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CARS OF THE FUTURE: PRODUCT LIABILITY IMPLICATIONS AND SOLUTIONS

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In 2015, the world watched as two researchers wirelessly hacked into a Jeep Cherokee through its dashboard connectivity system and remotely controlled the car.[1] Observers were shocked that these researchers "managed to gain control of not just features like the radio and air-conditioning, but the actual functions of the car: the engine, the brakes and the steering."[2] In fact, the researchers were able to turn off the engine of the Jeep as it drove.[3]

The National Highway Transportation Safety Administration (NHTSA) has long been concerned about the possibility of hacking but had never issued a recall for this threat until this year.[4] After researchers were able to hack into the Jeep Cherokee successfully, NHTSA and Chrysler Fiat issued a recall that affected nearly 1.4 million vehicles.[5] Another 7800 SUVs were recalled a little more than a month later so that they, too, could receive the necessary radio software upgrades to prevent future hacking.[6]

In addition, just this summer, Google began road testing its custom-built, self-driving car prototypes in Mountain View, California, and later in Aus-

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1 Aaron M. Kessler, *Fiat Chrysler Issues Recall over Hacking*, N.Y. TIMES (July 24, 2015), http://www.nytimes.com/2015/07/25/business/fiat-chrysler-recalls-1-4-million-vehicles-to-fix-hacking-issue.html?_r=0.

2 *Id*.

3 Reuters and James Eng, *Fiat Chrysler Recalls 7,800 SUVs over Hacking Concerns*, NBC NEWS (Sept. 4, 2015), http://www.nbcnews.com/tech/security/fiat-chrysler-recalls-7-800-suvs-over-hacking-concerns-n422131.

4 *See* Kessler, *supra*, note 1.

5 *Id*.

6 *See* Reuters and James Eng, *supra,* note 3.

tin, Texas.[7] Google's cars are designed to be fully self-driving and eventually may be manufactured without steering wheels and pedals.[8] Although fully autonomous cars are still inaccessible to the general public, many companies—such as Mercedes, BMW, and Tesla—already have integrated or soon will introduce self-driving features into their vehicles.[9] Thus, self-driving cars ("any car with features that allow it to accelerate, brake, and steer a car's course with limited or no driver interaction") are no longer a futuristic imagining.[10] Fully autonomous cars (vehicles that "can drive from point A to point B and encounter the entire range of on-road scenarios without needing any interaction from the driver") may not be far off either.[11] They are expected to debut in 2019.[12]

This article explores two major issues facing the automotive industry: (1) the challenges posed by the advanced technology being incorporated into vehicles currently in production; and (2) the challenges posed by the new technology in fully autonomous or self-driving vehicles. These challenges not only present practical issues for the automotive industry but also have widespread implications for future product liability litigation. Section II explores the extent to which these emerging technologies will transform traditional tort lawsuits into complex product liability disputes. Finally, this article discusses the steps that states and key players in the automotive industry have undertaken to ensure the automotive industry's continued progress and development.

I. UNIQUE CHALLENGES PRESENTED BY MODERN TECHNOLOGY

Manufacturers of vehicles constantly strive to increase the safety and convenience of passengers and drivers. Undoubtedly, the move to use new technologies in vehicles is part of this trend. Modern vehicles now incorporate innovations that once were only imagined. The ability to place a call through the speakers in a car by pushing a button in the steering wheel, looking at the car dash for a detailed map to the nearest gas station or restaurant, and playing music through the car's Bluetooth technology are all welcome additions to today's vehicles. In the coming years, more and more autonomous driving features will be added, such as parking assis-

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7 Emil Protalinski, *Google Starts Testing Its Custom-Built Self-Driving Cars in Austin, Texas*, VENTURE BEAT (Sept. 18, 2015), http://venturebeat.com/2015/09/18/google-starts-testing-its-custom-built-self-driving-cars-in-austin-texas/.

8 *Id*.

9 John Greenough, THE SELF-DRIVING CAR REPORT: Forecasts, Tech Timelines, and the Benefits and Barriers That Will Impact Adoption, BUSINESS INSIDER (Jul. 29, 2015), http://www.businessinsider.com/report-10-million-self-driving-cars-will-be-on-the-road-by-2020-2015-5.

