

Slow Down
You Move Too Fast
You've Got to Make the

Fuel Last





Who Am I?



DAIMLER

DAIMLER



To What Associations Do I Belong?



With Whom Do I Work?



Qualnetics Inc.

Intellectual Property Licensing for Telematics



The NTC is proudly affiliated with:



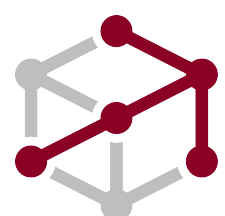
FOR THE LIFE OF YOUR BUSINESS



The National Academies of

SCIENCES
ENGINEERING
MEDICINE

Assessment of Technologies and Approaches for Reducing the Fuel Consumption of Medium- and Heavy-Duty Vehicles, Phase 2

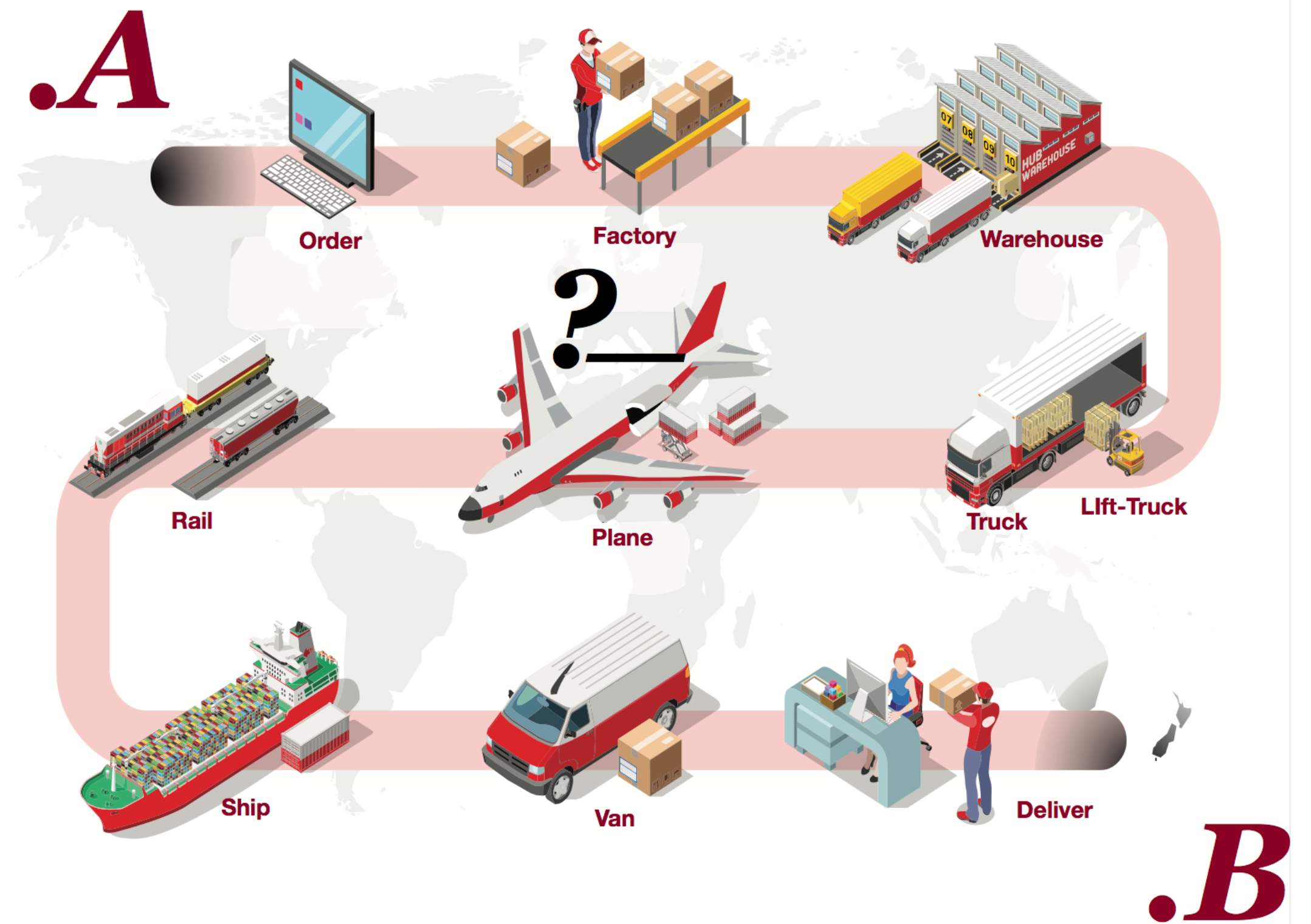


Report Will Cover Many Topics

- Regulatory Future
- Certification and Compliance
- Powertrain Technologies
- Technology to Reduce Power Demand
 - Aerodynamics, Tires, Weight, Axles, Auxiliary Loads
- Hybrids, Electric, Natural Gas, BioDiesel
- Freight Efficiency
- Intelligent Transportation Systems and Autonomy
- Manufacturing
- Costs and Benefits
- International Approaches

What I Learned Participating in NAS Studies

- WWW—well to wheel to world matters
- Real not estimated in the lab
- It's a weighty subject
- There are alternatives
- Waste not, want not, move it
- Information everywhere all the time
- It's a small world after all
- It's complicated
- 30-year gestation period



WWW—Well to Wheel to World Matters

- Fracking, Strip Mining, Drilling
- Pipelines
- Spills, Gaseous Discharge
- Equivalency of Energy Content
- Power to the Wheels
- Waste Discharge from Vehicle
- Hazardous Waste from Batteries
- Reuse of Batteries
- All the Other Parts

Real Not Estimated in the Lab

- Fleets Don't See What the Lab Sees
- Consider Diesel-Gate Issues Worldwide
- Driver Influence Always a Factor
- Maintenance an Issue
 - Clean filters
- Loads Different than Lab Tests
- Traffic Issues
- Standard Constantly Changing

It's a Weighty Subject

- Freight Weight/Mass Matters
- Light Load to Heavy Load, NOT Constant
- Heavy Haul of Steel, Grain, Fuel
- Light Haul of eCommerce Packages
- Power and Torque
- Startability and Gradeability
- Stopping Distance

There Are Alternatives

- Diesel
- Gasoline
- BioDiesel
- Battery Electric
- Ethanol
- Hydrogen Electric
- Natural Gas
- Propane
- Several More

Alternative Fuels and Advanced Vehicles

More than a dozen [alternative fuels](#) are in production or under development for use in [alternative fuel vehicles](#) and [advanced technology vehicles](#). Government and private-sector vehicle fleets are the primary users for most of these fuels and vehicles, but individual consumers are increasingly interested in them. Using alternative fuels and advanced vehicles instead of conventional fuels and vehicles helps the United States conserve fuel and lower vehicle emissions.



