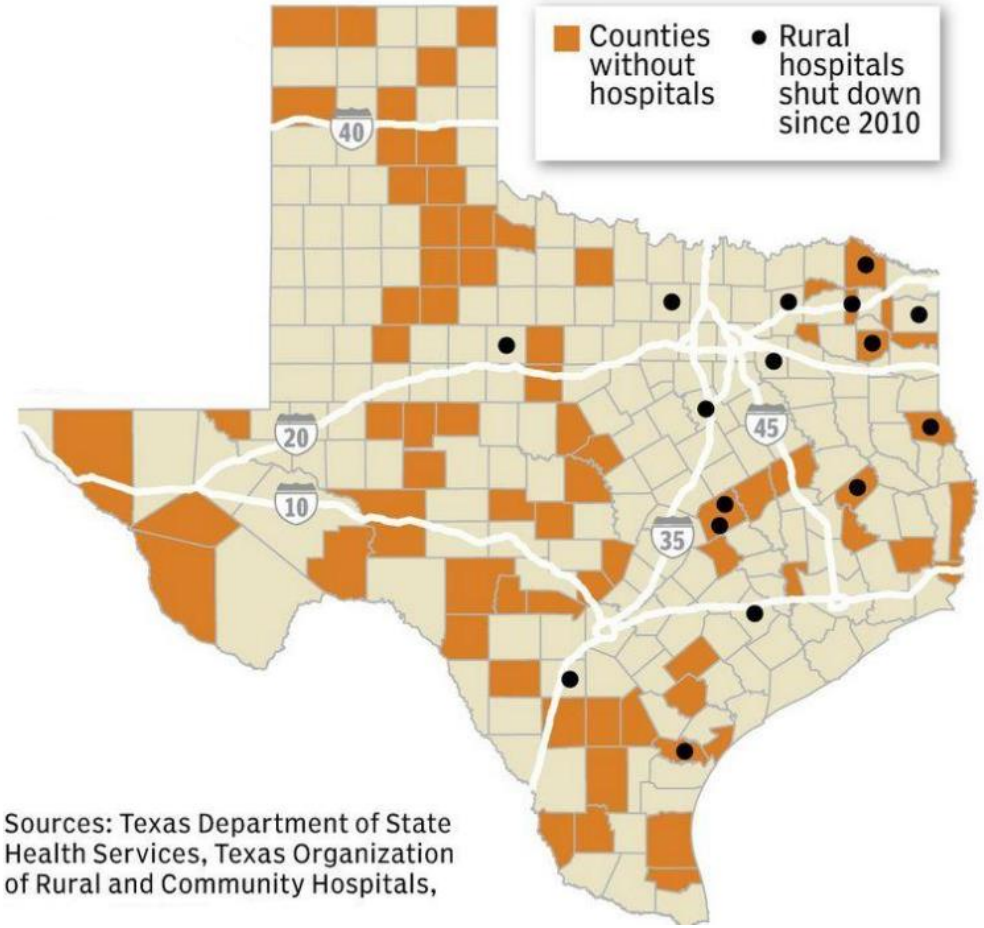
Promote enhanced mobility opportunities and trip planning services

HEALTH SERVICES

Realize need for bringing services to residents

BROADBAND CONNECTIVITY

Improve connectivity in rural areas



Transportation Equity for Rural Texans

Key Topics

MOBILITY FOR RURAL RESIDENTS

Promote enhanced mobility opportunities and trip planning services

HEALTH SERVICES

Realize need for bringing services to residents

BROADBAND CONNECTIVITY

Improve connectivity in rural areas

Transportation Equity for Rural Texans

A Closer Look

One Stop Shop Opportunities

- Travel information was scattered
- State cooperative provides planning, safety, and regional information

Transportation Equity for Rural Texans

A Closer Look

One Stop Shop Opportunities

- Travel information was scattered
- State cooperative provides planning, safety, and regional information

Dig Once Policies

- Proactive and cost savings
- Shared leasing of poles and ducts
- Collaboration with utilities
- Collaboration with local roadwork and DOT

White Paper Topic #2
Key Takeaways

- Invest in One Stop Shop Opportunities

White Paper Topic #2
Key Takeaways

- Invest in One Stop Shop Opportunities
- Encourage a Dig Once or Cooperative Policies