10 *Id*.

11 *Id*.

12 *Id*. Fully autonomous cars include both user-operated cars and driverless vehicles. This article discusses user-operated fully autonomous cars, rather than the driverless ones, which are likely still many years away from being on the road. *Id*.

tance, adaptive cruise control, emergency braking, lane departure and blind-spot detection. However, could these very same technologies that make the lives of the drivers easier also be putting them or the drivers around them at risk?

A. THE CHALLENGES POSED BY ADVANCED TECHNOLOGY IN AUTOMOBILES

Cybersecurity is one of the most pressing and widespread threats facing the automotive industry. According to technology analyst, Rob Enderle, the automotive industry has been slow to ensure the security of electronically stored information, even with the rapid expansion of the modern technology integrated into modern vehicles.[13] "Cars are no longer simply a physical device to get from A to B."[14] Rather, cars are now regularly installed with "[c]ameras, sensors, Internet-connected infotainment dashboards and computerized maintenance [and] control systems."[15] Although these same systems undoubtedly provide many benefits, such as an improved driving experience and vehicle upkeep, "the moment you network a car, you create a pathway for potential attacks."[16]

It is ironic that cars produced before 2005 are less susceptible to hacking than their more recently manufactured counterparts.[17] After 2005, the automotive industry began aggressively incorporating technology into operating systems.[18] However, these systems were left relatively vulnerable to hackers because the entertainment systems were not always effectively separated from the operating systems of the cars.[19]

Manufacturers' inability to easily implement countermeasures by rolling out an update further compounds the problem.[20] Indeed, in order to solve the problems, car manufacturers must perform recalls so that solutions can be layered onto the existing systems.[21] The most recent Chrysler Fiat recalls discussed above are perfect examples. Chrysler Fiat recalled vehicles to install a software update rather than designing the system to be secure in the first instance.[22] Although car manufacturers intended to reduce the

13 *This Weekend with Gordon Deal*, COMPASS MEDIA NETWORKS (Sept. 19, 2015) (downloaded using iTunes) (hereinafter "Podcast").

14 Charlie Osborne, *Intel Launches Automotive Security Board to Tackle Connected Car Security Risks*, ZD NET (Sept. 14, 2015), intel-launches-automotive-security-board-to-tackle-connected-car-security-risks.

15 *Id*.

16 *Id*.

17 *See* Podcast, *supra,* note 13.

18 *Id*.

19 *Id*.

20 *Id*.

21 *Id*.

22 *Id*.

number of accidents by installing advanced technology in their vehicles,[23] this technology often makes these cars less safe because they are more vulnerable to hacking attacks. If such hackings were widespread, the results could be catastrophic.

B. THE CHALLENGES POSED BY AUTONOMOUS (AND SEMIAUTONOMOUS) CARS

Although manufacturers are reported to be several years away from producing fully autonomous cars, semiautonomous features (many debuting as "active safety features") are already here, and here to stay.[24] Semiautonomous modes take over the driving in certain circumstances.[25] Because this technology already exists, car manufacturers are slowly introducing more and more semiautonomous and autonomous features to gauge the features for which customers are willing to pay.[26] And if the consumers are willing to pay, the technology is expected to become nearly ubiquitous, eventually filtering down from luxury vehicles to more affordable cars and trucks.[27]

Fully autonomous vehicles, such as Google's now-famous robotic vehicle, still suffer from meaningful limitations. As one author describes it:

> Would you buy a self-driving car that couldn't drive itself in 99 percent of the country? Or that knew nearly nothing about parking, couldn't be taken out in snow or heavy rain, and would drive straight over a gaping pothole?
>
> If your answer is yes, then check out the Google Self-Driving Car, model year 2014.[28]

Although these vehicles are unavailable to the general public, this example illustrates the complexities surrounding the ability of car manufacturers to bring fully autonomous vehicles to the retail market. Because fully autonomous cars—by definition—function without human input, a route must be fully and laboriously mapped before the car attempts to navigate

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23 Indeed, automotive engineers and experts estimate that semiautonomous and autonomous vehicle safety features involving vehicle-to-vehicle technology may make vehicles as much as nine times less likely to be involved in vehicle-to-vehicle collisions than when being operated manually by human drivers. *See* Tom Drye, Larry Geise, Karen Taylor, Jon Wood, and Dr. Mohamed Abuali, Products and Production: The Future is Here, Address at FBTAutoConnect (Oct. 15, 2015).