Biodiesel ▶

Biodiesel is a renewable fuel that can be manufactured from vegetable oils, animal fats, or recycled cooking grease for use in diesel vehicles.

[Diesel Vehicles ▶](#)



Electricity ▶

Electricity can be used to power plug-in electric vehicles, which are increasingly available. Hybrids use electricity to boost efficiency.

[Hybrid & Plug-In Vehicles ▶](#)



Ethanol ▶

Ethanol is a widely used renewable fuel made from corn and other plant materials. It is blended with gasoline for use in vehicles.

[Flexible Fuel Vehicles ▶](#)



Hydrogen ▶

Hydrogen is a potentially emissions-free alternative fuel that can be produced from domestic resources for use in fuel cell vehicles.

[Fuel Cell Vehicles ▶](#)



Natural Gas ▶

Natural gas is a domestically abundant gaseous fuel that can have significant fuel cost advantages over gasoline and diesel fuel.

[Natural Gas Vehicles ▶](#)



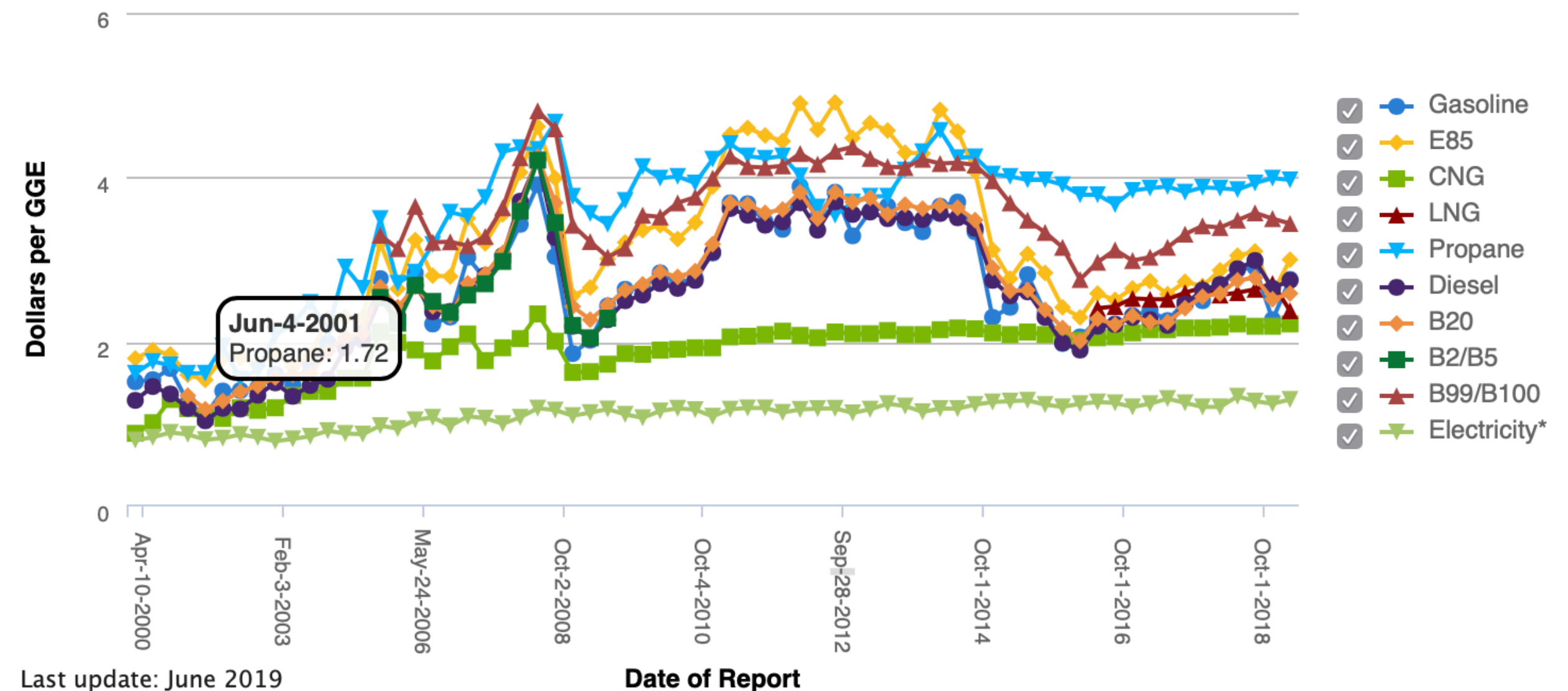
Propane ▶

Propane is a readily available gaseous fuel that has been widely used in vehicles throughout the world for decades.

[Propane Vehicles ▶](#)

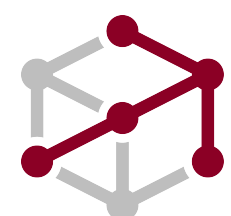
Average Retail Fuel Prices in the U.S.

