

Welcome to the Consensus Safety Measurement Methodologies for ADS- Equipped Vehicles Workshop!

June 25-26, 2019

NIST

NIST Campus in
Gaithersburg, MD



**U.S. Department
of Transportation**



**VIRGINIA TECH
TRANSPORTATION INSTITUTE**

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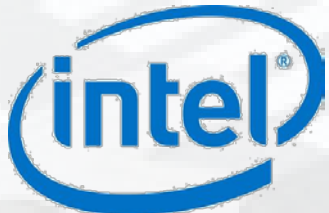
NIST

David Wollman
david.wollman@nist.gov

NIST Campus in
Gaithersburg, MD



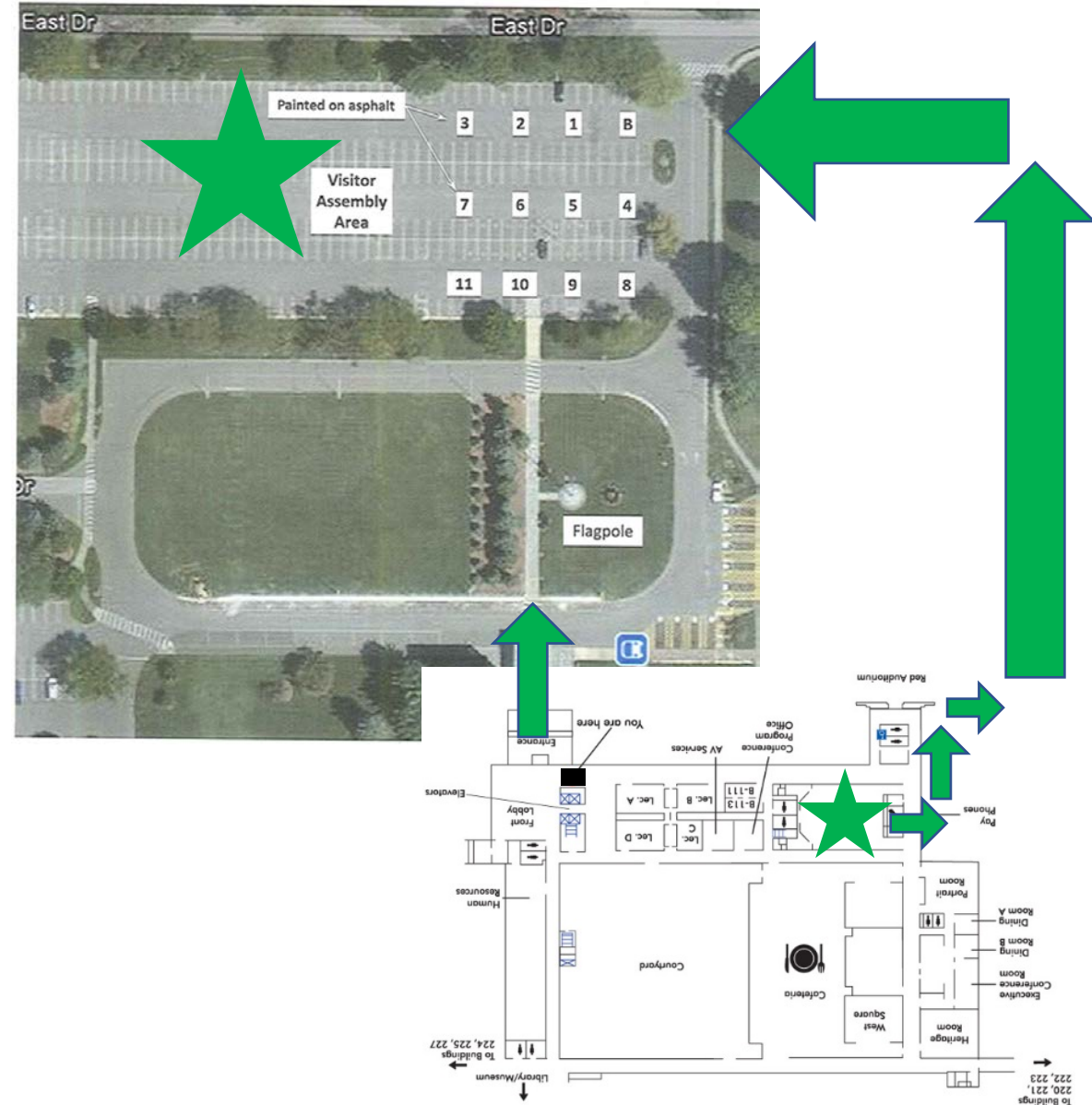
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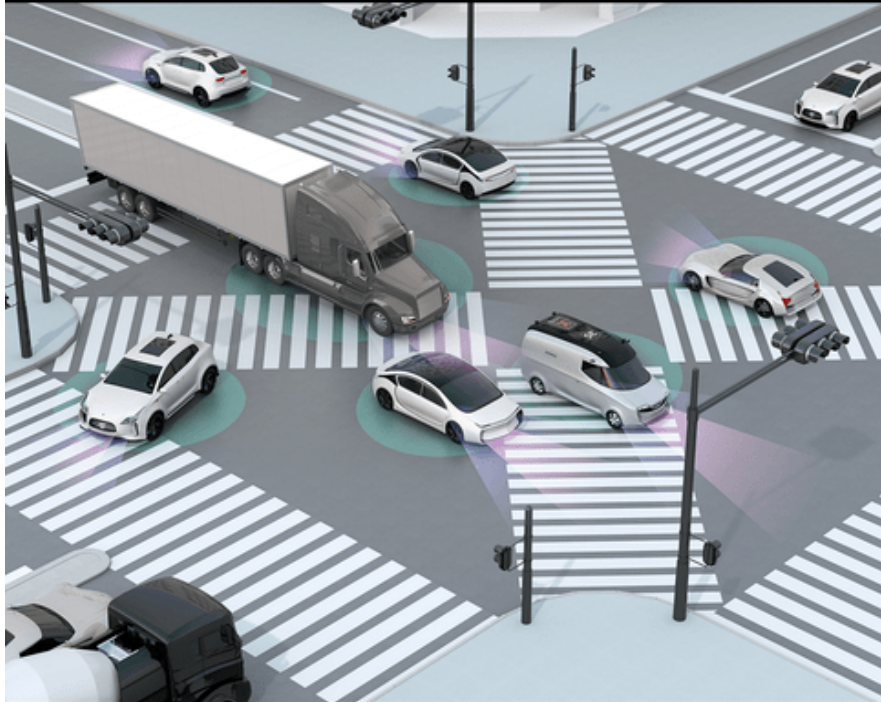
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Safety First: NIST safety video will be shown