White Paper Topic #2 Key Takeaways

- Invest in One Stop Shop Opportunities
- Encourage a Dig Once or Cooperative Policies
- Develop Statewide Guidelines for Technology Readiness

The Changing Texas Transportation Workforce

Developing a Workforce that Meets the Future's Needs

The Changing Texas Transportation Workforce

Key Topics

- Telework & Flexible Scheduling
- Existing Workforce Development Infrastructure
- Vehicular Automation and Jobs
- Worker Classification

The Changing Texas Transportation Workforce

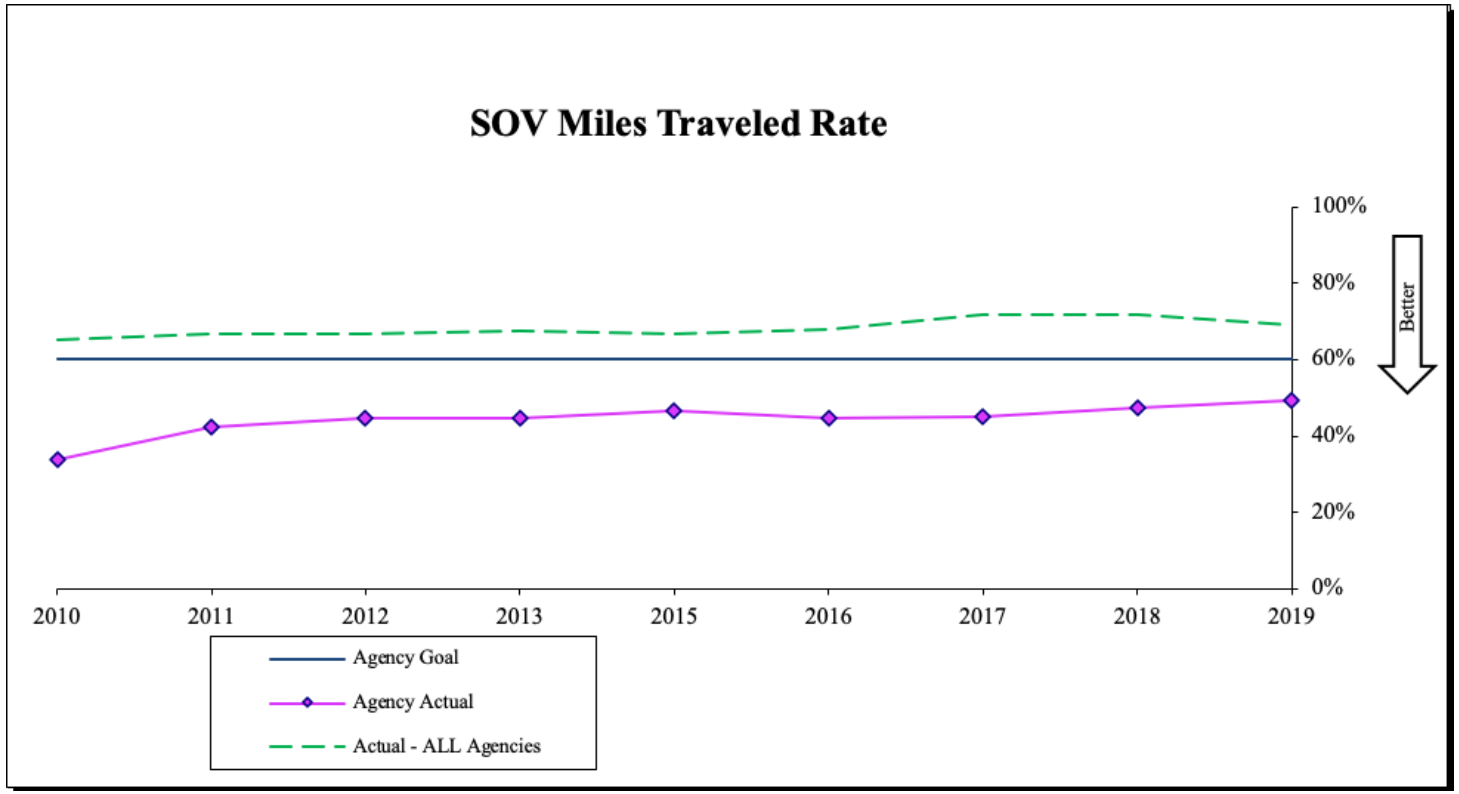
Key Topics

Telework & Flexible Scheduling

The Changing Texas Transportation Workforce

AZ state agencies exceed VMT goals

- Leads ALL state agencies in employee engagement
- Leads ALL state agencies in SOV trip reduction



