



Fox Rothschild LLP
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Manufacturing Success: Smart Products Reshuffle Safety Responsibilities and Liabilities

November 16, 2021

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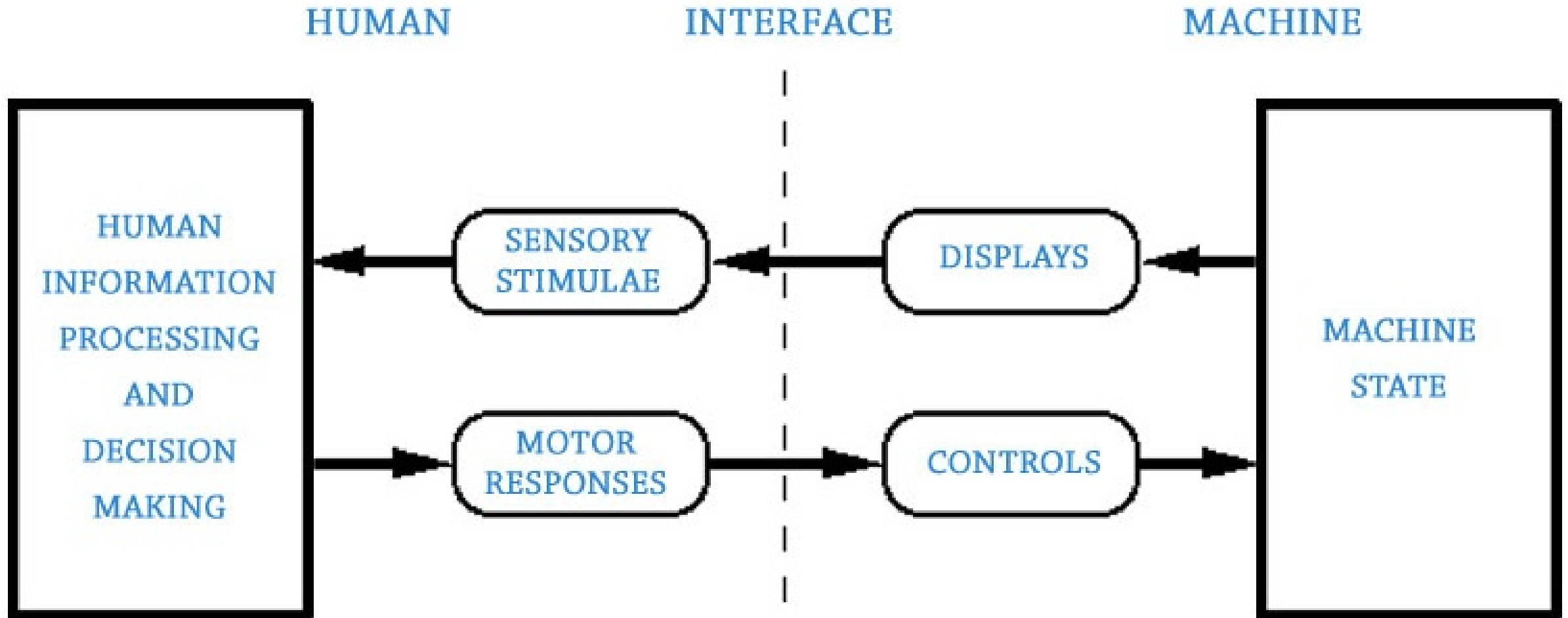
Steven Hall, M.S.E., CPSM, Applied Safety and Ergonomics, Inc.

Tools Make Work Easier





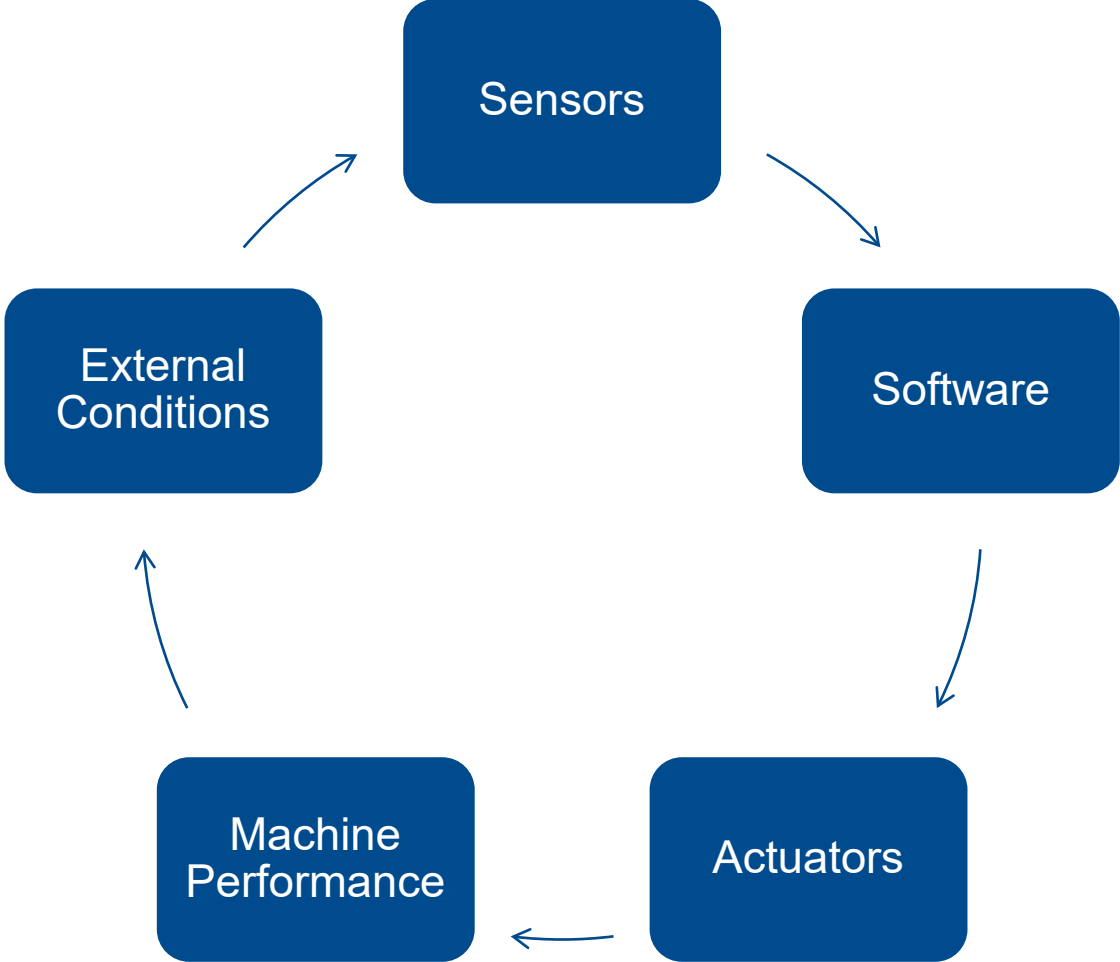
People Do Work by Controlling Machines



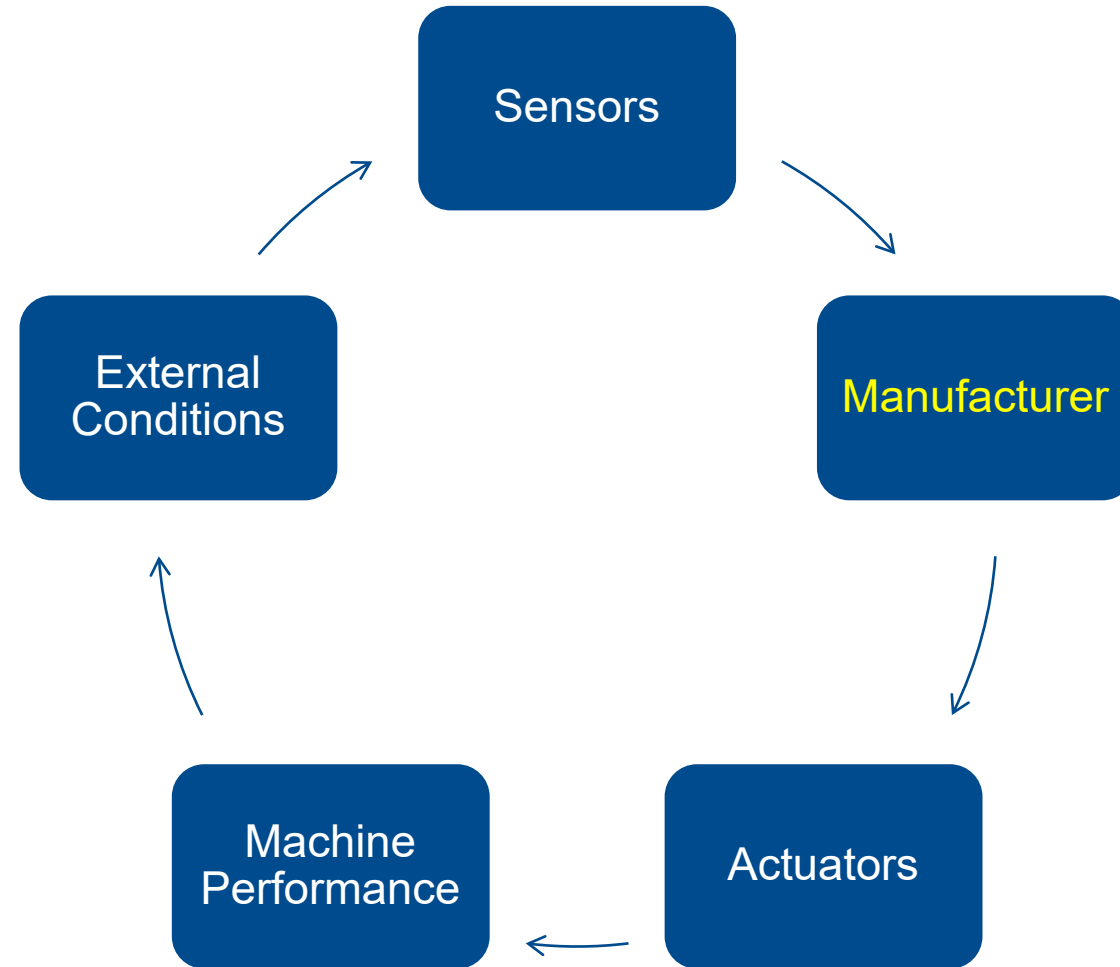
CAN'T SOMEONE ELSE DO IT?