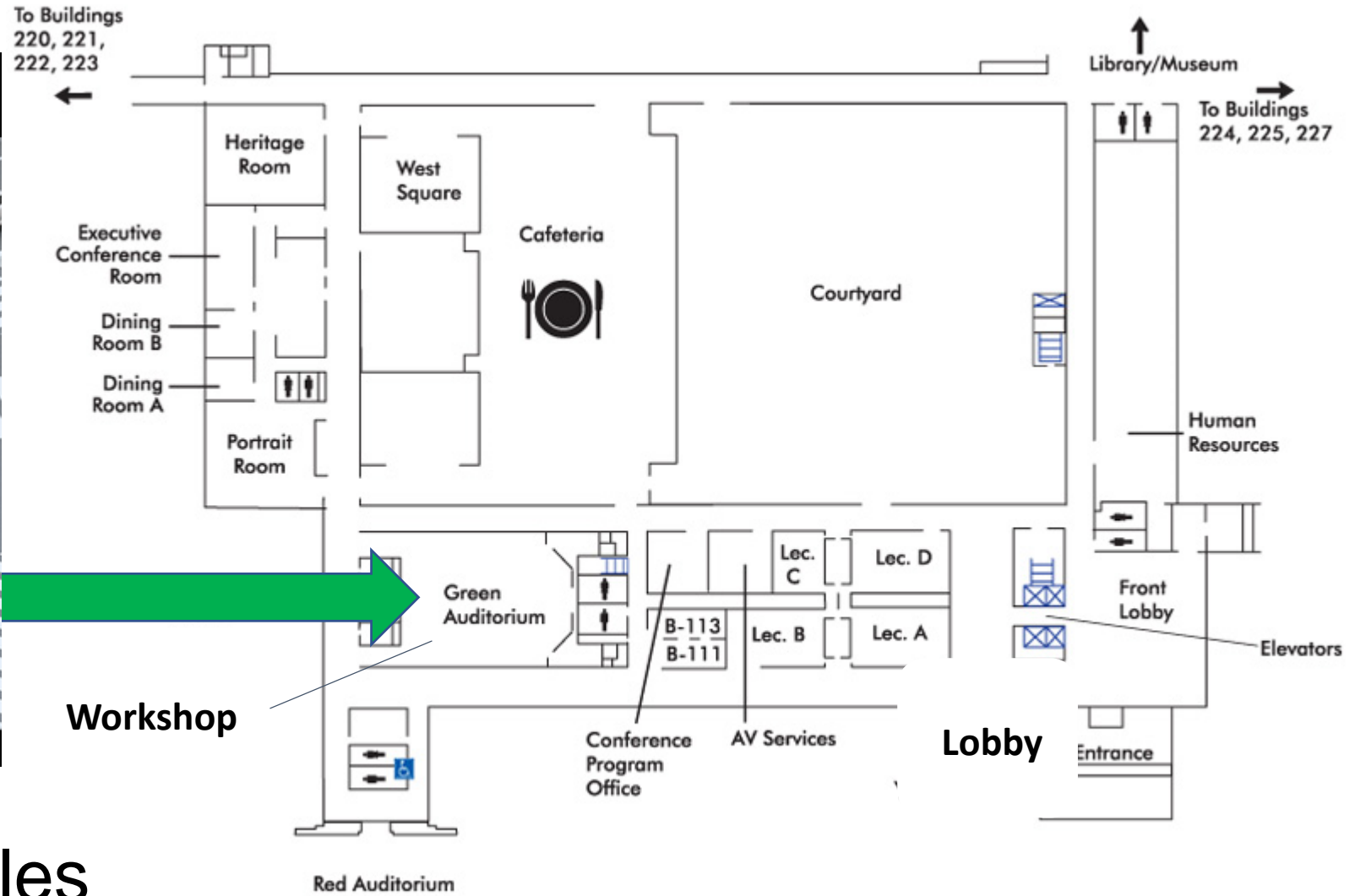
- In an emergency, please exit auditorium and if safe, turn left and head out exit doors to the right past where you picked up badges (or follow exit signs)
- Once outside, NIST staff will lead you to assembly points in the parking lots
- If alarm sounds, loudspeaker instructions will follow with additional information (shelter in place, etc.)