The Changing Texas Transportation Workforce

Permanent changes

Key Takeaways

- Telework protects employees and reduces SOV trips
- We have an opportunity to shift our work/lifestyle paradigm

Data Privacy

Lessons on privacy, security, and consumer protections

Data Privacy

Key Topics

START WITH PRIVACY PRINCIPLES

Regulations and internal privacy policies should be principle based

GO BEYOND REGULATIONS AND POLICIES

A good privacy law or internal policy is important, but it is only the tip of the iceberg

BALANCE ENFORCEMENT AND ENCOURAGEMENT

Public partners should approach private sector data partnerships with a balance of enforcement and encouragement

> *We work to find a fair balance between gathering information to provide needed services and protecting the public's privacy*

Data Privacy

Key Topics

START WITH PRIVACY PRINCIPLES

Regulations and internal privacy policies should be principle based

GO BEYOND REGULATIONS AND POLICIES

A good privacy law or internal policy is important, but it is only the tip of the iceberg

BALANCE ENFORCEMENT AND ENCOURAGEMENT

Public partners should approach private sector data partnerships with a balance of enforcement and encouragement

> *We work to find a fair balance between gathering information to provide needed services and protecting the public's privacy*

Data Privacy

Key Topics

START WITH PRIVACY PRINCIPLES

Regulations and internal privacy policies should be principle based

GO BEYOND REGULATIONS AND POLICIES

A good privacy law or internal policy is important, but it is only the tip of the iceberg

BALANCE ENFORCEMENT AND ENCOURAGEMENT

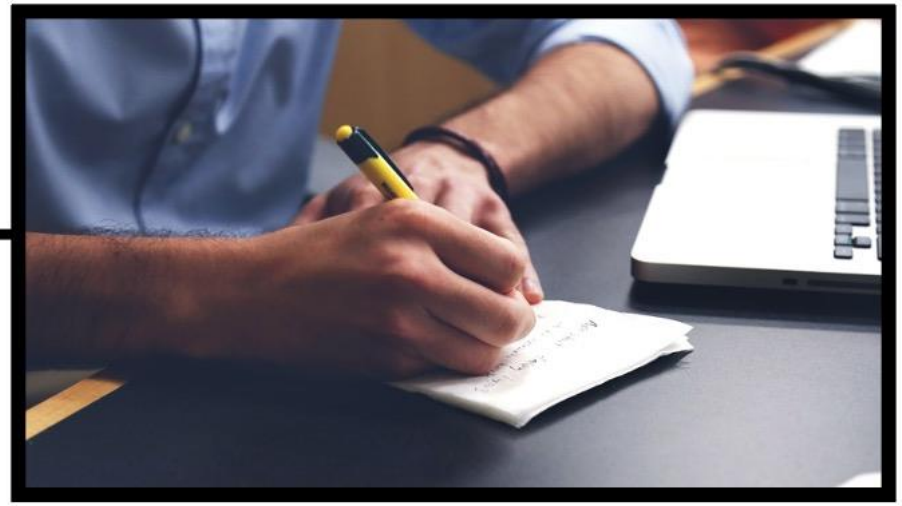
Public partners should approach private sector data partnerships with a balance of enforcement and encouragement

"We work to find a fair balance between gathering information to provide needed services and protecting the public's privacy"