**SOMEONE ELSE!
SOMEONE ELSE! SOMEONE ELSE!**

Automation: The Machine Controls Itself



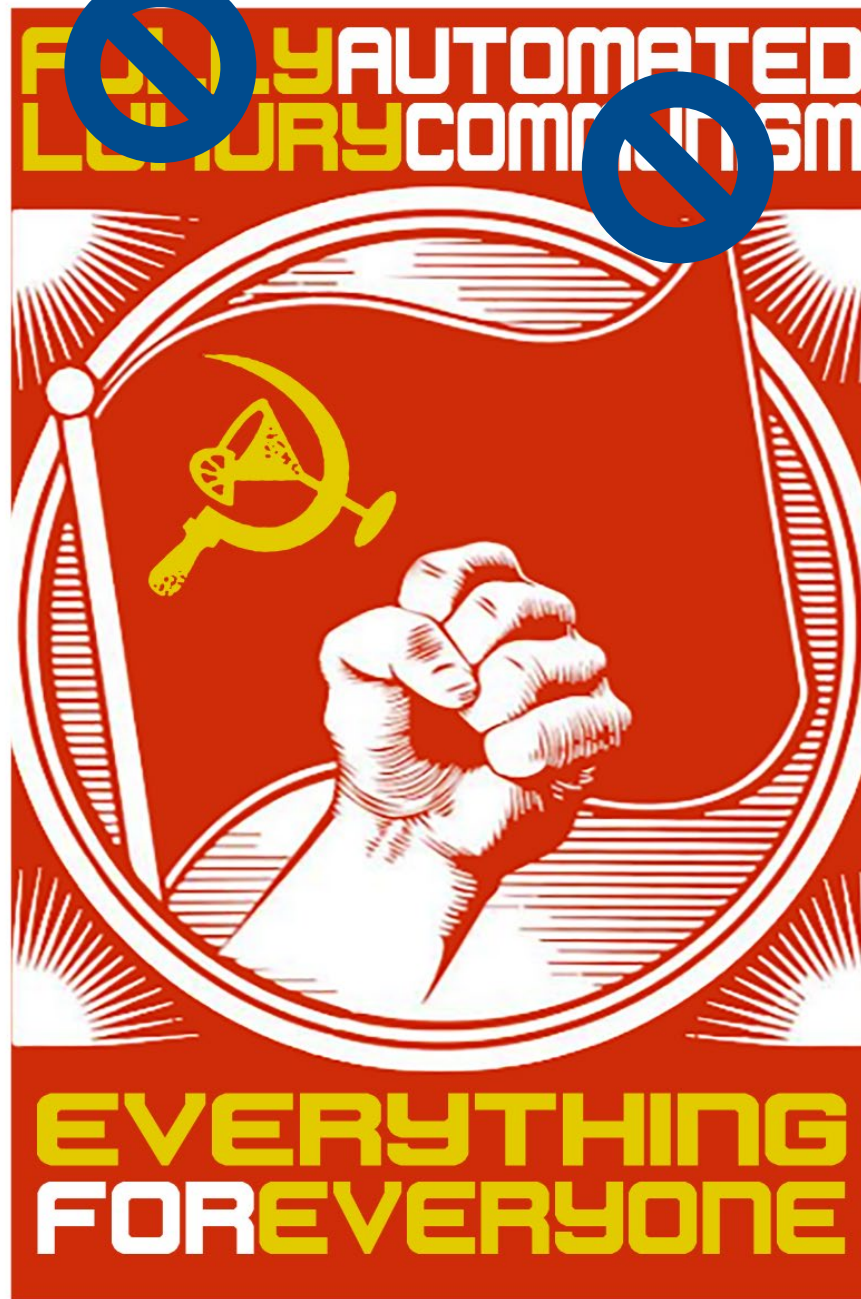
Internet of Things: The Manufacturer Is Connected to the Machine



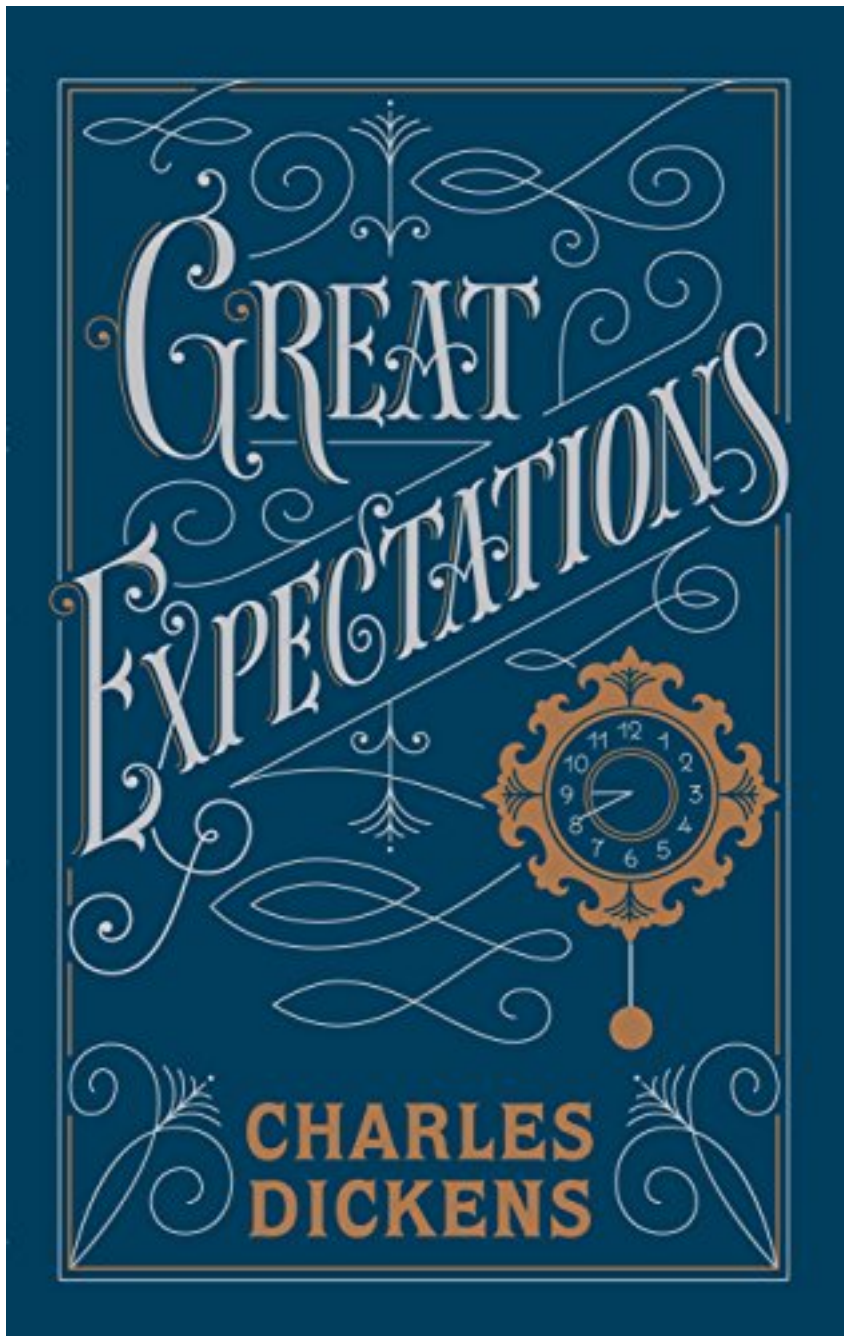
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Partially



Capitalism



Safety is about expectations

- Who should do what to prevent accidents?





**WHICH OF THE WORLD'S VILLAINS IS
RESPONSIBLE FOR THIS HEINOUS CRIME?**

Raiders Receiver to Be Charged in Fatal Car Crash

Henry Ruggs III will be charged with driving under the influence, the police said, after a crash that left one person dead in Las Vegas on Tuesday morning. The Raiders released Ruggs by the end of the day.

Give this article

Share



Raiders receiver Henry Ruggs III faces two felony drunken-driving charges in connection with a car collision early Tuesday morning in Las Vegas that left one person dead.

The crash occurred early Tuesday morning when a sports car that Ruggs, 22, was driving hit an S.U.V., the police said. According to a statement released by the Las Vegas Metropolitan Police Department on Tuesday, the fire department was called to the scene, where it found a 23-year-old woman dead in the struck vehicle.

Ruggs's Corvette had been traveling at 156 miles per hour, Clark County (Nev.) Deputy District Attorney Eric Bauman said at Ruggs's initial court appearance Wednesday morning.

He remained on the scene, the police said, and "showed signs of impairment." Clark County District Attorney Steve Wolfson told reporters after Ruggs's court appearance that Ruggs's blood alcohol level was 0.16, or twice Nevada's legal limit.