[Print](#) [Download](#)



Last update: June 2019
Printed on August 15

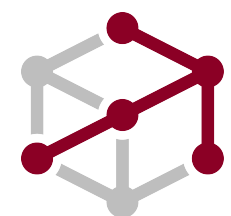
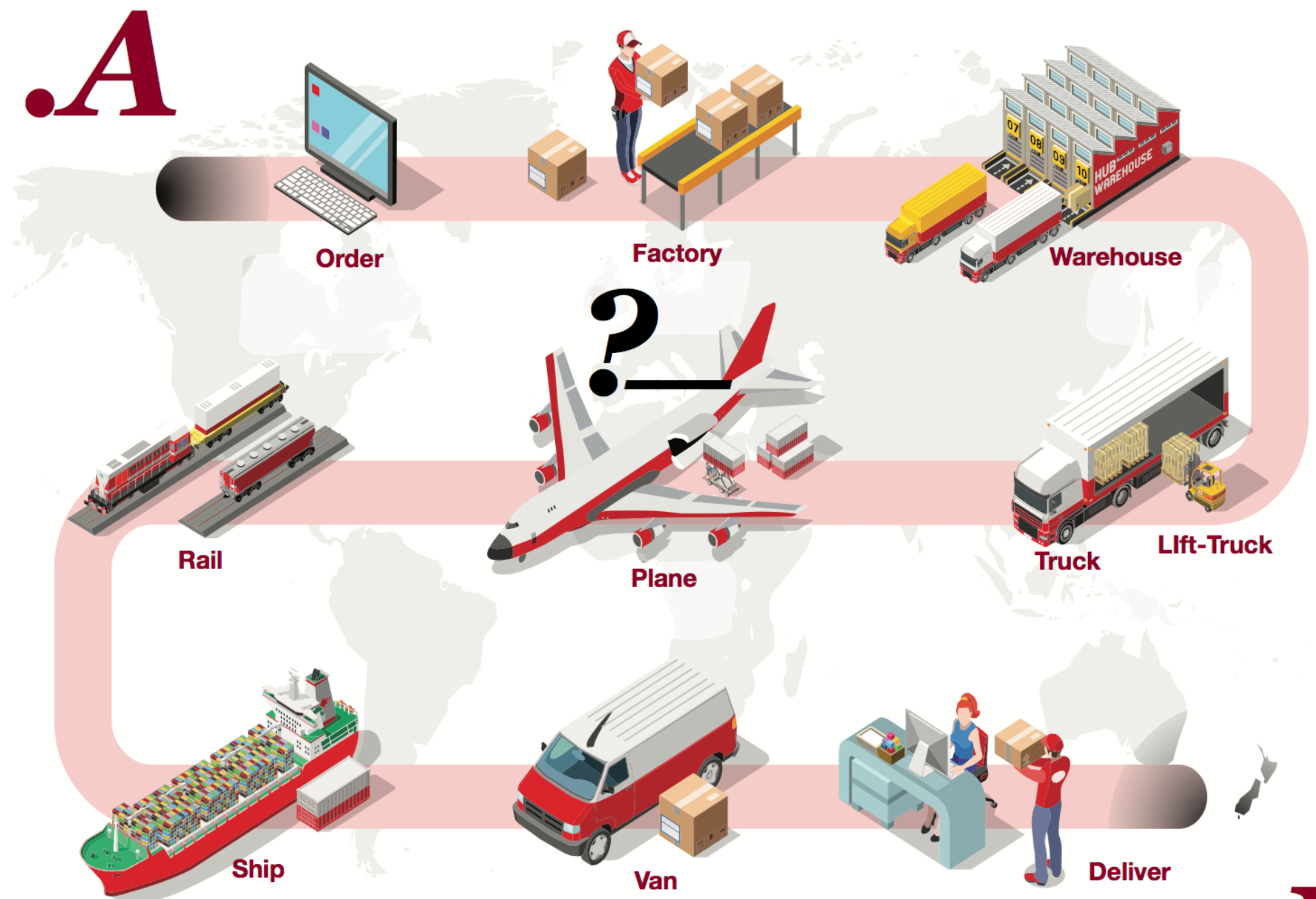
Source: [Clean Cities Alternative Fuel Price Reports](#)



Waste Not, Want Not, Move it

- Fuel
- Labor Hours
- Time
- Materials
- Mistakes
- Damage
- Pollution

• *A* ? • *B* TM



• *B*

Information Everywhere All the Time

- Blockchain
- Position Tracking by Multiple Satellite Networks
- Telematics
- Predictive Diagnostics
- Remote Diagnostics
- Over the Air Updates
- RFID

It's a Small World After All

Delphi Technologies

Worldwide emissions standards
On and off-highway commercial vehicles

2018 | 2019

Delphi Technologies

Worldwide emissions standards
Passenger cars and light duty vehicles

2019 | 2020

G T B

The International Automotive Lighting and Light Signalling Expert Group
Groupe de Travail "Bruxelles 1952"



Global Technical Regulations (GTRs)

1998 Agreement on Global Technical Regulations (GTRs)



International Organization of Motor Vehicle Manufacturers
OICA is the voice speaking on automotive issues in world forums