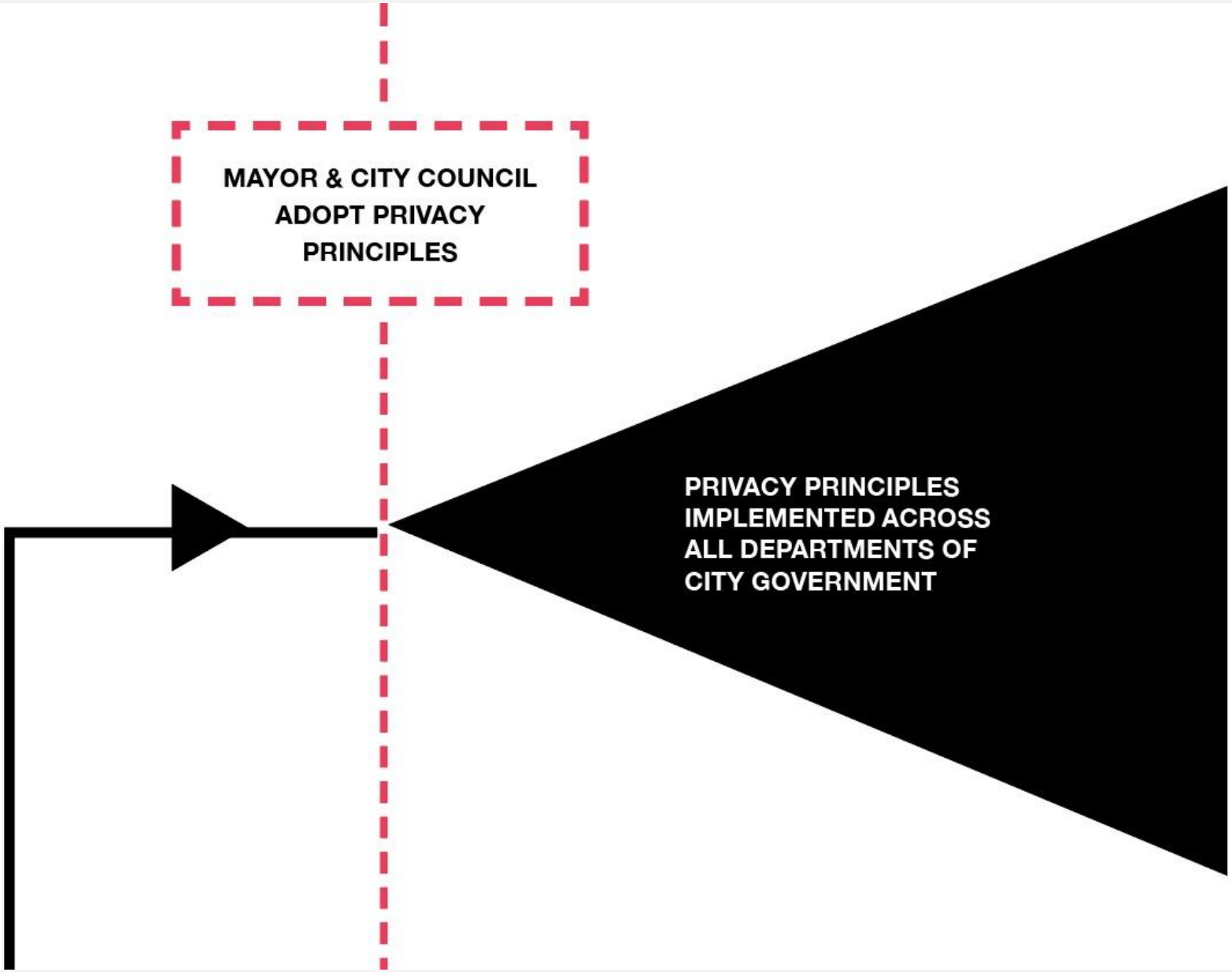
A Closer Look: Seattle Privacy Advisory Committee