Henry Ruggs III, 22, was in his second season with the Las Vegas Raiders before being released on Tuesday. Rick Scuteri/Associated Press



2022 CORVETTE



Coupe as shown: \$81,090[‡]
Convertible as shown: \$91,180[‡]

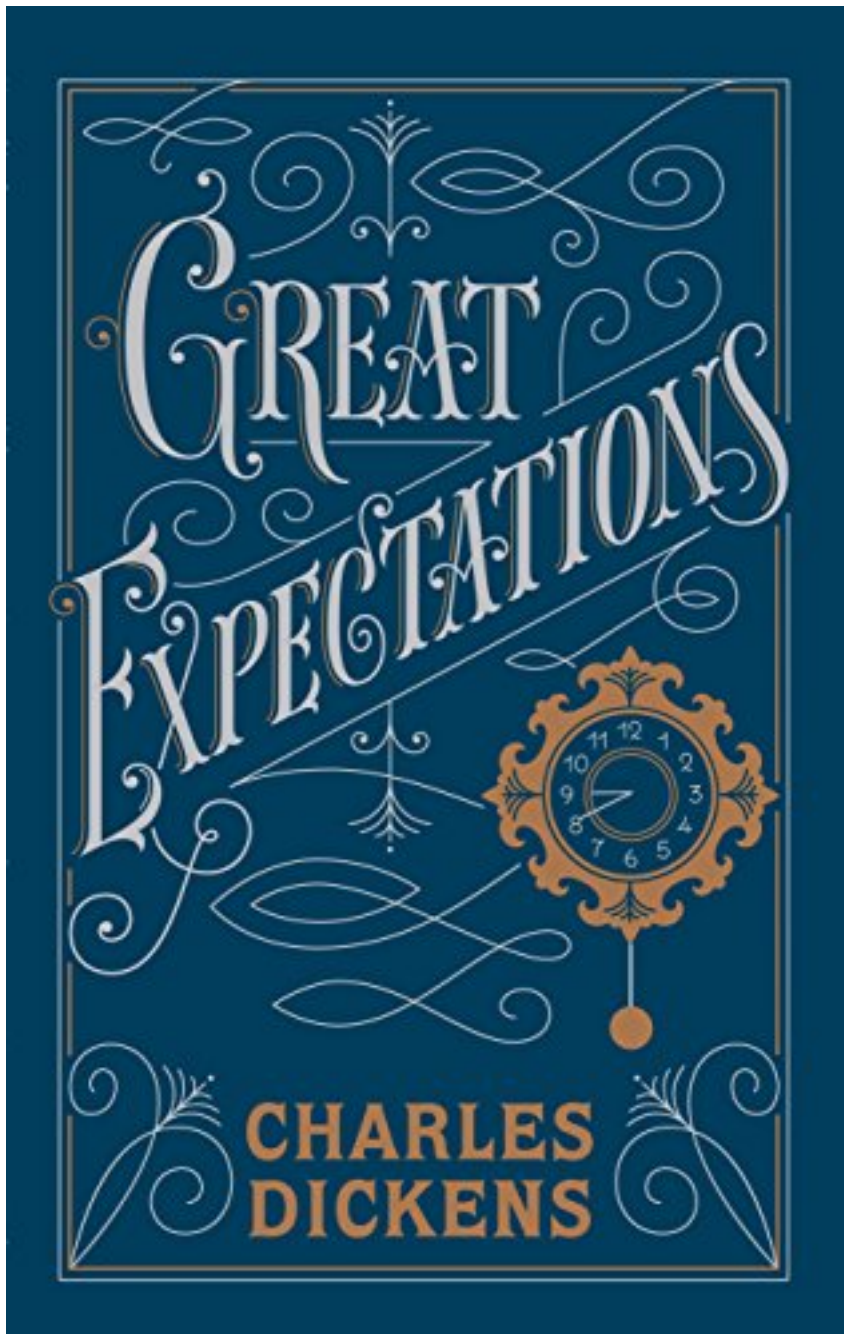
2021 Model year shown

Professional driver shown throughout. Closed course. Do not attempt.

470 LB.-FT.[‡]
Max available torque

2.9 SECONDS[‡]
Available 0–60 time

194 MPH[‡]
Top track speed

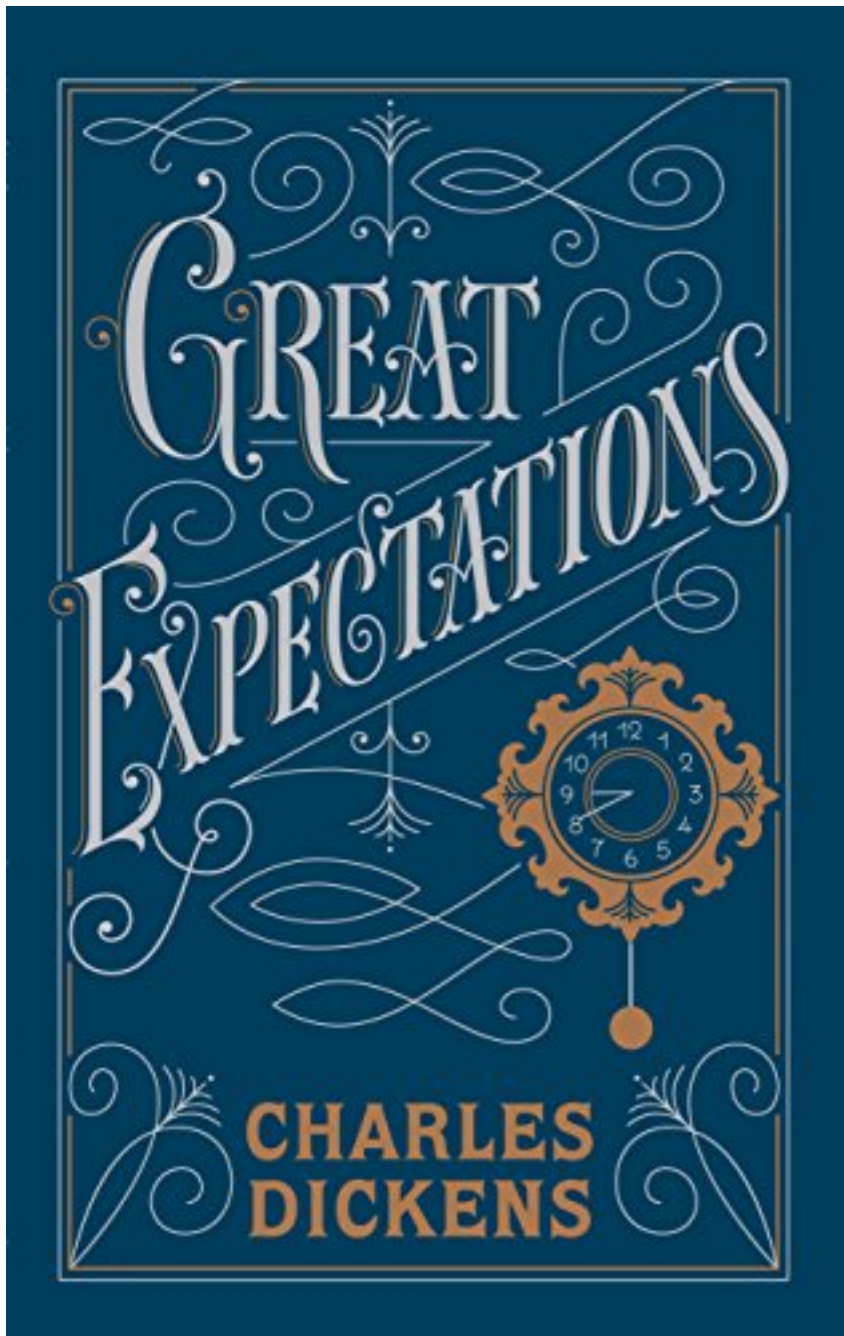


Safety is about expectations

- Who should do what to prevent accidents?
 - **Drivers**
 - Do not drive 156 mph
 - Do not drive with a BAC 2x the limit



“I was driving and dropped my phone,” Mr. McGee told an officer who responded to the accident, according to a recording from a police body camera. “I looked down, and I ran the stop sign and hit the guy’s car.”



Safety is about expectations

- Who should do what to prevent accidents?
 - **Drivers**
 - Keep your eyes on the road
 - Don't use your phone while driving

driver's responsibility




Warning

Autosteer is not designed to, and will not, steer Model 3 around objects partially or completely in the driving lane. Always watch the road in front of you and stay prepared to take immediate action. It is the driver's responsibility to be in control of Model 3 at all times.

'It Happened So Fast': Inside a Fatal Tesla Autopilot Accident

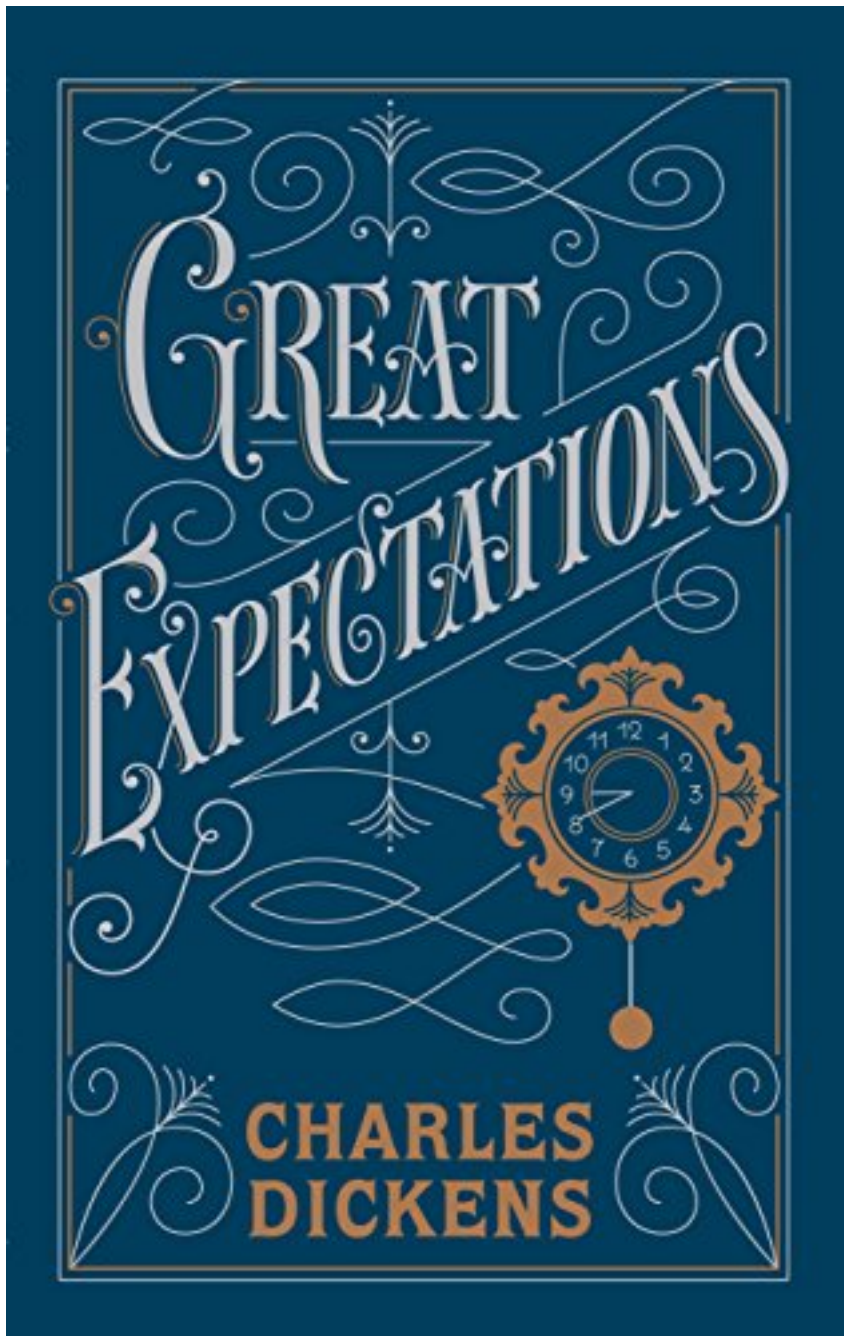
A 2019 crash in Florida highlights how gaps in Tesla's driver-assistance system and distractions can have tragic consequences.