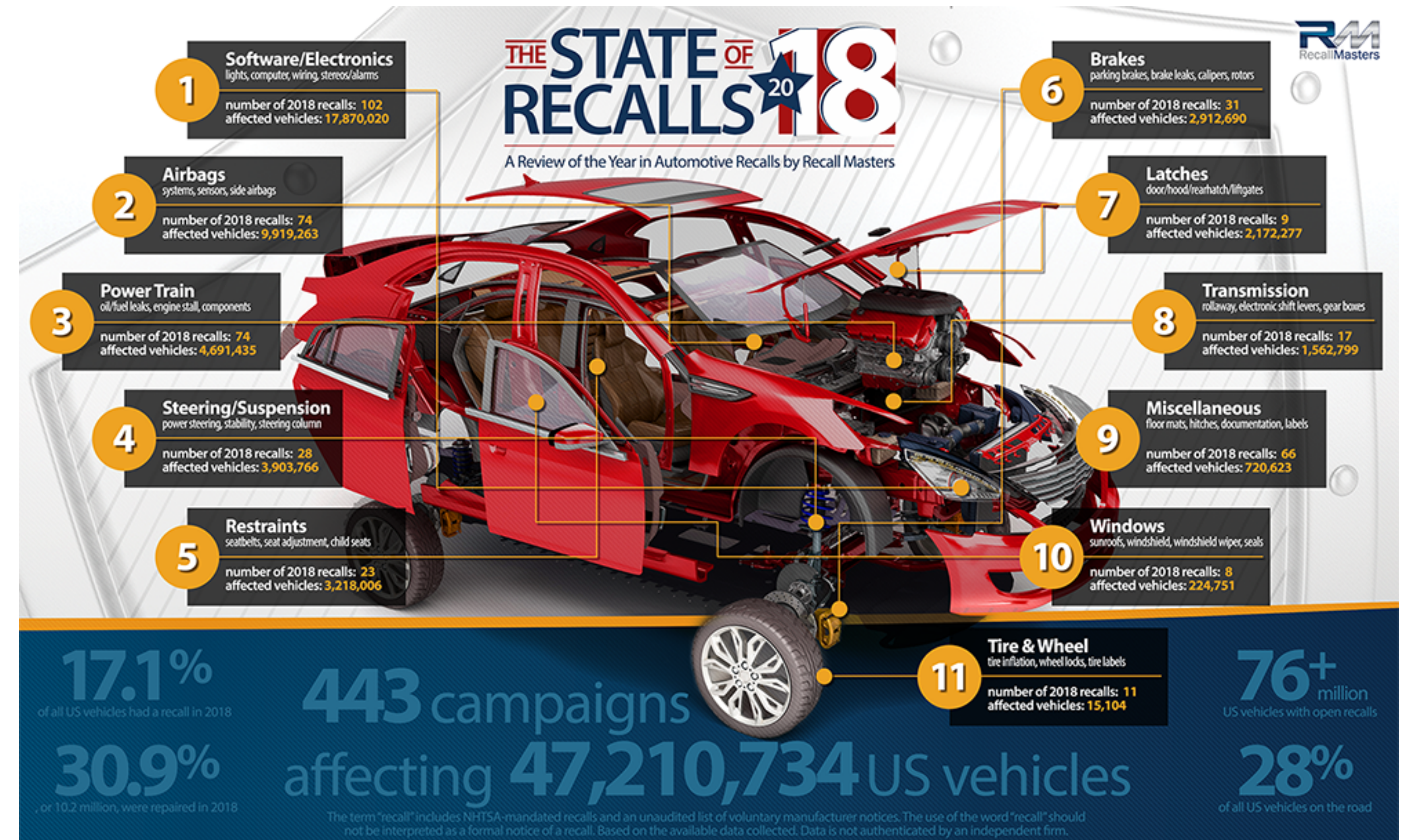
WHAT ARE YOU INTERESTED IN?

AUTOMOBILES	AVIATION
RAILROADS	PIPELINES AND HAZMAT
TRUCKING AND MOTORCOACHES	MARITIME AND WATERWAYS
ROADWAYS AND BRIDGES	BICYCLES AND PEDESTRIANS
PUBLIC TRANSIT	RESEARCH AND TECHNOLOGY



It's Complicated

- I'm a HIT! Our Home Integrated Technology Professional
- Tires are complicated by pressure monitoring, temperature monitoring, pressure maintenance
- 1980 vehicle had 0 computers
- 2020 has nearly 100
- Recalls abound



Vision for a Roadmap to Autonomy



HYPE—**H**eady **Y**arn for **P**rice/**E**arnings

- Lots of conferences worldwide
 - Who's doing the work if everyone is attending conferences and **TALK**ing about it?
 - **T**echnology **A**lways **L**ooks **K**ool!

AUTONOMOUS
VEHICLE TECHNOLOGY

Autonomous Vehicle 5 - 7 June 2018
INTERIOR DESIGN & TECHNOLOGY MESSE STUTTGART
SYMPOSIUM 2018

Also held alongside:

Autonomous Vehicle
TEST & DEVELOPMENT
Symposium Europe

Autonomous Vehicle
SOFTWARE
SYMPOSIUM

ONE DELEGATE PASS GIVES YOU ACCESS TO ALL 3 CONFERENCES

Autonomous Vehicle
TECHNOLOGY
WORLD EXPO 2018

The Symposium is an integral part of
Autonomous Vehicle Technology World Expo.