A Closer Look: Seattle Privacy Advisory Committee

PRIVACY PRINCIPLES

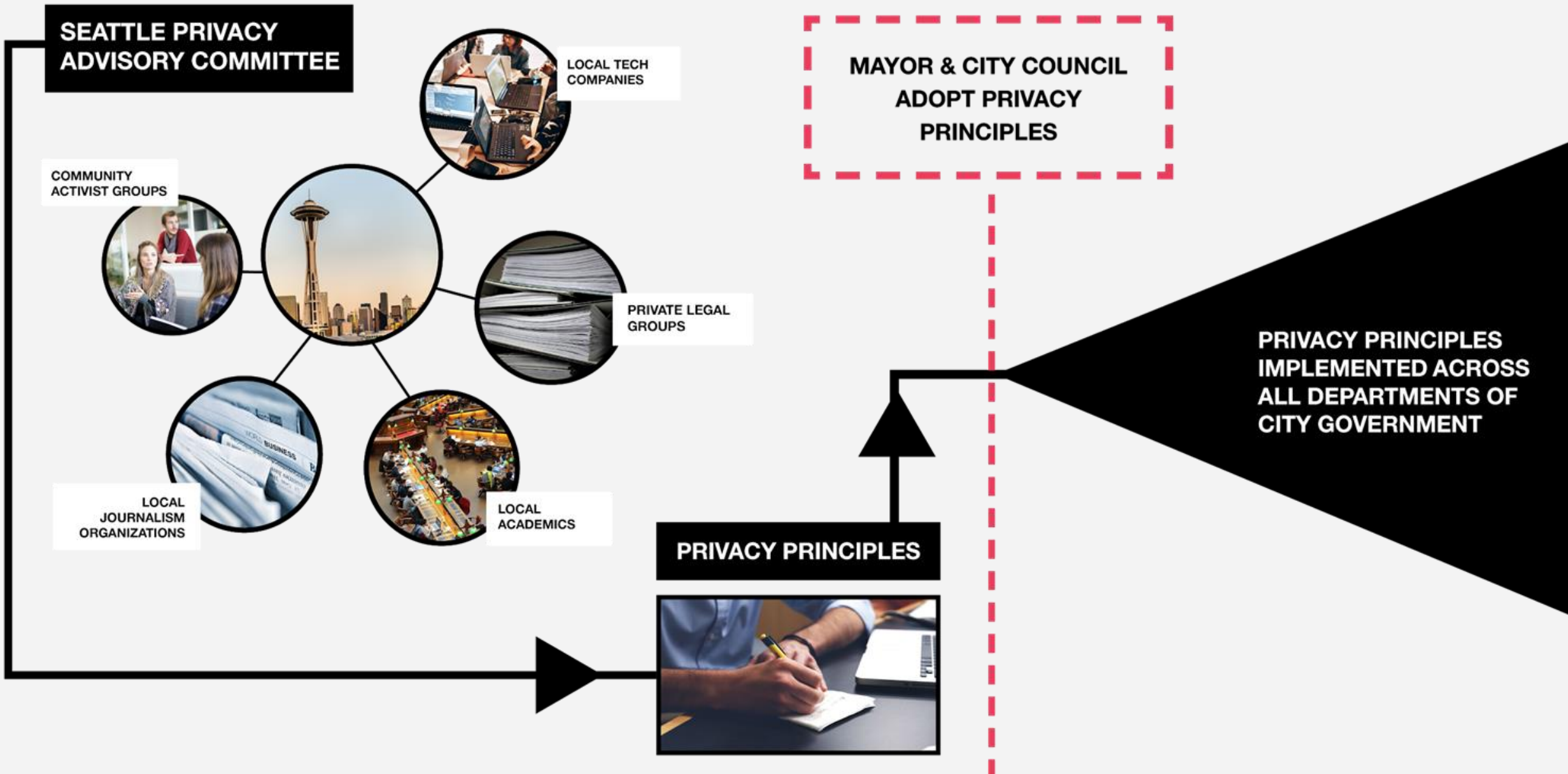


A Closer Look: Seattle Privacy Advisory Committee



Data Privacy

A Closer Look: Seattle Privacy Advisory Committee



Data Privacy

A Closer Look: Seattle Privacy Advisory Committee

1 We value your privacy...

Keeping your personal information private is very important. We consider potential risks to your privacy and the public's well-being before collecting, using and disclosing your personal information.

2 We collect and keep only what we need...

We only collect information that we need to deliver City services and keep it as long as we are legally required and to deliver those services. Whenever possible, we tell you when we are collecting this information.

3 How we use your information...

When possible, we make available information about the ways we use your personal information at the time we collect it. We commit to giving you a choice whenever possible about how we use your information.