A night scene of a car accident. The background is dark with trees and a bright orange glow from emergency lights. In the foreground, there is a white rectangular box containing text. Below the box, the scene shows a car's interior or exterior with debris on the ground.

Distracted driving can be deadly in any car. But safety experts say Autopilot may encourage distraction by lulling people into thinking that their cars are more capable than they are. And the system does not include safeguards to make sure drivers are paying attention to the road and can retake control if something goes wrong.

'It Happened So Fast': Inside a Fatal Tesla Autopilot Accident

A 2019 crash in Florida highlights how gaps in Tesla's driver-assistance system and distractions can have tragic consequences.



Safety is about expectations

- Who should do what to prevent accidents?
 - **Manufacturers**
 - Don't encourage unsafe use?
 - Monitor and prevent unsafe use?

Getting Our Model 3 Approved for Tesla's FSD Beta Requires a Passing Safety Score

Tesla CEO Elon Musk says drivers who requested Full Self-Driving Beta will be granted access on October 9 if their Safety Score checks out.



BY CONNOR HOFFMAN SEP 30, 2021



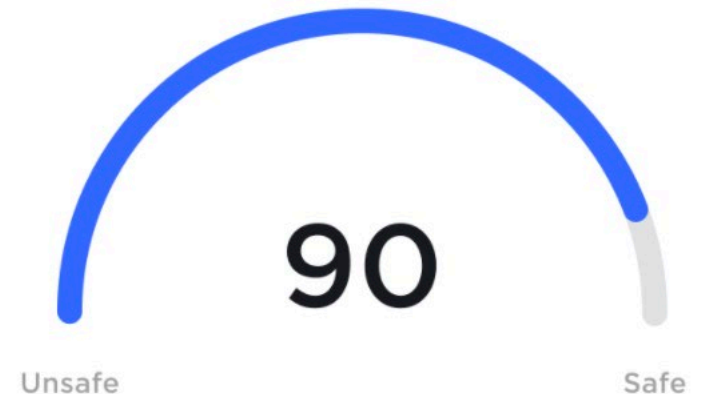
Elon Musk
@elonmusk

Beta button will request permission to assess driving behavior using Tesla insurance calculator. If driving behavior is good for 7 days, beta access will be granted.

11:25 PM · Sep 16, 2021




Based on driving behavior for
Oct 1, 2021 - Oct 30, 2021



Tesla's New 'Safety Score' Could Lead to Unsafe Driving, a CR Evaluation Shows

The automaker's gamification of safe driving could be an incentive, but Tesla should leverage its other capabilities to judge driver behavior

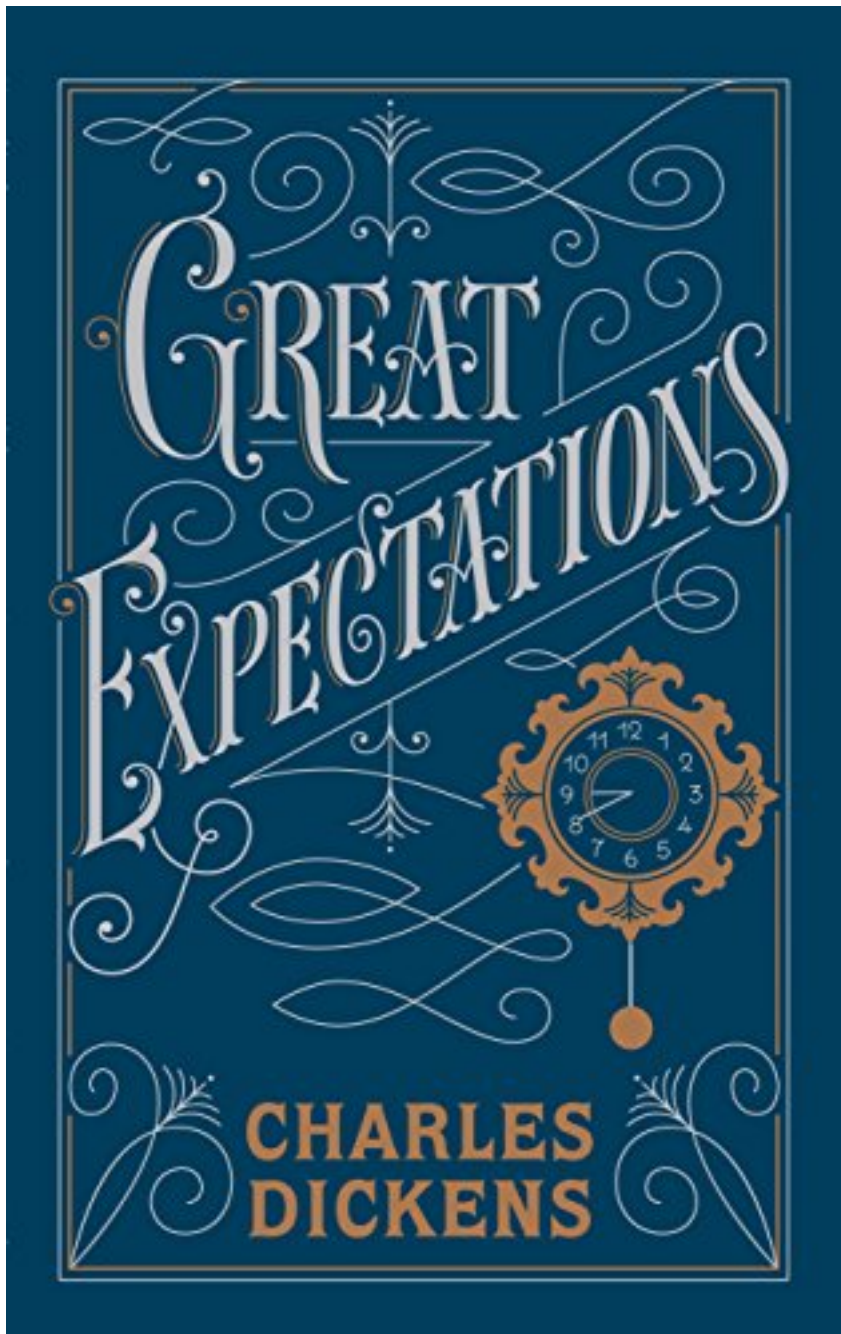
Within hours of Tesla's release of its new Safety Score feature, meant to qualify owners for access to the company's latest version of its Full Self-Driving (FSD) software, some Tesla drivers were discussing on Twitter how they engaged in unsafe driving practices, such as coasting through stop signs or accelerating through yellow lights, to avoid lowering their score from braking too hard.

A night scene of a car accident. In the background, several people are standing near a vehicle that is illuminated by bright emergency lights. The scene is dark, with the primary light source being the emergency lights, creating a high-contrast, somewhat blurry image. The foreground is mostly dark and indistinct, suggesting the interior or immediate vicinity of the accident site.

They also strongly suggest that Autopilot failed at a basic function — automatic emergency braking — that engineers developed years ago. Many newer cars, including models much more affordable and less sophisticated than Teslas, can slow or stop themselves when an accident seems likely.


‘It Happened So Fast’: Inside a Fatal Tesla Autopilot Accident

A 2019 crash in Florida highlights how gaps in Tesla’s driver-assistance system and distractions can have tragic consequences.