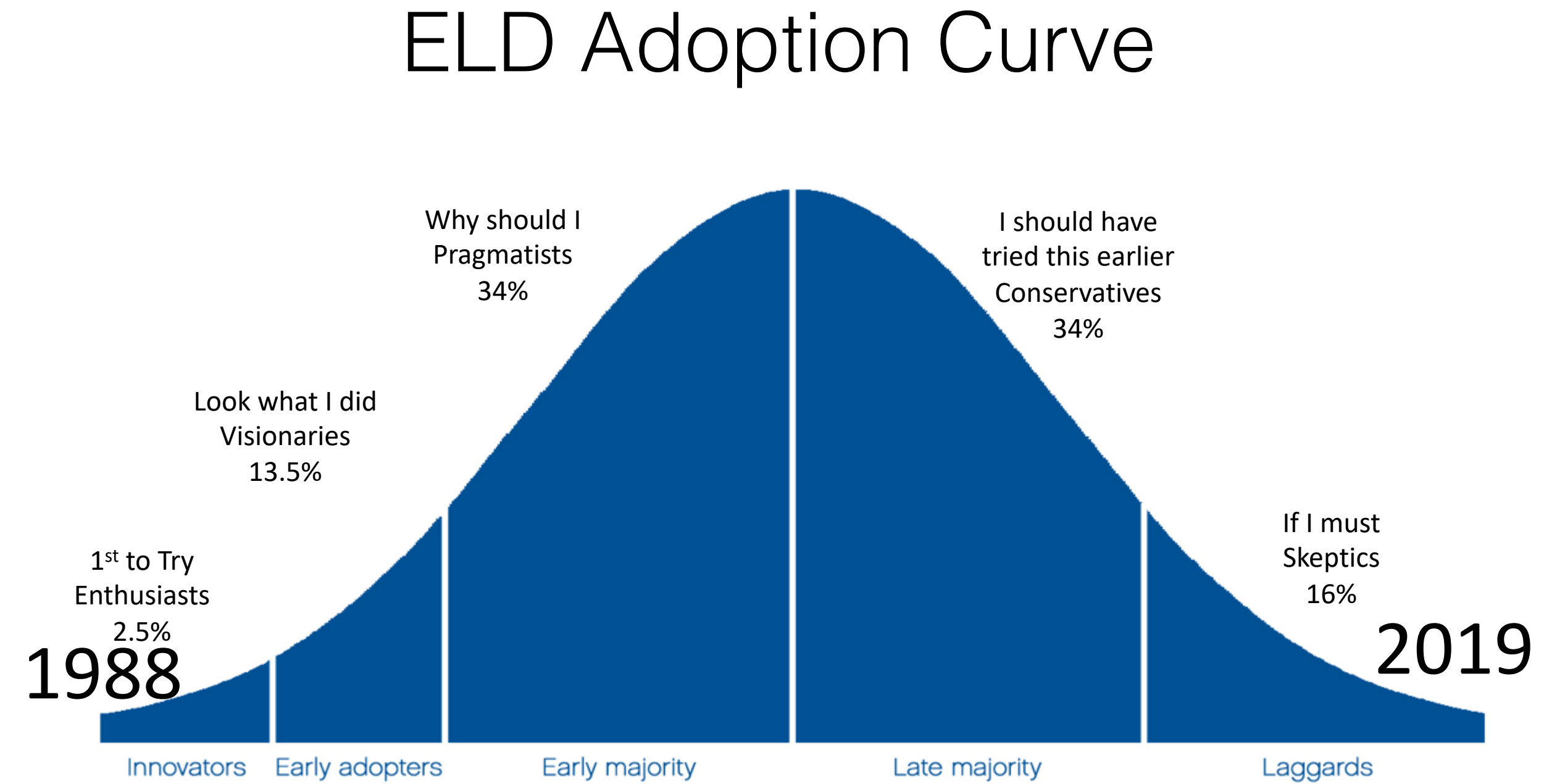
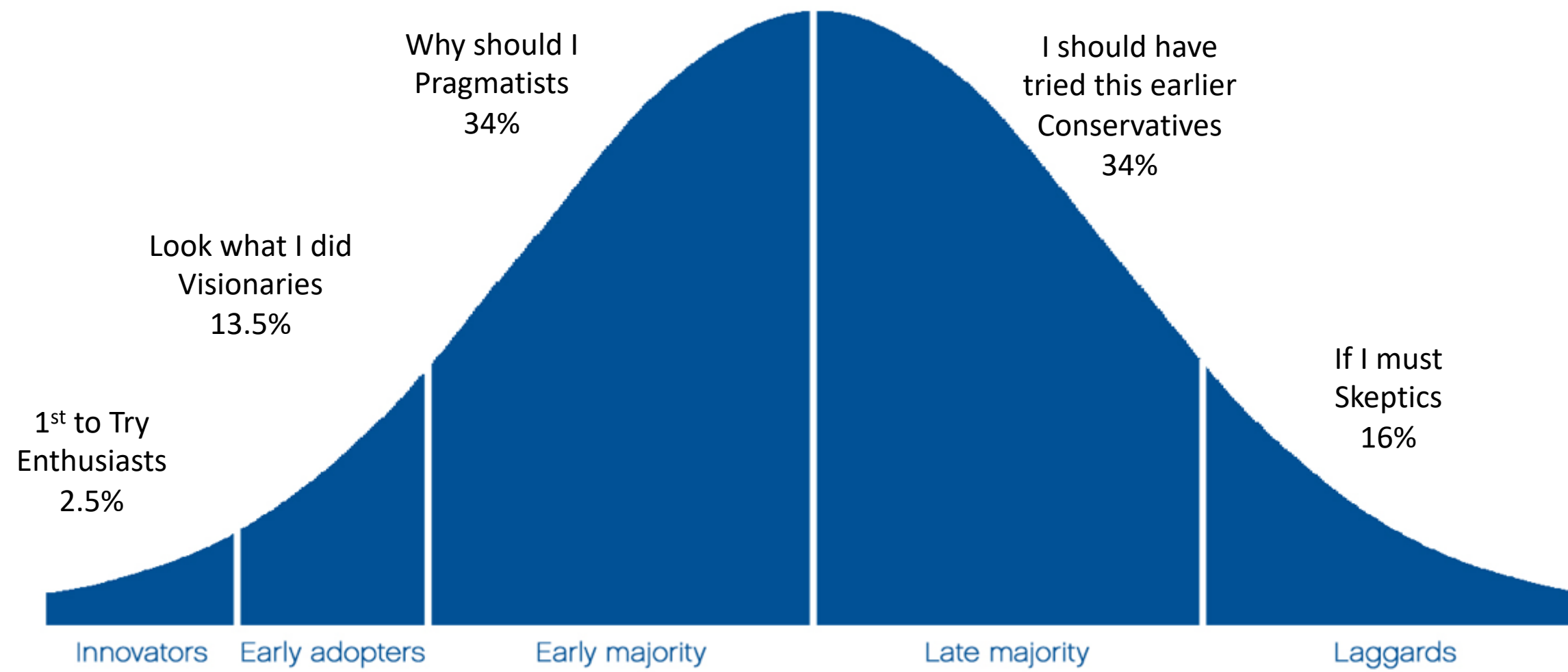
**AUTONOMOUS VEHICLE INTERIORS -
REWRITING THE RULE BOOK ON
AUTOMOTIVE INTERIOR DESIGN!**