4 We are accountable...

We are responsible for managing your personal information in a manner that is consistent with our commitments and as required by law. We protect your personal information by restricting unauthorized access and by securing our computing resources from threats.

5 How we share your information...

We follow federal and state laws about information disclosure whenever we work with outside governmental agencies and in answering Public Disclosure Requests (PDRs). Business partners and contracted vendors who receive or collect personal information from us or for us to deliver City services must agree to our privacy requirements.

6 Accuracy is important...

We work to maintain and use accurate personal information for City business. When practical, we will work to correct inaccurate personal information. We also direct our partners and contracted vendors to follow the same guidelines.

Data Privacy

A Closer Look: Seattle Privacy Advisory Committee

SIMPLE

1 We value your privacy...

Keeping your personal information private is very important. We consider potential risks to your privacy and the public's well-being before collecting, using and disclosing your personal information.

2 We collect and keep only what we need...

We only collect information that we need to deliver City services and keep it as long as we are legally required and to deliver those services. Whenever possible, we tell you when we are collecting this information.

3 How we use your information...

When possible, we make available information about the ways we use your personal information at the time we collect it. We commit to giving you a choice whenever possible about how we use your information.

4 We are accountable...

We are responsible for managing your personal information in a manner that is consistent with our commitments and as required by law. We protect your personal information by restricting unauthorized access and by securing our computing resources from threats.

5 How we share your information...

We follow federal and state laws about information disclosure whenever we work with outside governmental agencies and in answering Public Disclosure Requests (PDRs). Business partners and contracted vendors who receive or collect personal information from us or for us to deliver City services must agree to our privacy requirements.

6 Accuracy is important...

We work to maintain and use accurate personal information for City business. When practical, we will work to correct inaccurate personal information. We also direct our partners and contracted vendors to follow the same guidelines.

Data Privacy

A Closer Look: Seattle Privacy Advisory Committee

1 We value your privacy...
Keeping your personal information private is very important. We consider potential risks to your privacy and the public's well-being before collecting, using and disclosing your personal information.

2 We collect and keep only what we need...
We only collect information that we need to deliver City services and keep it as long as we are legally required and to deliver those services. Whenever possible, we tell you when we are collecting this information.

3 How we use your information...
When possible, we make available information about the ways we use your personal information at the time we collect it. We commit to giving you a choice whenever possible about how we use your information.

4 We are accountable...
We are responsible for managing your personal information in a manner that is consistent with our commitments and as required by law. We protect your personal information by restricting unauthorized access and by securing our computing resources from threats.

5 How we share your information...
We follow federal and state laws about information disclosure whenever we work with outside governmental agencies and in answering Public Disclosure Requests (PDRs). Business partners and contracted vendors who receive or collect personal information from us or for us to deliver City services must agree to our privacy requirements.

6 Accuracy is important...
We work to maintain and use accurate personal information for City business. When practical, we will work to correct inaccurate personal information. We also direct our partners and contracted vendors to follow the same guidelines.

SIMPLE

CLEAR

Data Privacy

A Closer Look: Seattle Privacy Advisory Committee

1 We value your privacy...

Keeping your personal information private is very important. We consider potential risks to your privacy and the public's well-being before collecting, using and disclosing your personal information.

2 We collect and keep only what we need...

We only collect information that we need to deliver City services and keep it as long as we are legally required and to deliver those services. Whenever possible, we tell you when we are collecting this information.

3 How we use your information...

When possible, we make available information about the ways we use your personal information at the time we collect it. We commit to giving you a choice whenever possible about how we use your information.

4 We are accountable...

We are responsible for managing your personal information in a manner that is consistent with our commitments and as required by law. We protect your personal information by restricting unauthorized access and by securing our computing resources from threats.

5 How we share your information...

We follow federal and state laws about information disclosure whenever we work with outside governmental agencies and in answering Public Disclosure Requests (PDRs). Business partners and contracted vendors who receive or collect personal information from us or for us to deliver City services must agree to our privacy requirements.

6 Accuracy is important...

We work to maintain and use accurate personal information for City business. When practical, we will work to correct inaccurate personal information. We also direct our partners and contracted vendors to follow the same guidelines.