Safety is about expectations

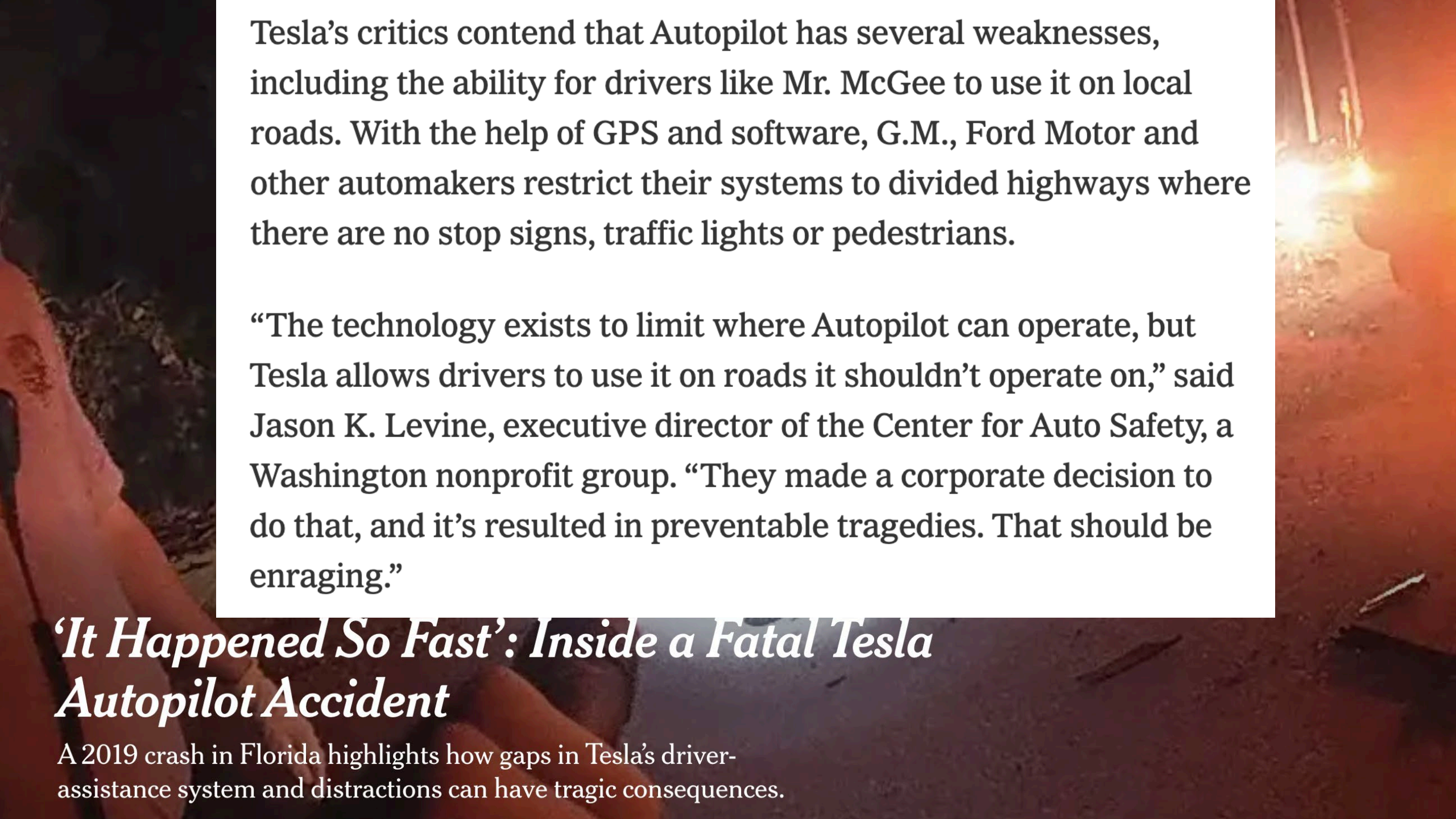
- Who should do what to prevent accidents?
 - **Manufacturers**
 - **Don't encourage** unsafe use?
 - **Monitor and prevent** unsafe use?
 - **Automatically** correct errors?
 - **Reliably** correct errors?

A night scene of a car accident. In the background, several people are gathered around a vehicle, illuminated by bright emergency lights. The foreground shows a white car with significant damage, including a large, jagged piece of metal and other debris scattered on the ground. The overall atmosphere is dark and somber, with the primary light source being the emergency lights.

Tesla owners' manuals warn customers not to use Autopilot on city streets. "Failure to follow these instructions could cause damage, serious injury or death," the manual for 2019 models says.

'It Happened So Fast': Inside a Fatal Tesla Autopilot Accident

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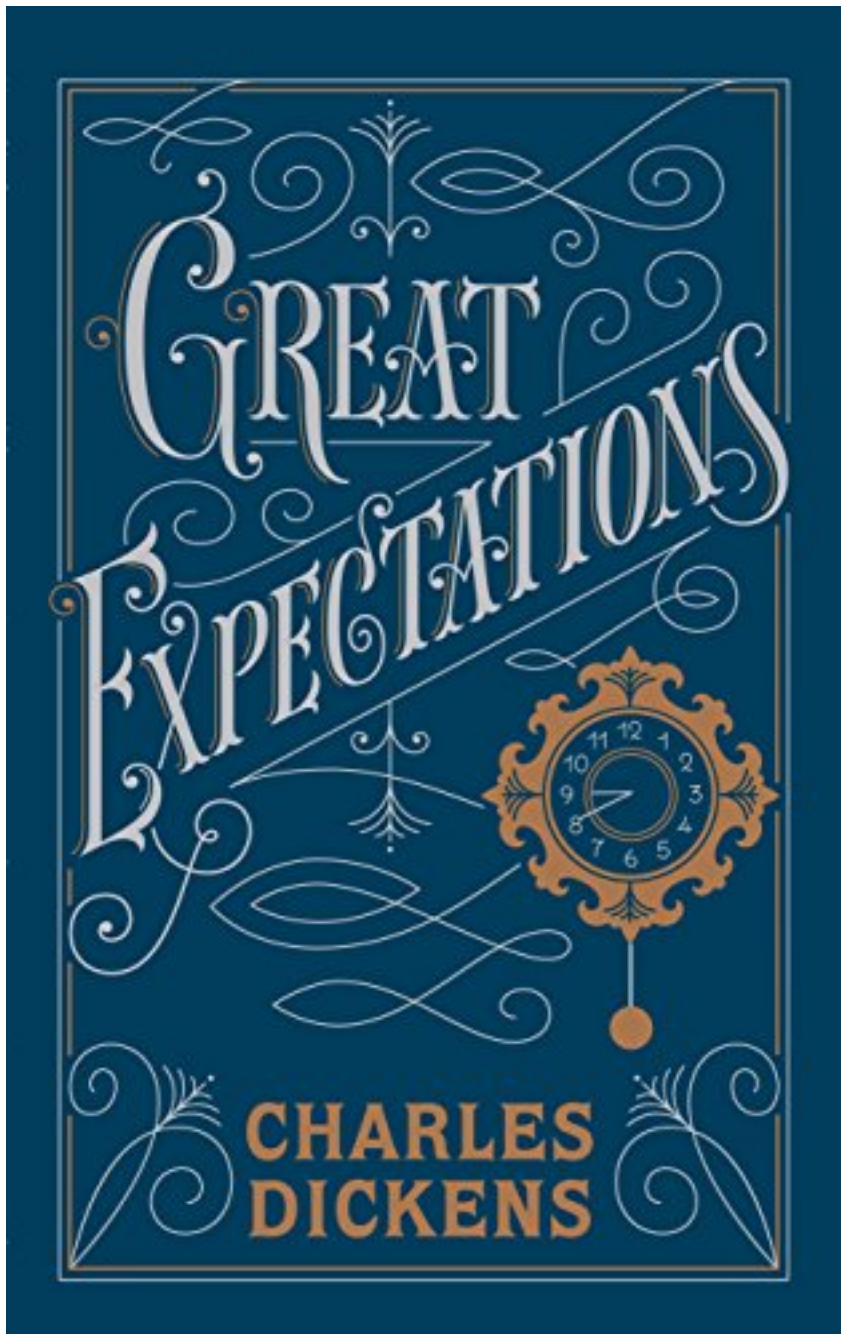
A photograph of a car accident scene. In the foreground, a person's arm is visible, reaching towards the camera. In the background, a large fire is burning, with bright orange and yellow flames and a thick plume of smoke. The scene is dark, suggesting it might be nighttime or in a dimly lit area.

Tesla's critics contend that Autopilot has several weaknesses, including the ability for drivers like Mr. McGee to use it on local roads. With the help of GPS and software, G.M., Ford Motor and other automakers restrict their systems to divided highways where there are no stop signs, traffic lights or pedestrians.

“The technology exists to limit where Autopilot can operate, but Tesla allows drivers to use it on roads it shouldn't operate on,” said Jason K. Levine, executive director of the Center for Auto Safety, a Washington nonprofit group. “They made a corporate decision to do that, and it's resulted in preventable tragedies. That should be enraging.”

‘It Happened So Fast’: Inside a Fatal Tesla Autopilot Accident

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Safety is about expectations

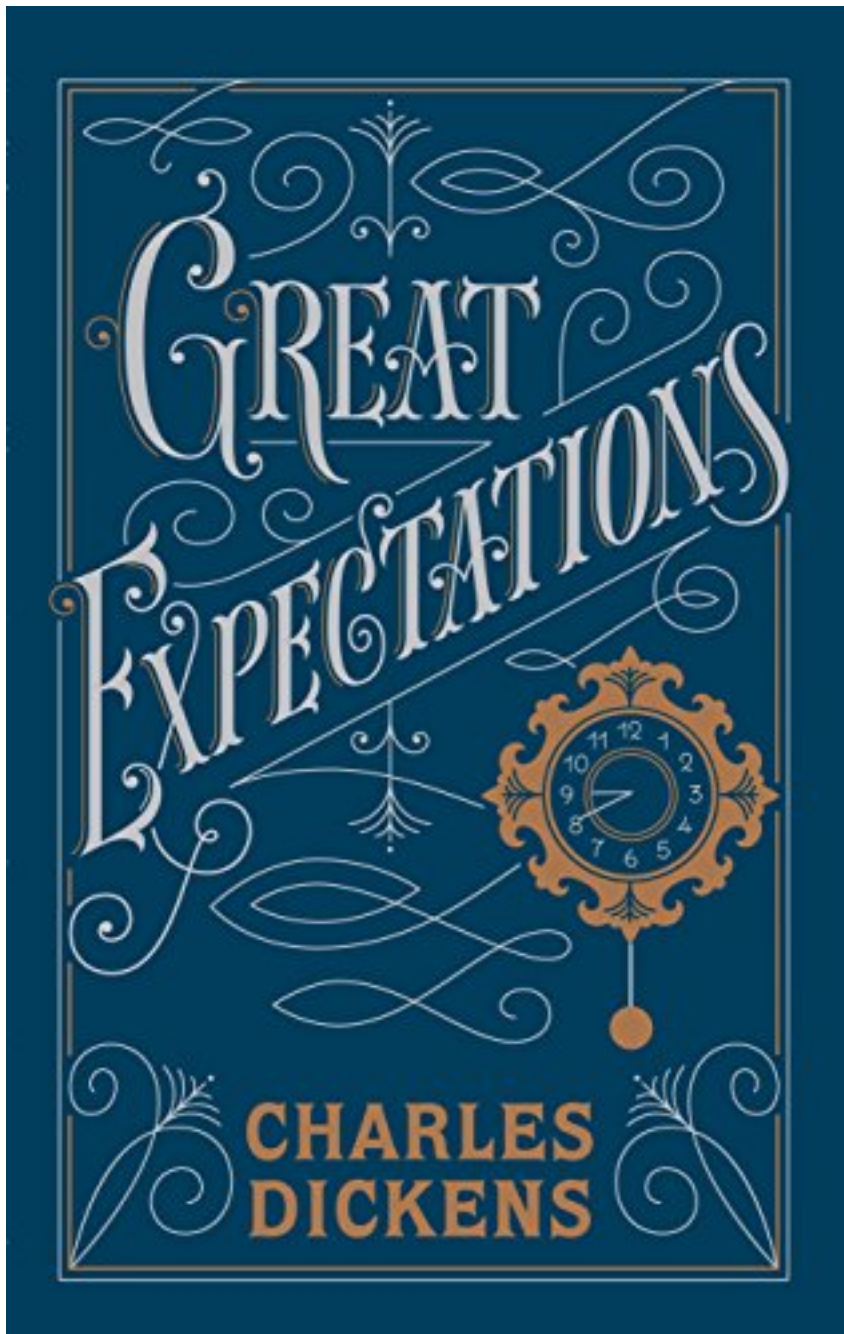
- Who should do what to prevent accidents?
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 - **Automatically** correct errors?
 - **Reliably** correct errors?
 - Prevent **misuse** of automation?