63 Companies Licensed to Test Autonomous Vehicles in California

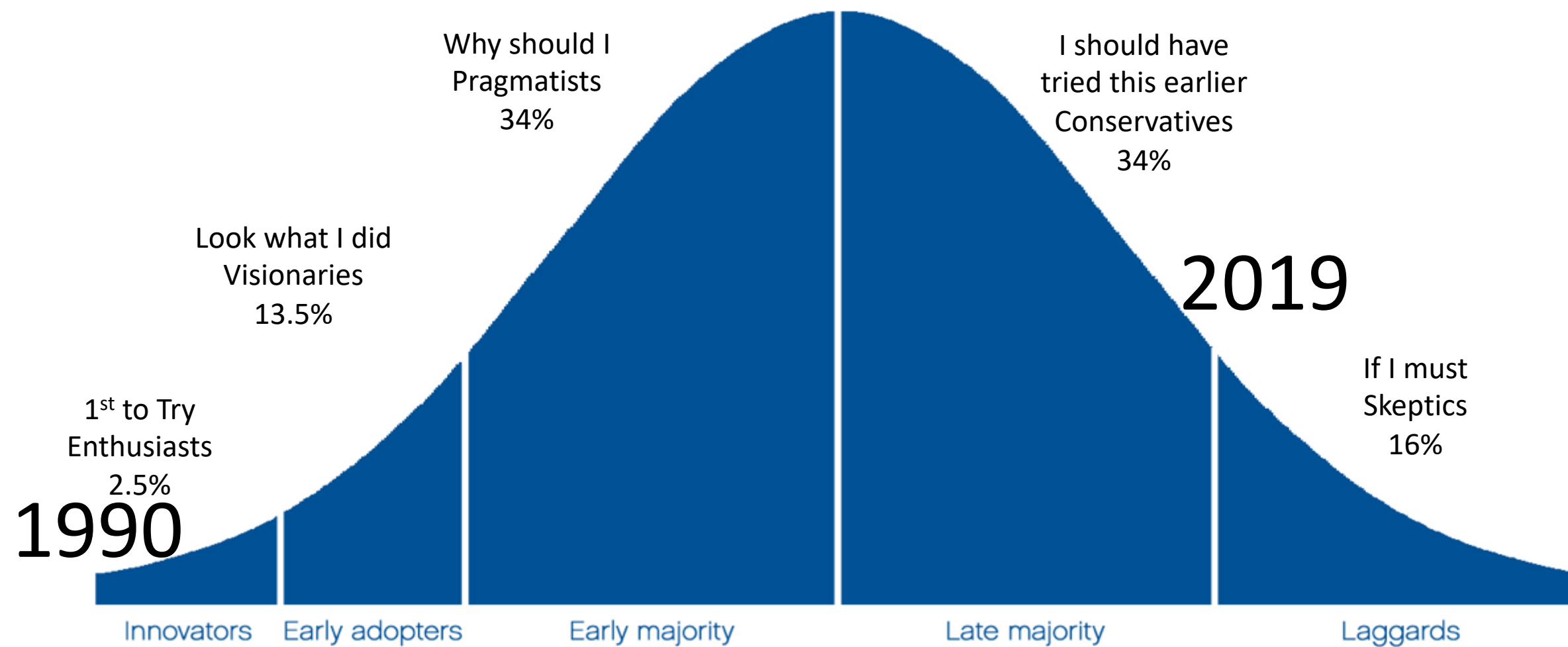
- Volkswagen Group of America
- Mercedes Benz
- Waymo LLC
- Delphi Automotive
- Tesla Motors
- Bosch
- Nissan
- GM Cruise LLC
- BMW
- Honda
- Ford
- Zoox, Inc.
- Faraday & Future Inc.
- Baidu USA LLC
- Valeo North America, Inc.
- NIO USA, Inc.
- Telenav, Inc.
- NVIDIA Corporation
- AutoX Technologies Inc
- Subaru
- Udacity, Inc
- Navya Inc.
- Renovo.auto
- PlusAi Inc
- Nuro, Inc
- CarOne LLC
- Apple Inc.
- Pony.AI
- TuSimple
- Jingchi Corp
- SAIC Innovation Center, LLC
- Almotive Inc
- Aurora Innovation
- Nullmax
- Samsung Electronics
- Continental Automotive Systems Inc
- Voyage
- CYNGN, Inc
- Roadstar.Ai
- Changan Automobile
- Lyft, Inc.
- Phantom AI
- Qualcomm Technologies, Inc.
- SF Motors Inc.
- Toyota Research Institute
- Apex.AI
- Intel Corp
- Ambarella Corporation
- Gatik AI. Inc.
- DiDi Research America LLC
- TORC Robotics Inc
- Boxbot Inc
- EasyMile
- Mando America Corporation
- Xmotors.ai, Inc.
- Imagry Inc.
- Ridecell Inc.
- AAA NCNU
- ThorDrive Inc
- Helm.AI Inc
- Argo AI, LLC
- Qcraft.ai
- Atlas Robotic, Inc.