Consensus Safety Measurement Methodologies for ADS-Equipped Vehicles Workshop



NIST, Gaithersburg, MD on June 25-26, 2019



#NISTADS Vehicles

Webcast audience input:
david.wollman@nist.gov

- Some simple ground rules to help facilitate the discussions:

- Use aisle microphones if possible, one person speaks at a time
- Please give name/affiliation, and limit response to a minute
- Please focus on one concept/question at a time (avoid asking long list of questions ...)
- Reserve judgment during idea gathering (be constructive)
- Mute your electronics

Moderators and
Speakers: Please
stay on time!

Workshop plenary
sessions are being
webcast and recorded.

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**U.S. Department
of Transportation**



#NISTADSvehicles

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Chris Greer
David Wollman
Ed Griffor

**Workshop
Partners &
Organizing
Committee**

Ken Leonard



**U.S. Department
of Transportation**

Jack Weast
Greg Leeming

John Maddox
Simone Wilson

Ed Straub

Myra Blanco



#NISTADSVehicles

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Agenda – Tuesday morning

- **9:15AM Workshop Overview, Goals, and Opening Statements**
[Chris Greer, moderator]
 - Chris Greer (NIST)
 - Loren Smith (USDOT)
 - Jack Weast (Intel Corporation)
 - John Maddox (Lyft)
- **10:15AM State and Users Perspectives**
[Greg Leeming, moderator]
 - Gummada Murthy (American Association of State Highway and Transportation Officials - AASHTO)
 - Kevin Biesty (Arizona Department of Transportation)
 - Marisa Walker (Arizona Commerce Authority)
 - Jessica Cicchino (Insurance Institute for Highway Safety - IIHS)
- **11:00AM Break**
- **11:15AM Developers Perspectives: Manufacturers and Technology Companies**
[Ed Griffor, moderator]
 - Jack Weast (Intel Mobileye)
 - John Maddox (Lyft)
 - Ron Medford (Waymo)
 - Colm Boran (Ford Motor Company)
 - Steve Kenner (Uber)
 - Padma Sundaram (GM)
 - Nick Royal (Ricardo Innovation)
- **12:20PM Current Standards and Testing Methods (US and International)**
[Myra Blanco, moderator]
 - Edward Straub (Automated Vehicles Safety Consortium - SAE)
 - Myra Blanco (Virginia Tech Transportation Institute - VTTI)
 - Aviral Shrivastava (Arizona State University)
 - Brian Williams (Massachusetts Institute of Technology - MIT)
- **1:00PM Lunch (on your own, NIST cafeteria)**⁷

Agenda – Tuesday afternoon

- **1:50PM Evolving Methods and Frameworks**

[Jack Weast, moderator]

- Frank Barickman (USDOT)
- Jack Weast (Intel Corporation)
- Michelle Chaka (VTTI)

- **2:50PM Instructions for Breakouts and Short Break**

- David Wollman (NIST)