CR Engineers Show a Tesla Will Drive With No One in the Driver's Seat

After a fatal crash in Texas, we demonstrated how easy it is to defeat Autopilot's driver monitoring



1. Sit on top of buckled seatbelt
2. Hang weighted chain from steering wheel
3. Climb out of driver's seat without opening the door



Safety is about expectations

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 - Prevent **misuse** of automation?
 - Prevent **abuse** of automation?

How Could This Story Read in the Future?

Corvette Malfunction Leaves NFL Player Injured, Innocent Woman and Dog Dead

A malfunctioning Corvette late last night allowed an intoxicated driver, Raiders Wide Receiver Henry Ruggs III, to drive at 156 mph, resulting a fiery wreck.

Mr. Ruggs' attorney stated: "Henry relied on the Blood Alcohol Monitoring System to ensure that he never drove when he was impaired, but the system was unreliable and he was able to easily override it in his drunken state."

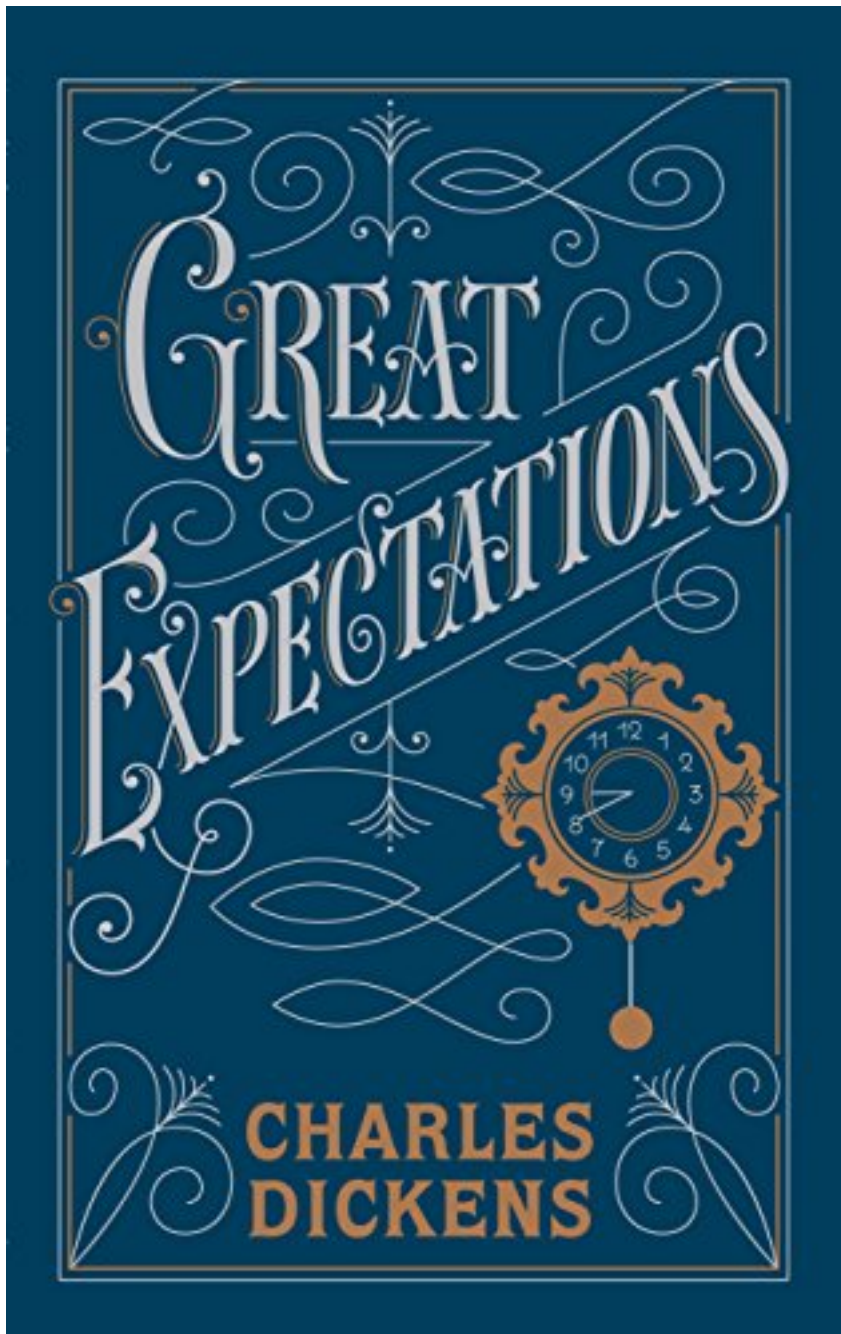
Mr. Ruggs stated that he was surprised that he was able to drive 156mph: "I thought the Intelligent Speed Assist system wouldn't let me break the speed limit, except when I'm at the racetrack. I don't understand why GM didn't stop me from going that fast on the road – they know where the car is, it has OnStar!"



Investigators say the car was in "Track Mode" which can easily be engaged even by a drunk driver navigating through several menus on the touchscreen and entering a PIN.

A GM spokesperson offered condolences to the family of the deceased woman, but tried to shift the blame to Ruggs: "Our automated safety systems help fight unsafe driving, but they cannot prevent all accidents. Drivers must still drive responsibly."

A Mothers Against Drunk Driving spokesperson blasted GM: "We know laws can't stop all drunk drivers and speeders. That's why cars have to! GM's inadequate alcohol and speed control systems prove that they don't care about safety."



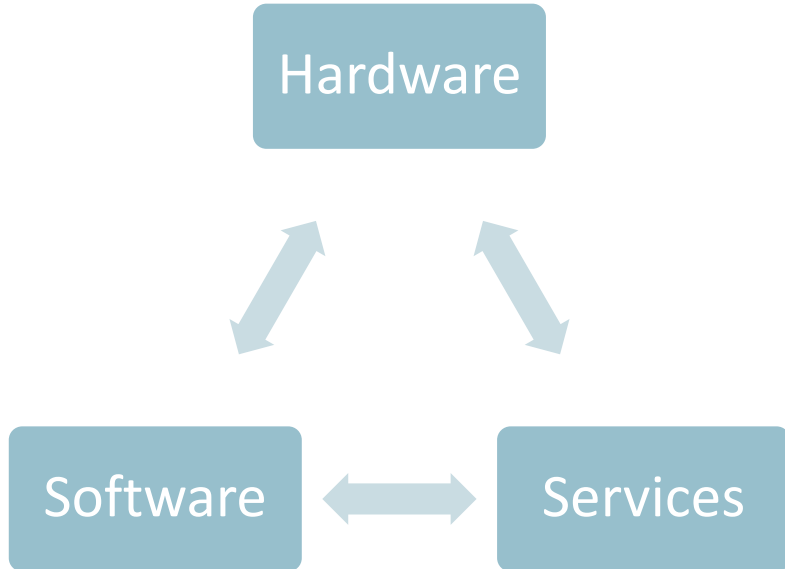
Safety is about expectations

- Who should do what to prevent accidents?
 - **Manufacturers**
 - **Don't encourage** unsafe use?
 - **Monitor and prevent** unsafe use?
 - **Automatically** correct errors?
 - **Reliably** correct errors?
 - Prevent **misuse** of automation?
 - Prevent **abuse** of automation?
 - **Users** - ????

Are these expectations reasonable? Practical?

How can manufacturers be clear about what is expected of them, and other parties?

