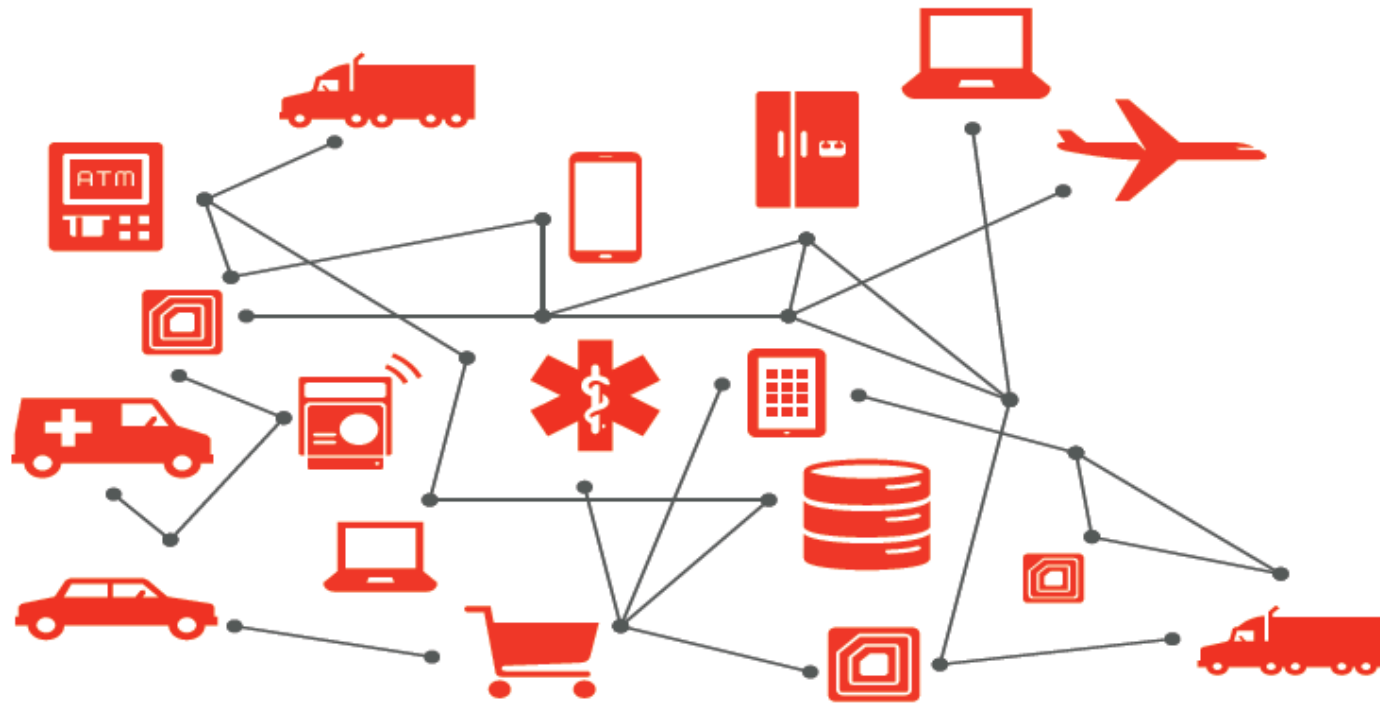


Big Data: Extracting Value, Managing Security and Privacy Risks

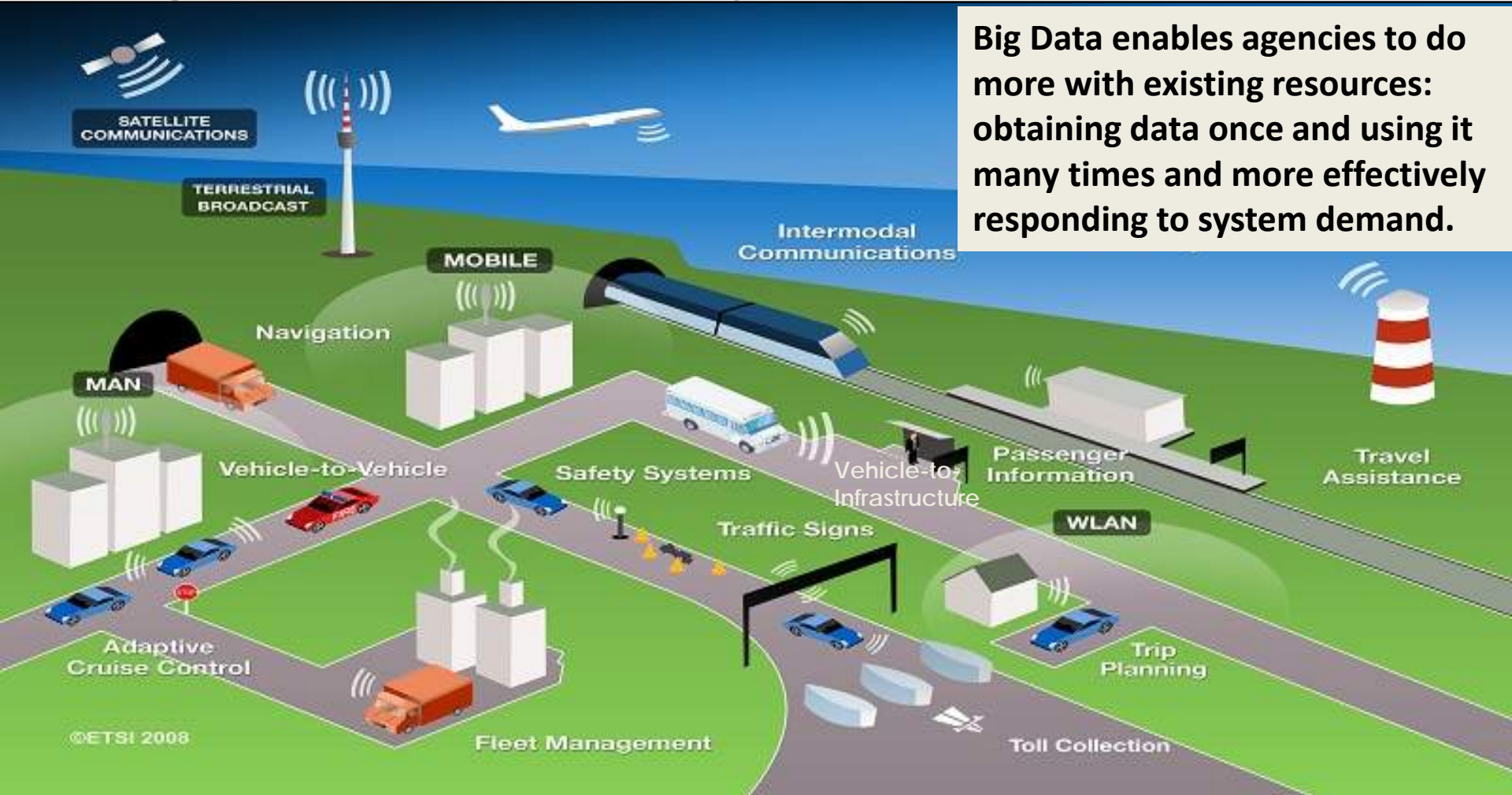


Dr. Johanna Zmud
Director, Washington, DC Office and Senior Research Scientist



Big Data Opportunity

Big Data enables agencies to do more with existing resources: obtaining data once and using it many times and more effectively responding to system demand.



Big Data: Process not Concept



Relatively Easy  Relatively more difficult 



Fusion of Data Creates New Knowledge

Sources:



Remote or *in situ* sensors



Crowdsourcing



Transactions



Monitored (IOT)



Opportunistic sensing

About:



People:

Movements, Economic activities, Interactions



Infrastructure:

Extent, Conditions, Performance



Environment:

Sources, Volumes, and Impacts of pollutants

New Models of Public-Private Engagement



- Benefits

- Private-sector innovation
- More efficient and accountable government

The more data are shared,
**the more threats to
privacy and security.**

Legal Data Protections

- No single national law regulating the collection and use of personal data
- Patchwork system of federal and state laws and regulations
- Best practices from Federal Trade Commission
 - Notice of collection and intended use (purpose limitation)
 - Informed consent
 - Citizen access
 - Responsibility to keep data secure and accurate