30-Year Gestation Period

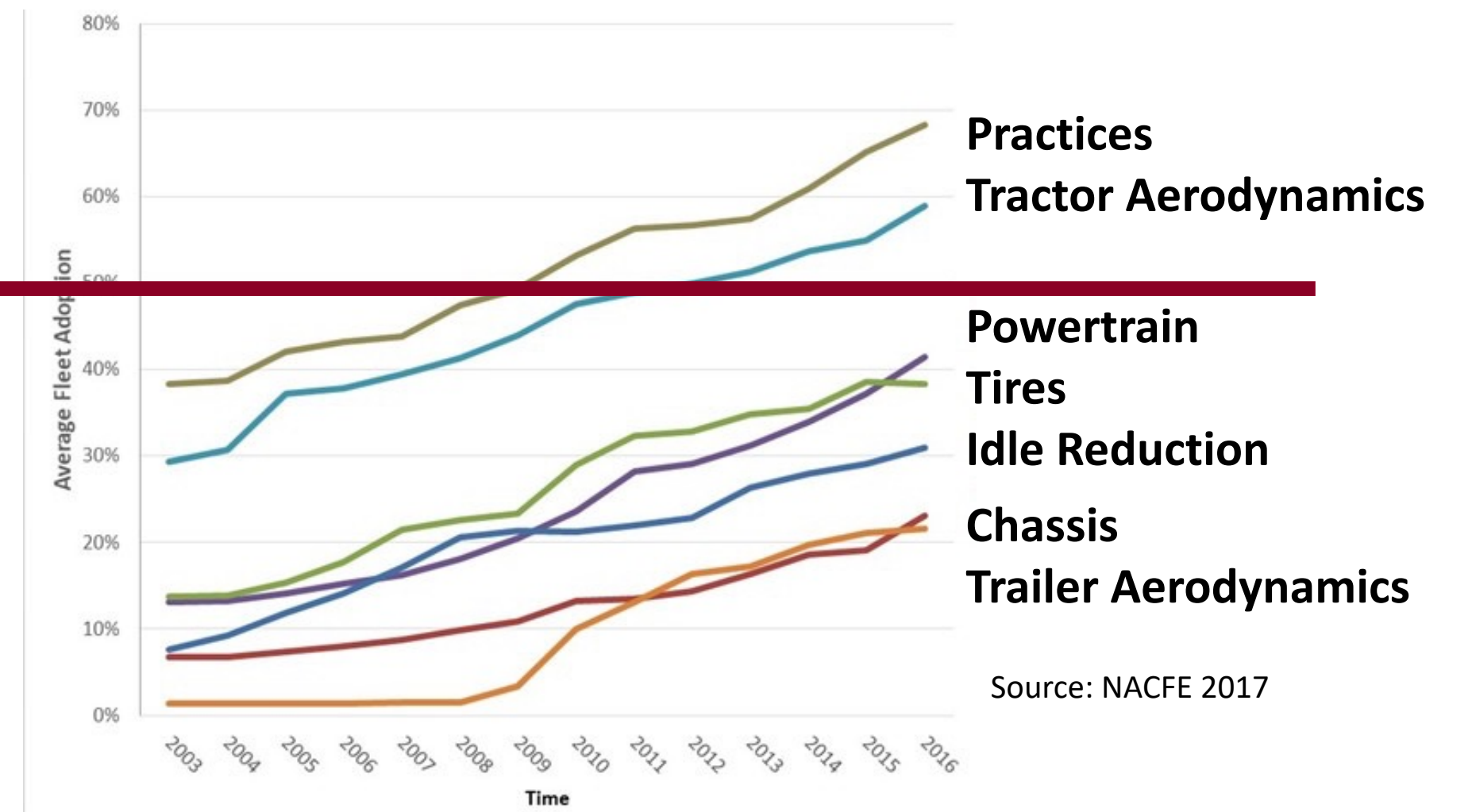
Source: Iowa State Research



AMT Adoption Curve



50%



WOOP DEE DOO!



WHAT DOES IT ALL MEAN?



THE FUTURE IS
BRIGHT

Fulmin Electric



Learn



A/a

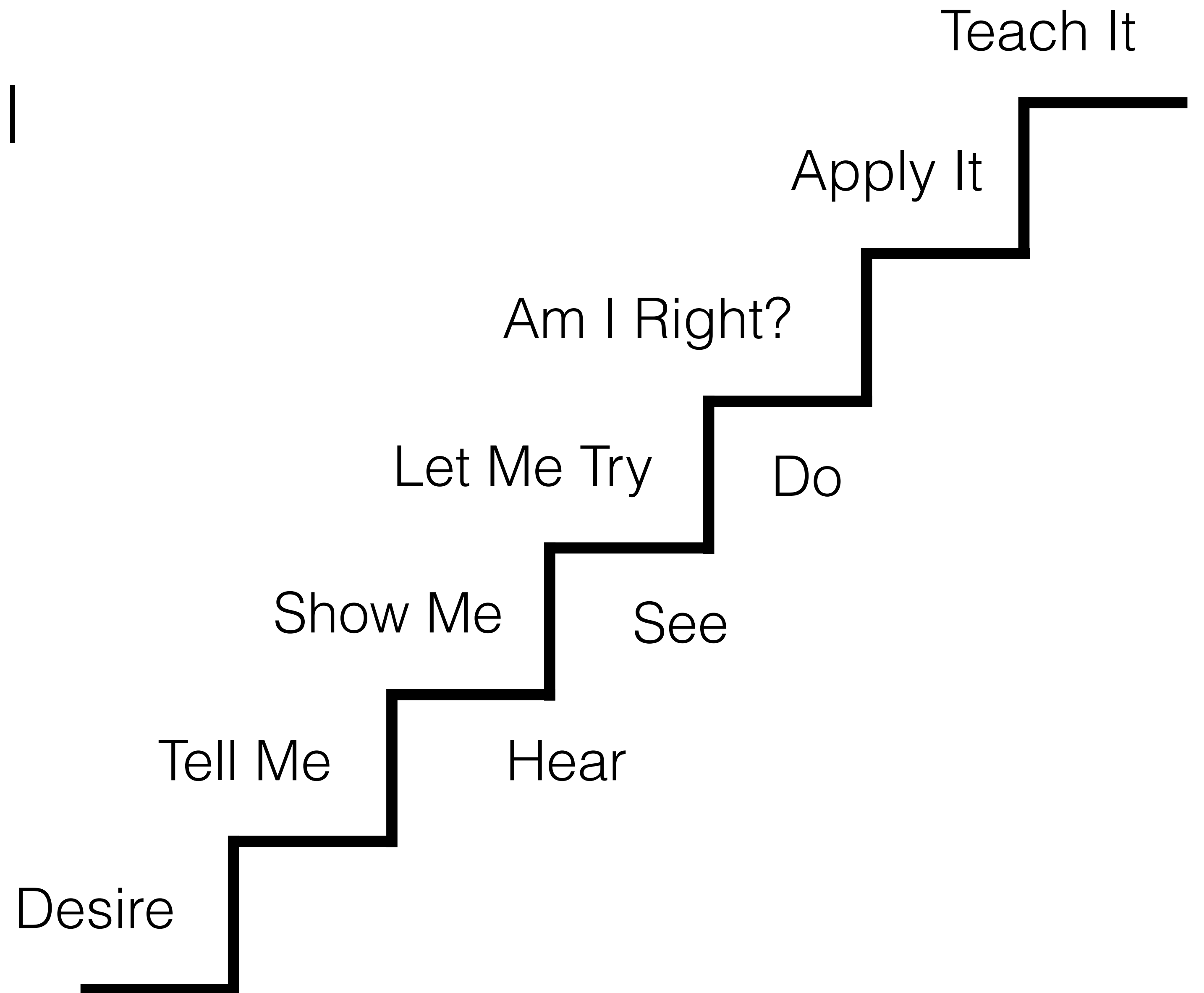
Design

creativity



7

easy steps
to learn a skill



MAKE IT

HAPPEN!