The Internet of Things: Broadly Defined

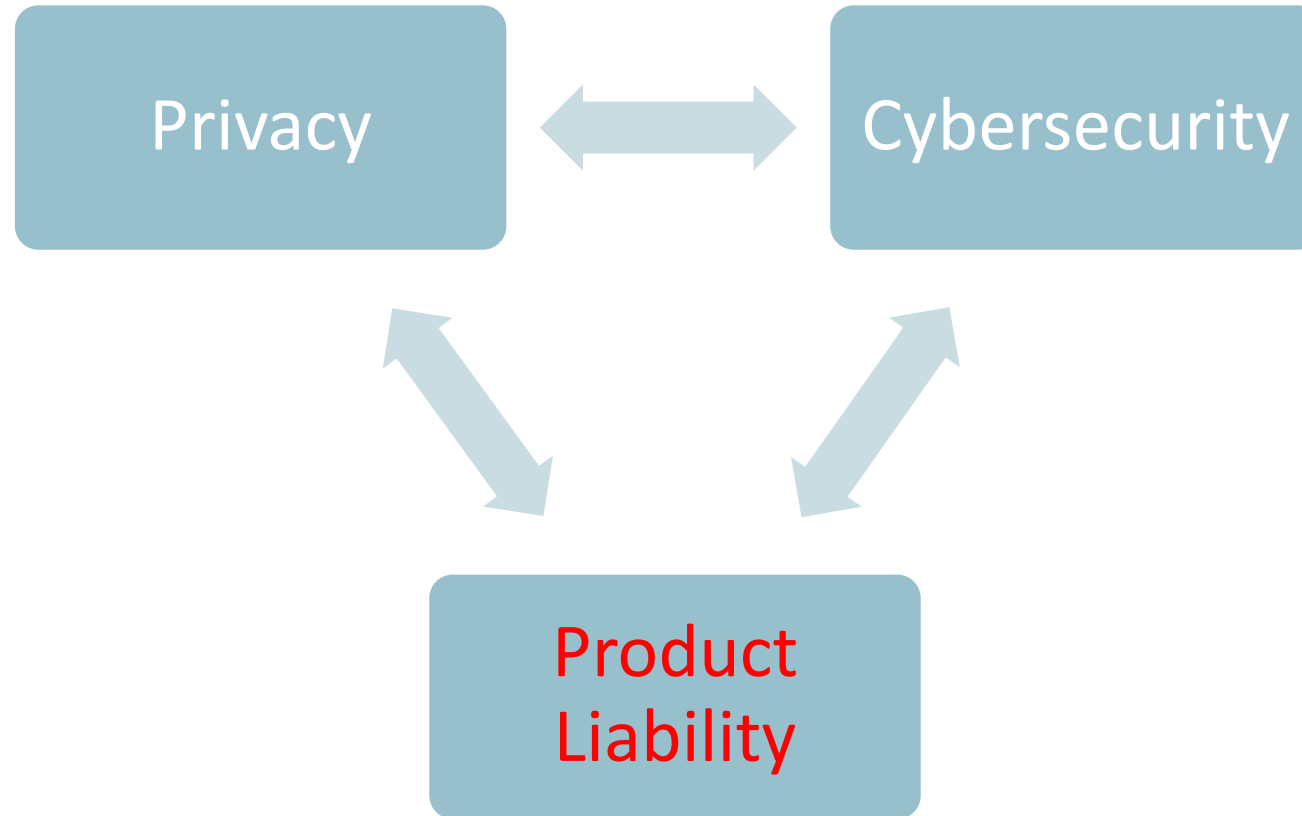


The Internet of Things (IoT) refers to a **system of interrelated, internet-connected objects that are able to collect and transfer data over a wireless network without human intervention, and to assume aspects of control that previously resided with the end user**

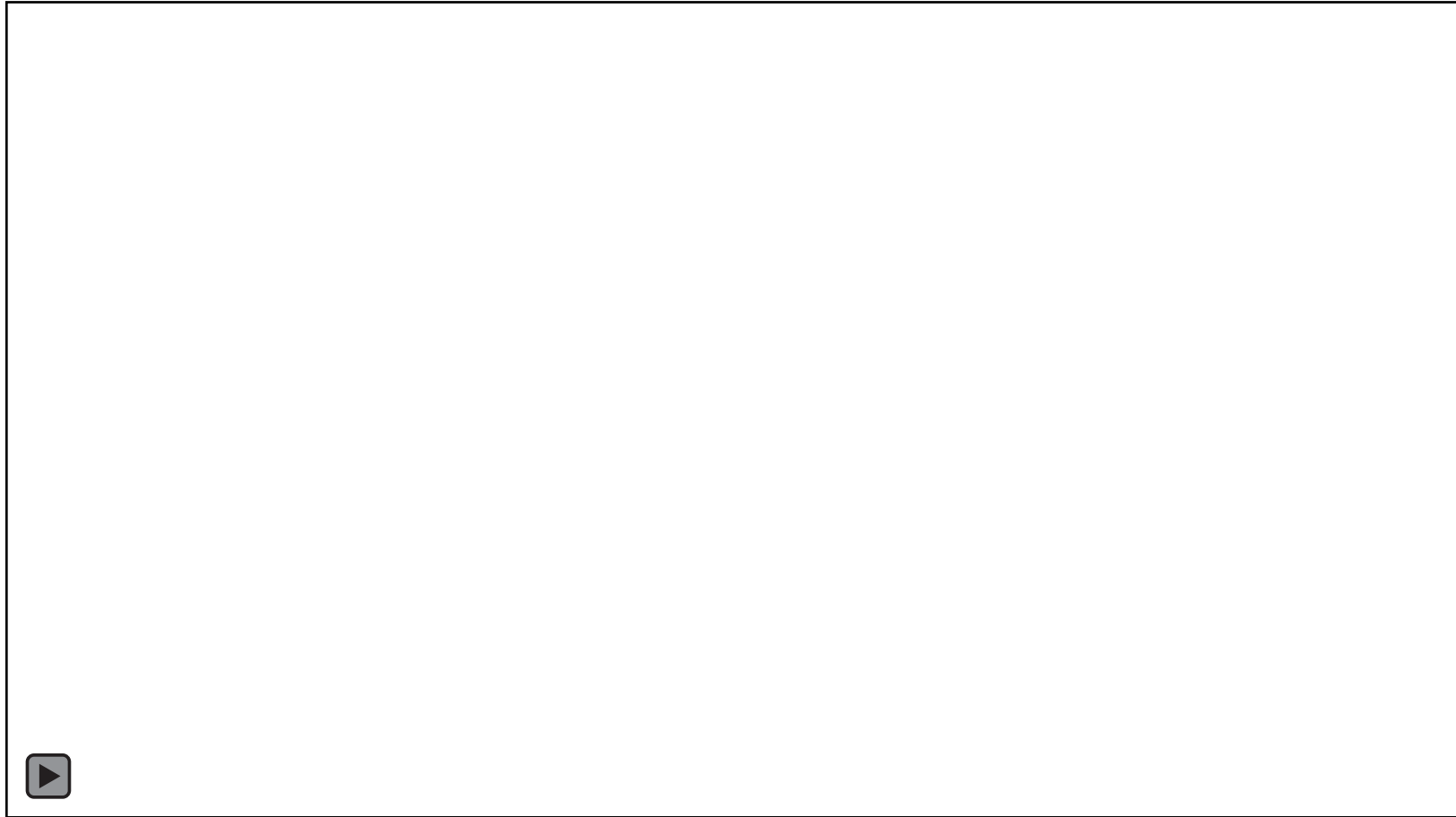
Key focus for our recommendations is on how data and reliance on automation changes the tort risk for:

- Machine Learning/AI adds functionality
- Storage and Processing
- On-going access to customers

“IoT” Risk: Product Liability is the Third Leg



Watson Grinding, Houston Texas January 24, 2020



Watson Grinding (cont.)



- Half-mile blast radius
- 3 dead
- 18 hospitalized
- 400-450 homes damaged/destroyed

Watson Grinding (cont.)



- Highly flammable propylene delivered by Matheson/Western Natural Gas & Cylinder for use in spray booths
- Western has remote monitor on 2000 gallon tank to monitor tank level for delivery purposes
- There was a 30% drop in tank level in the 24-hour period prior to explosion vs. 6%-7% average 24-hour use

Watson Grinding – Next Wave Plaintiffs’ Attorneys and Experts

- Watson Grinding files for bankruptcy and has inadequate insurance
- Who else can be blamed?
- Western, Matheson, DataOnline and numerous subcontractors sued

35. Western/Matheson delivered 1,067 gallons of propylene to their tank on January 20, 2020 and filled the tank to 85% capacity from 28% capacity.

36. Western/Matheson had monitoring equipment on the propylene tank. However, the monitoring equipment was being severely underutilized for its capabilities.

37. Prior to replenishing the tank with propylene on January 20, 2020, the tank level had dropped to 30% and a warning signal was sent to Western/Matheson. Western/Matheson were aware of the average daily usage of the customer and were aware of the average tank levels in their tank due to normal consumption.



Watson Grinding – IoT Propylene Monitoring Theory

- Western, Matheson, DataOnline and numerous subcontractors sued

Defendant DataOnline, manufactured and sold the telemetry equipment for the propylene tank and was hired to monitor the propylene levels in the tank.

[DataOnline]

- [failed] to properly monitor telemetry readings from the subject tank;
 - [failed] to properly identify, notify and warn others regarding the propylene leak;
- and

DataOnline had actual, subjective awareness of the risk, but proceeded with **conscious indifference** to the rights, safety, and welfare of Plaintiff with an intentional state of mind.
... Plaintiff is entitled to **punitive and/or exemplary damages**.



Good Contracts are Necessary but May Not be Sufficient

- Limited Warranty
- Indemnity
- Limitation of Remedy
- Specifications
- Limitation of Liability
- Scope of Work



WHAT ABOUT TORT LIABILITY?



The Contracts – Key Pitfalls and Limitations

Economic loss rule

- Independent duty exception
- Special relationship exception

Third party claims

- Worker's compensation laws
- Customers with limited assets

Sale of goods under UCC Article 2

- Article 2 favors buyers
- Defect in “goods” can undermine limitations in services agreements

Consumer transactions

- Some jurisdictions dramatically limit enforceability of disclaimers
- Terms of service are key



The Contracts – Recommendations

- ✓ Use plain language in the scope of work and specifications to describe the limits of your company's role and the obligations that remain with the customer or third parties
- ✓ Consider custom disclaimer language to clarify that other functionality and services described in sales and technical support documents are not in your scope of work
- ✓ Make sure the sale of the goods does not create a “back door” for liability:
 - ✓ Consider whether sales of goods in high-risk businesses should be done pursuant to UCC Article 2
 - ✓ If goods component of IoT must be sold pursuant to UCC Article 2, use the negotiated software and services contracts to limit liability by accounting for the potential failure of the goods



Liability Framework

Products

- Product FMEA
- Component FMEA
- Component supplier/
Customer tension
- Line of **responsibility**

Services Ancillary to Sale of Product

- Application engineering
- Product testing
- Limited field data
- Risk of crossing the line and
taking on someone else's
responsibility

Services

- **Responsibility**
defined by contract
- Negligence - **duty**
typically defined by
contract



Liability Framework – Theories of Liability

Strict Liability

- “Not reasonably safe” in design, manufacture or adequacy of warnings
- Consumer expectation test
- Risk versus utility

Negligence

- Failure to exercise “reasonable care” in performance of a “**duty**”
- Failure to properly design
- Failure to properly manufacture
- Failure to properly warn