- **3:00PM Day 1 Breakouts**

- **4:15PM Break to Reconvene (Green Auditorium)**

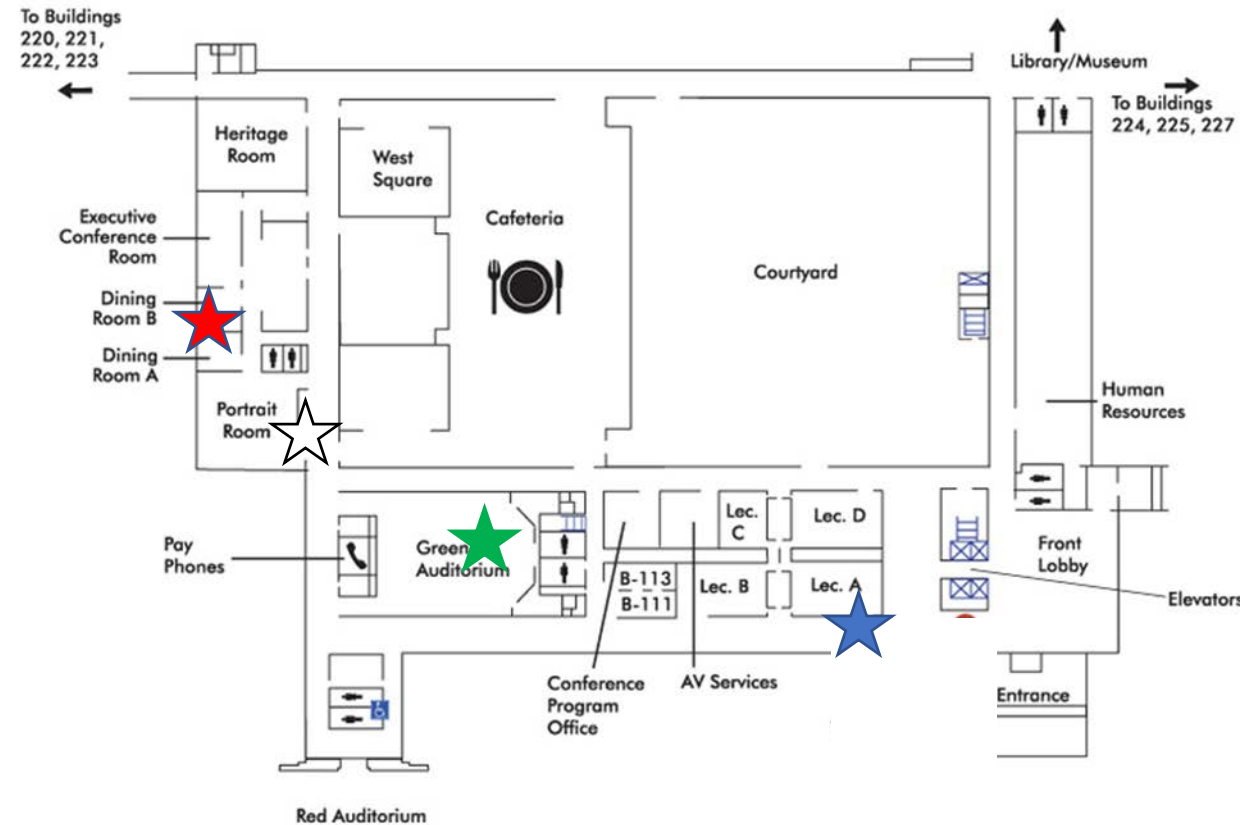
- **4:30PM Breakout Group Reports**

- **4:45PM Wrap-up, Day 2 Plan**

- Chris Greer (NIST)



Day 1 Breakouts – Tuesday June 25		
Meeting Room	Attendee Last Name	Moderator
Lecture Room A	A-G	Jack Weast
Portrait Room	H-M	John Maddox
Dining Room A&B	N-Q	Ed Straub
Green Auditorium	R-Z	Myra Blanco