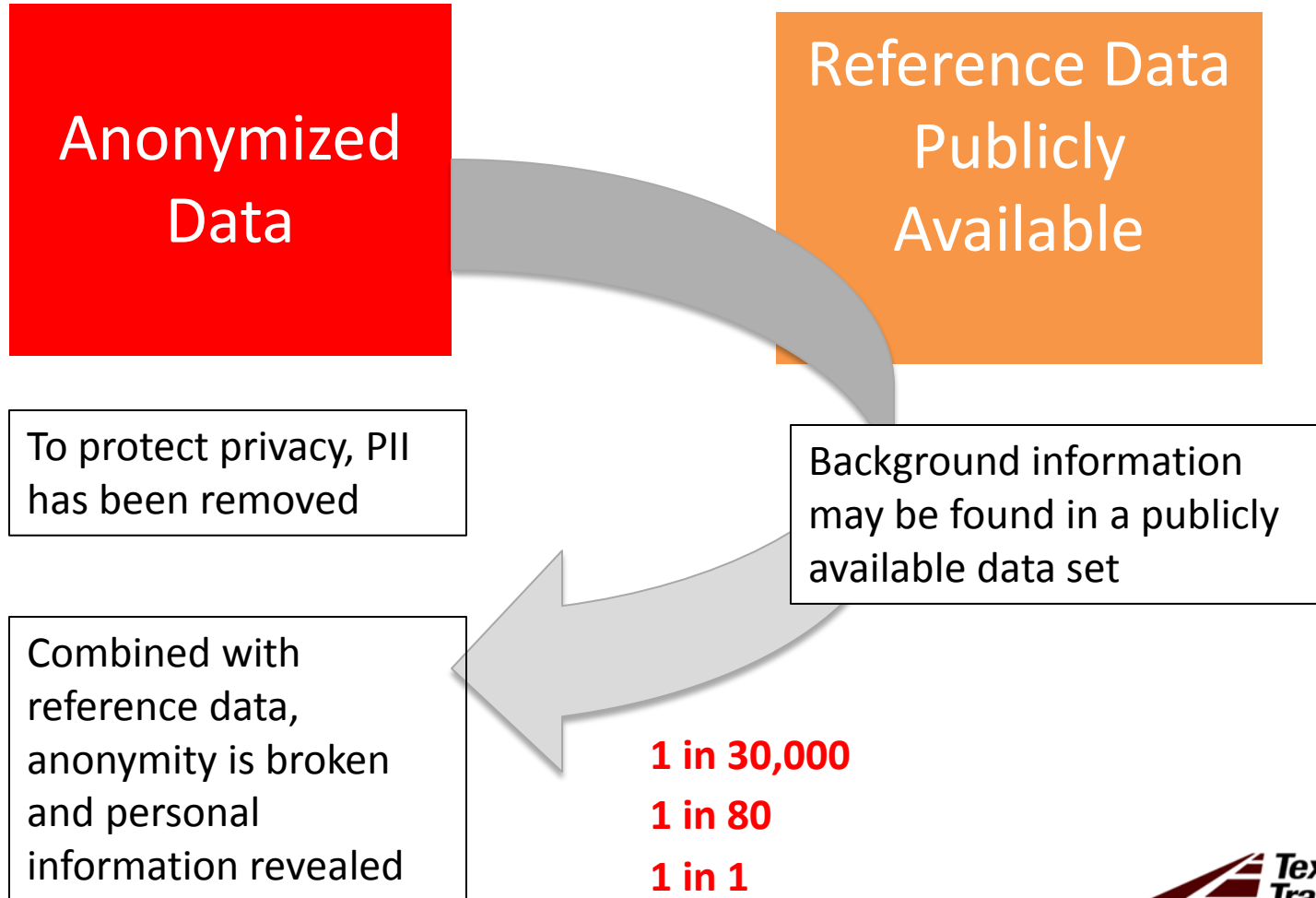
Data Protection “Gaps” in a Big Data World

- ~~Notice~~
- ~~Purpose limitation~~
- ~~Informed consent~~

- Data that can be tied to a person often:
 - Not provided by a subject
 - Results from opportunistic sensing
 - Emerges ex-post from data fusion

- ~~Responsibility to keep data secure~~

How Easy to Break Anonymity



More Security Threats to Big Data

- Data breaches are common and increasingly expensive
- NIST: Know, Prevent, Detect, Respond, Recover



- Lack of designed security
- Big data diversity
- Big data skills gap
- 3rd party users

Cyber security is now a CEO issue

How People Feel About Security and Privacy?

- **91%** of adults agree that consumers have lost control of how personal information is collected and used by companies
- **31%** feel confident that records of their activity maintained by government agencies will remain private and secure
- **50%** of adults feel that details of their physical location over time is very sensitive information
- **45%** of online households avoided online activities due to privacy or security concerns
- **19%** affected by an online security breach

Big Data: Research Going Forward

- Are people more or less concerned about data privacy and security?
- Who should own data of use to transportation agencies and what are sharing protocols?
- How can transportation agencies ensure an adequate level of data literacy for handling new data streams and novel types?
- What are the trade-offs in terms of open data / privacy protections that transportation agencies will need to make? And, what are their economic costs?
- How can transportation agencies responsibly capture, use, and share geo-located personal information?

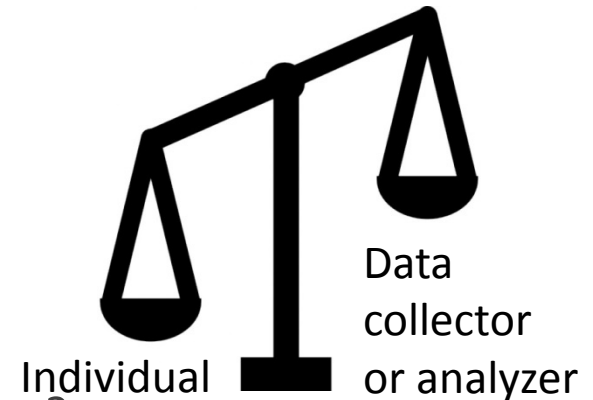
Time for a New Deal on Data?

- **Objective**

- Rebalancing ownership of data in favor of individuals whose data are collected

- **Rationale**

- Personal data immensely valuable – both for public agencies and private companies
- How to ensure people are willing to share their data?



- **Method**

- Data as money
- Managed account of personal data like a bank account (personal data locker or store)

- **Outcome**

- Market for access and use

What would New Deal on Data mean for transportation agencies?

Thank you!
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