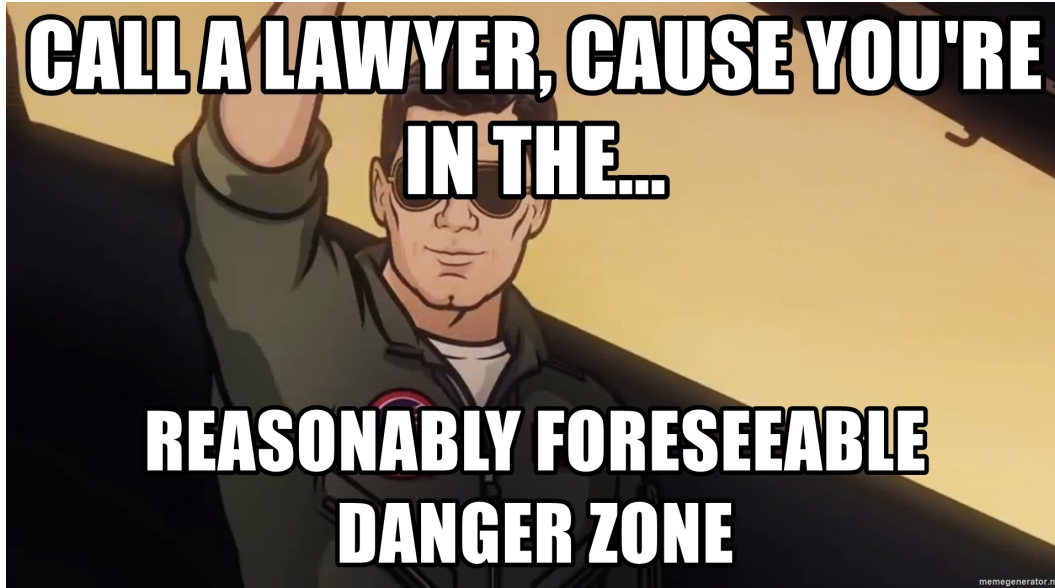
Breach of Contract

- Warranty
- Terms and conditions of sale
- Battle of the forms
- Warranty of “merchantability”
- Warranty of “fitness for particular purpose”
- Fraudulent inducement

Control = Responsibility
Responsibility = Duty
Duty = Potential Liability



What Duties / Tort Liability Can IoT Create?



Source: memegenerator.net

- Developing area and case law not well established
- Courts turn to familiar legal frameworks to analyze and define duty
 - Foreseeability of harm
- Special relationship with plaintiff may also create duty
- Post-sale duties



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Snapchat's Speed Filter: Georgia Court Disagrees About Duty



- Plaintiffs injured in rear-end car accident
- Driver who caused accident was using Snapchat's Speed Filter
- Plaintiffs sued Snapchat, claiming Snapchat negligently designed the Speed Filter
- Majority: Snapchat did not owe plaintiffs a duty to prevent injuries from misuse of Speed Filter; no special relationship
- Dissent: Majority ignores existing case law; manufacturers may be liable for reasonably foreseeable product misuse

Source: NYMag.com/Intelligencer



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When Does Strict Liability Apply to Software / IoT?

- Intertwining of software/hardware/services can create unexpected product liability
- Courts and regulators have not hesitated to apply product liability principles to software that renders hardware defective.
- Three types of “defect”:
 - Manufacturing defects create true strict liability (software bugs)
 - Design defects (suspiciously like negligence)
 - Inadequate warnings or instructions



3.5M vehicles recalled over software glitch that could cause cars to stall at high speeds



FAA blames software defects for fatal Boeing 737 MAX crashes



Class action lawsuit over failing touch screen that operates safety-related systems



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Potential IoT Liability



- The implications of the information you are gathering:
 - Information being gathered for a non-safety purpose may be able to improve safety/reduce harm
- The implications of the information you could gather, but do not
 - After-the-fact world of litigation skews perception of what is reasonable
- Reasonable alternative design
 - Plaintiff's burden is getting easier



Recommendations for Product/Services Design

Where company “owns” full product offering (i.e., hardware, software and services):

- ✓ Lawyers should help engineers anticipate reasonable alternative design arguments
- ✓ Privacy and cybersecurity can justify design limitations; capture reasoning in business records
- ✓ Make sure hazard, risk, and design assessments consider ancillary effects of functionality

Where company does not own all three:

- ✓ Technical support documents are part of the design
- ✓ Lines of responsibility must be part of the design
- ✓ Scope of services should expressly account for and disclaim role of software and goods
- ✓ Limits of software, and how it is being used, should be expressly evaluated and affirmatively disclosed



Key Aspects of Warnings Law for Software / IoT



“You thought of it, so it must be reasonably foreseeable.”

“With IoT, you could have designed out the hazard rather than just warn about it.”

Restatement 3rd Torts: Product Liability

- A weakened heeding presumption
- Defective notwithstanding warning?

When does reasonably foreseeable misuse become gross misuse?

- Traditional warning strategy teaches that warnings mitigate legal risk for hazards that are borderline abuse

IoT sensors, algorithms and connected customers create new options

- Misuses can be detected before they manifest in harm
- Devices or systems can interject countermeasures
- Warnings can be delivered real-time

Recommendations for Warnings and Instructions

- ✓ The role of warning and instructions in HARA and DFMEA processes should reflect IoT technology:
 - ✓ Be careful of simply reusing pre-IoT warnings and instructions; unnecessary warnings may do more harm than good
 - ✓ Warning delivery options and obligations must be newly evaluated for IoT
- ✓ Consider how the automation of IoT changes the users' perceptions and actions
 - ✓ Historic experience may not accurately predict how the product will be misused
 - ✓ Consider doing new human factors analysis
- ✓ Warnings and instructions must specify the limits of your client's role when other parties are providing some aspects of hardware, software or services



Sinclair Incident – September 27, 2013



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Sinclair – Complaint

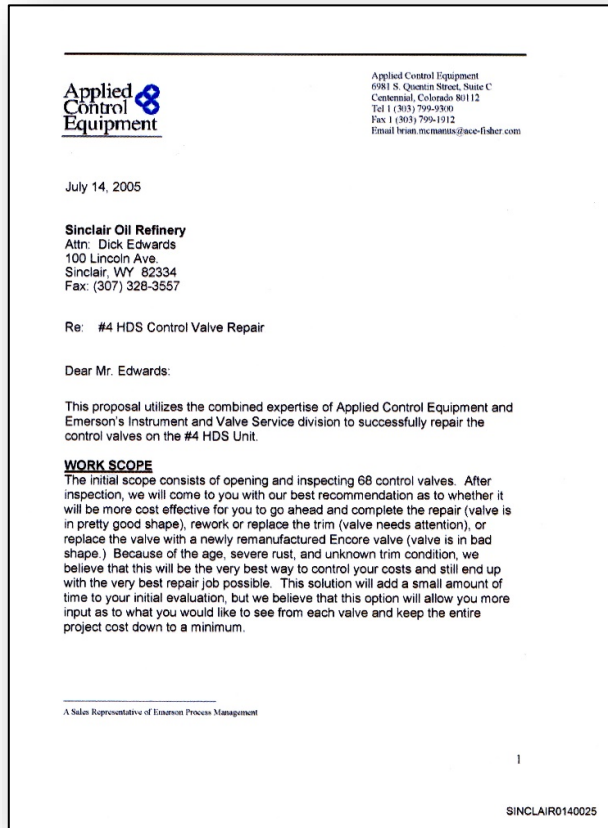
48. Defendants Fisher Controls, IVCS and Emerson were negligent ... :

a. In the preparation, development and distribution of a **software program** that allowed a Sliding Stem Control Valve Specification to be generated for Fisher Encore control valve FV-241 that were contrary to, and did not meet, the requirements of API 941 or industry standards;

b. In the preparation, development and distribution of a **software program** that did not provide a warning to the user of that program that the Sliding Stem Control Valve Specification for Fisher Encore control valve FV-241 that were contrary to, and did not meet, the requirements of API 941 or industry standards;



Sinclair – Applied Control Equipment Proposal



All new or Encore valves will be run through Fisher's sizing [software] program to guarantee performance in the application specified.

Applied Control Equipment July 14, 2005 letter, p. 2



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Sinclair – FirstVue™ Sizing



FIRSTVUE™ provides complete control valve, actuator, and monitor sizing, and enables complete process equipment selection and specification sheet generation.

FirstVue Sizing Manual ©1996, p. 4



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Fisher Valve Manual / Software

CAUTION

When ordered, the valve configuration and construction materials were selected to meet particular pressure, temperature, pressure drop, and controlled fluid conditions.

Responsibility for the safety of process media and compatibility of valve materials with process media rests solely with the purchaser and end-user.

What it Does

What it Does

NOT DO



Product Literature

Material Selection

Emerson provides a variety of products with various materials of construction that can be expected to perform well in a wide range of applications.... It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options and components for the particular application. **Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration or materials of construction selected.**



Recommendations for Sales and Technical Support Documents

- Tort law looks beyond the contract when defining duty
- IoT significantly increases the risk that duties can be created with sales and technical support documents
 - Puffery in sales and marketing documents must not over promise
- Where company “owns” full product offering (hardware, software and services):
 - Expressly state the limits of the product/service where necessary
 - Clarify when customer chooses not to use available functionality
- Where company does not own all three:
 - Technical support must be consistent with scope of work
 - Must guard against manufacturer’s expertise being used to create after-the-fact liability arguments
 - Consider disclaimers
 - Document offers for additional services that customer chooses not to purchase
 - Avoid contradictions between company’s related product offerings



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Impact on Post-sale Duties

IoT can significantly increase post-sale duties:

- Greater ability to prevent harm
- On going contact with customer/user
- Reduced burden to prevent harm

There can be a duty to act even if the product was not defective at the time of sale

- Intervening bad actors may be deemed foreseeable
- New knowledge of misuse may trigger duty

Heightened standards for product monitoring

- Warranty and performance data can be overwhelming
- Ability to monitor risks can increase potential culpability

Notice or warning may not be sufficient

- Remote software fixes are great when they work
- When they do not, recalls are often more expensive



Recommendations for Post-sale Duties

- ✓ **Consider post-sale duties during product design**
 - ✓ Evaluate whether the data is likely to create duties beyond business objectives
 - ✓ As with privacy and cybersecurity, limiting data detail can reduce product liability risk
- ✓ **Consider post-contract duties**
- ✓ **Clearly communicate the nature/limits of your company's post-sale monitoring to customer**
- ✓ **Assess (and where necessary disclose) changes in data monitoring or processing**
- ✓ **Conduct periodic post-sale risk reviews to identify material changes**
 - ✓ Foreseeability of intervening bad actors may change
 - ✓ New knowledge of misuse may trigger new duties



Questions?

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