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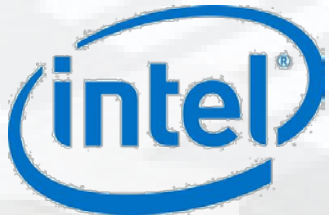
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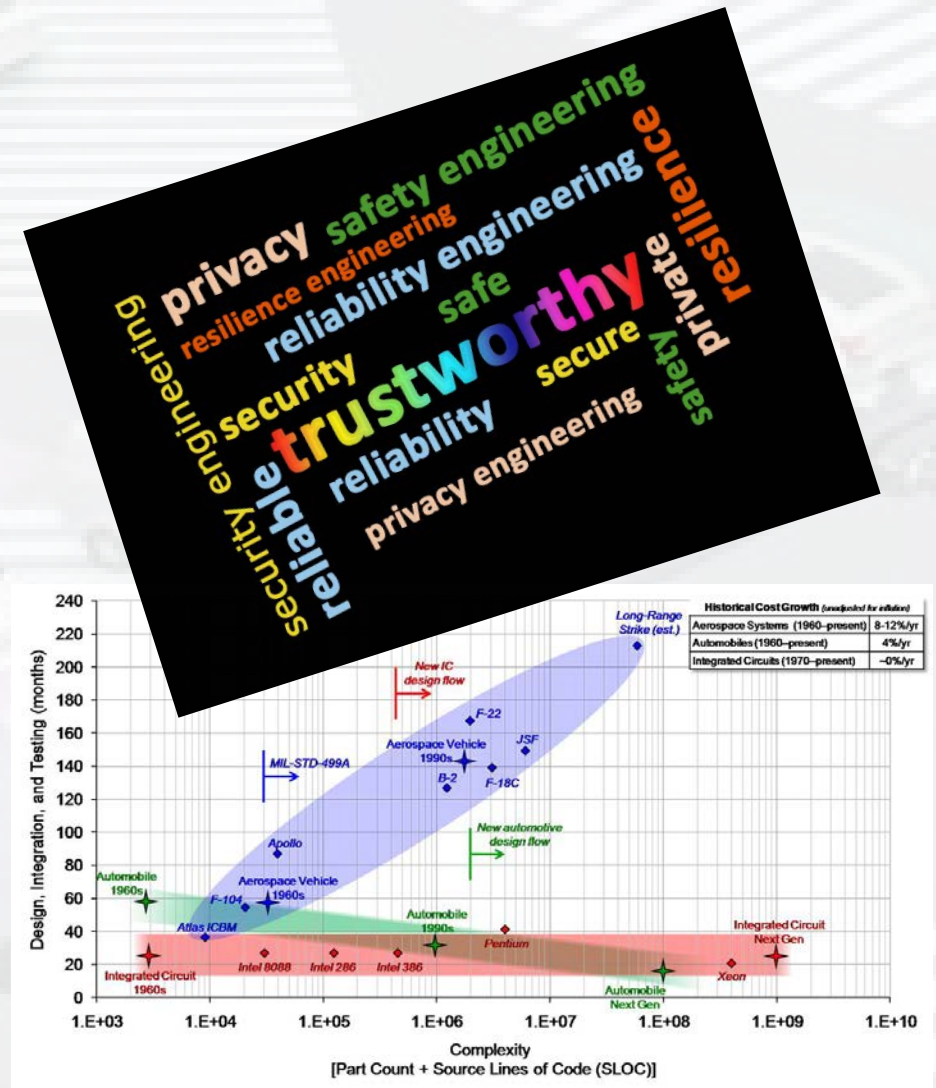
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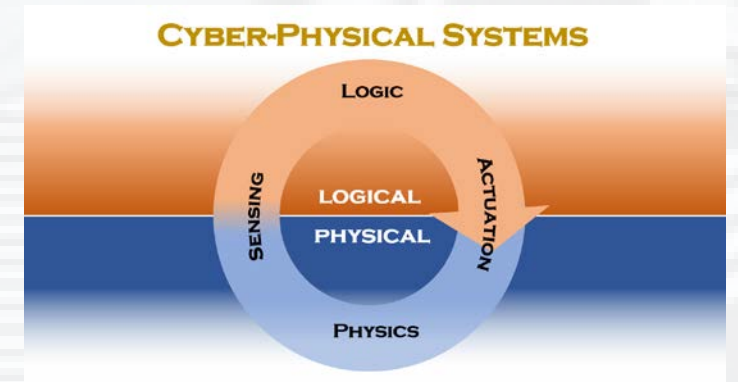
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Measuring ADS-Equipped Vehicle Safety: The Opportunity

- Need to understand where we are on safety
- Need to assess if and by how much our innovations improve safety
- Need to understand the tradeoffs with other concerns
- Need to understand the relationship to complexity



Smart Grid and Cyber-Physical Systems (SGCPS) Program at NIST



- Metrology mission of NIST
- NIST as part of the Department of Commerce mission
 - Transportation as one of the top three elements of the economy
 - AVs will transform markets
- Ed Griffor Background
 - Academic Research (Mathematics and EE in the US, Europe and South America)
 - Industry Experience (Chief Scientist for EE at DaimlerChrysler, Fiat-Chrysler)
 - Functional Safety and Cybersecurity
 - Gov't Experience (Assoc. Director for Cyber Physical Systems/IoT)
 - NIST CPS/IoT Framework
 - System Trustworthiness (Safety, Security, Privacy, Resilience and Reliability)

Serendipity?

- NIST Breakthroughs: CPS/IoT Framework, Trustworthiness Reasoning and AV Testbed
- Right group of people (from ADS Manufacturers to early adopters/transportation as a service Lyft and UBER)
- Right time (deployment of partial autonomy is underway and of full autonomy is immanent)
- There is a large body of good work to build on:
 - Industry testing/validation practices for Automated Driving features
 - NHTSA Framework for Test Cases
 - RAND Framework
 - and others ...
- Surging work on AI in CPS/IoT