Thank You!

Backup

33,000 parts in a diesel engine
8,000 parts in an electric powertrain
Roger Nielsen, President, DTNA 7/25/2019

<https://www.foxbusiness.com/economy/us-manufacturing-aging-american-workforce>



Democratic Candidates

Free college tuition for all
Eliminate debt for college

Nothing is being said about
vocational training
on-the-job training

Of 4 children in my family,
I'm the youngest by 10 years.

My two brothers and sister all went a different route than college.

Industry Recognized Apprenticeship Program

<https://www.apprenticeship.gov/industry-recognized-apprenticeship-program>

regulations.gov
Your Voice in Federal Decision-Making

Home Help Resources Contact Us

PR Apprenticeship Programs, Labor Standards for Registration, Amendment of Regulations

This Proposed Rule document was issued by the **Employment and Training Administration (ETA)**
For related information, [Open Docket Folder](#)

Action
Notice of Proposed Rulemaking.

Summary
To address America's skills gap and expand the apprenticeship model to new industries, the U.S. Department of Labor proposes a rule under the National Apprenticeship Act (NAA) to establish a process for recognizing Standards Recognition Entities (SREs), which will in turn recognize Industry-Recognized Apprenticeship Programs (Industry Programs). This proposed rule describes what entities may become SREs; outlines the responsibilities and requirements for SREs, as well as the hallmarks of the high-quality apprenticeship programs they will recognize; and sets out how the Administrator of the Office of Apprenticeship will interact with SREs. The proposed rule also describes how Industry Programs would operate in parallel with the existing registered apprenticeship system. The Department believes its industry-led, market-driven approach provides the flexibility necessary to scale the apprenticeship model where it is needed most and helps address America's skills gap.

Dates
Comments must be submitted, in writing, on or before August 26, 2019.

Addresses
You may submit comments, identified by Regulatory Information Number (RIN) 1205-AB85, by one of the following methods:
Federal e-Rulemaking Portal: <http://www.regulations.gov>. Follow the website instructions for submitting comments.
Mail and hand delivery/courier: Written comments, disk, and CD-ROM submissions may be mailed to Adele Gagliardi, Administrator, Office of Policy Development and Research, U.S. Department of Labor, 200 Constitution Avenue NW, Room N-5641, Washington, DC 20210.
Instructions: Label all submissions with "RIN 1205-AB85."
Please submit your comments by only one method. Please be advised that the Department will post all comments received that relate to this NPRM on <http://www.regulations.gov> without making any change to the comments or redacting any information. The <http://www.regulations.gov> website is the Federal e-rulemaking portal, and all comments posted there are available and accessible to the public. Therefore, the Department recommends that commenters remove personal information such as Social Security Numbers, personal addresses, telephone numbers, and email addresses included in their comments, as such information may become easily available to the public via the <http://www.regulations.gov> website. It is the responsibility of the commenter to safeguard personal information.
Also, please note that, due to security concerns, postal mail delivery in Washington, DC may be delayed. Therefore, the Department encourages the public to submit comments on <http://www.regulations.gov>.
Docket: All comments on this proposed rule will be available on the <http://www.regulations.gov> website, and can be found using RIN 1205-AB85. The Department also will make all the comments it receives available for public inspection by appointment during normal business hours at the above address. If you need assistance to review the comments, the Department will provide appropriate aids, such as readers or print magnifiers. The Department will make copies of this proposed rule available, upon request, in large print and electronic file on computer disk. To schedule an appointment to review the comments and/or obtain the proposed rule in an alternative format, contact the Office of Policy Development and Research at (202) 693-3700 (this is not a toll-free number). You may also contact this office at the address listed below.
Comments under the Paperwork Reduction Act: In addition to filing comments on any aspect of this rule with the Agency, interested parties may file comments on the information collections contained in or supporting this proposed rule with the Office of Management and Budget (OMB). This opportunity is limited to the information collections that must also be approved under the Paperwork Reduction Act, and the period to submit comments to OMB expires 30 days after the date this proposed rule is published in the Federal Register. Please submit comments about this request by mail to the Office of Information and Regulatory Affairs, Attn: OMB Desk Officer for DOL-ETA, Office of Management and Budget, Room 10235, 725 17th Street NW, Washington, DC 20503; by Fax: 202-395-5806 (this is not a toll-free number); or by email: OIRA_submission@omb.eop.gov. Commenters are encouraged, but not required, to send a courtesy copy of any comments by mail or courier to the Agency using the same method as for any other comments on the rule.
For Further Information Contact
Adele Gagliardi, Administrator, Office of Policy Development and Research, U.S. Department of Labor, 200 Constitution Avenue NW, Room N-5641, Washington, DC 20210; telephone (202) 693-3700 (this is not a toll-free number).
Individuals with hearing or speech impairments may access the telephone number above via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.
Supplementary Information

Comment Now!
Due Aug 26 2019, at 11:59 PM ET

ID: ETA-2019-0005-0001
View original printed format: PDF
Twitter Facebook Email

Document Information
Date Posted: Jun 25, 2019
RIN: 1205-AB85
Federal Register Number: 2019-13076
Show More Details

Comments
77,343
Comments Received*

The Massachusetts Building Trades Council represents over 75,000 men and women from every trade who work for more than 3,300 construction employees in...
View Comment

I am a member of the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART). As a SMART apprentice who has worked in the...
View Comment

I'm proud to have received the best training available in the construction industry. Thanks to LEUNA training, I have worked hard as a laborer with my LEUNA...
View Comment

Docket Information
This document is contained in