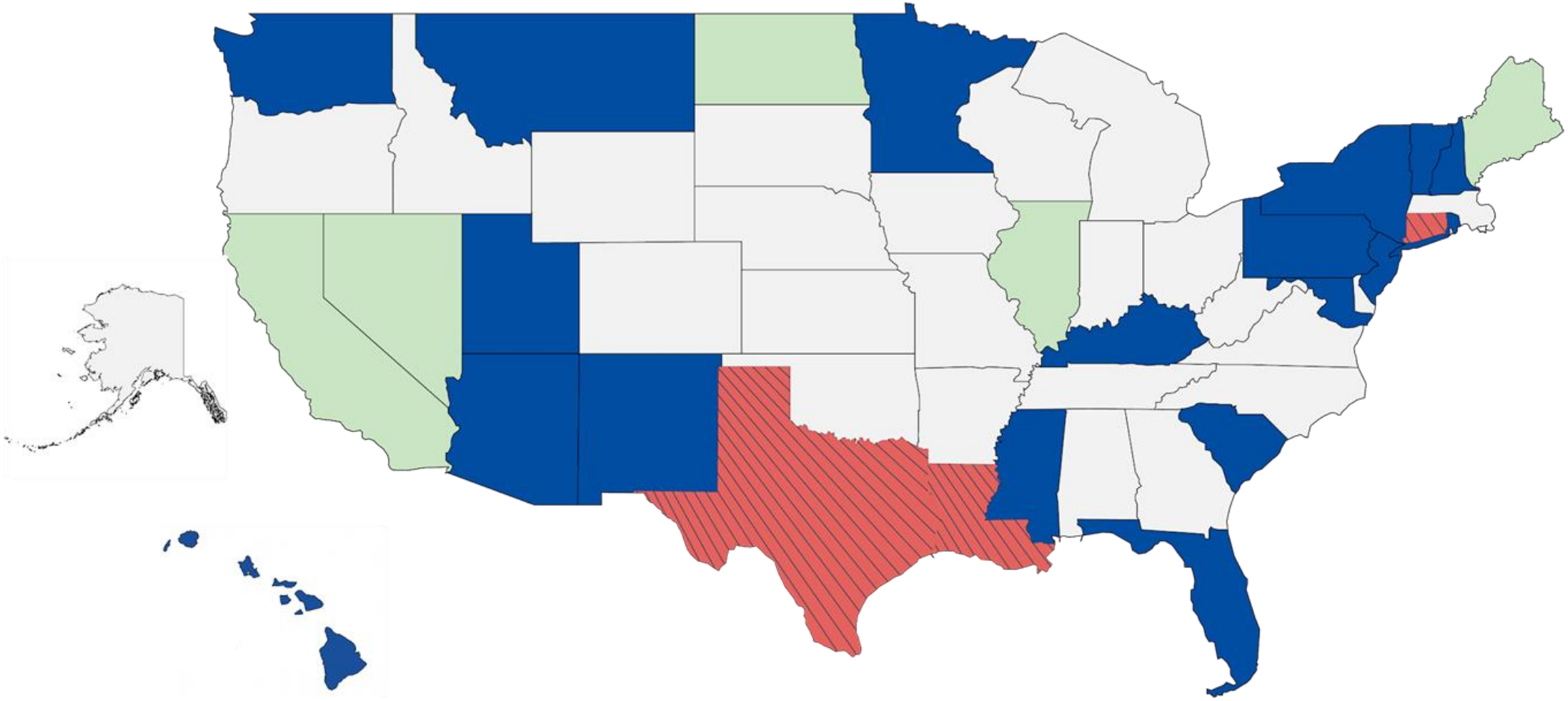
SIMPLE

CLEAR

CONCISE

Data Privacy

A Closer Look: Working with Private Partners



Enacted Data Privacy Legislation

Proposed Data Privacy Legislation

Created Statewide privacy taskforce

Data Privacy
Key Takeaways

- Start with Privacy Principles

Data Privacy
Key Takeaways

- Start with Privacy Principles
- Go Beyond Regulations and Policies

Data Privacy
Key Takeaways

- Start with Privacy Principles
- Go Beyond Regulations and Policies
- Balance Enforcement and Encouragement