24 Aaron M. Kessler and Bill Vlasic, *Semiautonomous Driving Arrives, Feature by Feature*, N.Y. TIMES (April 2, 2015), *at* http://www.nytimes.com/2015/04/03/automobiles/semiautonomous-driving-arrives-feature-by-feature.html?_r=1.

25 *Id.*

26 *Id.*

27 *Id.*

28 Lee Gomes, *Hidden Obstacles for Google's Self-Driving Cars: Impressive Progress Hides Major Limitations of Google's Quest for Automated Driving*, MIT TECHNOLOGY REVIEW (Aug. 28, 2014), http://www.technologyreview.com/news/530276/hidden-obstacles-for-googles-self-driving-cars/.

it.[29] In other words, features missing from existing maps or any error in those maps would create serious trouble for autonomous cars (as currently designed). A car would not know to obey a stop light that it was not programmed to recognize.[30] "[A]chieving Google's vision will require maintaining a constantly updating map of the nation's millions of miles of roads and driveways."[31] In addition, some researchers still wonder whether certain situations, such as turning left into a high-speed stream of traffic, are possible given the current sensors and technology with which the cars are equipped.[32]

Until driving becomes fully autonomous, the technology will continue to be hampered by one major element: human error. But human error aside, accidents occurring when the vehicle is operating in an autonomous and semiautonomous mode likely will inject complex factual and legal questions into any resulting litigation.

II. Implications of Modern Technology on Product Liability Law

The various issues identified above are likely to manifest themselves in product liability litigation throughout the United States. Imagine a situation in which an individual hacks into a vehicle and causes it to crash or a situation in which an autonomous vehicle malfunctions and causes a collision. Although these types of accidents have never been an issue in the past, the technological advancements discussed above make them increasingly possible. The result will likely be an increase in the complexity of the claims and a corresponding increase in the difficulty of fault apportionment between the driver and the autonomous vehicle.

A. INCREASE IN THE COMPLEXITY OF LITIGATION

In the absence of regulations to the contrary, car accidents that result in simple tort claims between drivers could become complex product liability claims against car manufacturers or software engineers or both.

> The legal theories under which liability for car accidents are pursued will also change dramatically. Instead of a straightforward negligence claim, plaintiffs may be able to present multiple theories of liability under product liability law (design defects, manufacturing defects, failure to warn or instruct), alongside breach of contract, warranty or other claims.[33]

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29 *Id.*

30 *Id.*

31 *Id.*

32 *Id.*

33 Matthew J. Trainor, *DTCI: Legal Questions Abound for Hands-Free Driving*, The Indiana Lawyer (July 15, 2015), *available at* http://www.theindianalawyer.com/dtci-legal-questions-abound-for-hands-free-driving/PARAMS/article/37702.

Thus, when an autonomous vehicle is involved in an accident, plaintiffs may choose to assert not only simple negligence claims against the driver of the other vehicle but product liability claims against the car manufacturer as well. As a consequence, the complexity of claims could increase along with the number of potentially culpable parties brought into the litigation. "All of these issues add more parties, costs and legal questions to accident cases, increasing the role of the attorneys involved and potentially decreasing the chances of settlements."[34] Depending upon the type of defect claimed, courts also could see an increase in the number of class actions vying for certification and a dramatic increase in requests for punitive damages.[35]

The case becomes even more complex and difficult if a hacker is involved. If the plaintiff is unable to determine the identity of the hacker, a reasonable assumption, then that plaintiff could face serious issues fully recovering for his loss. In states such as Indiana, fault apportioned to a properly preserved nonparty directly decreases the amount of total damages recoverable from the other defendants remaining in the litigation. Even if the hacker could be identified, manufacturers might still be liable for claims of defective design for failing to design and produce a vehicle capable of fending off reasonably foreseeable cyber attacks.

B. THE PROBLEM OF FAULT APPORTIONMENT: WHEN IS THE DRIVER AT FAULT?

Even fully autonomous cars, at least for the foreseeable future, are likely to have a driver behind the wheel from whom input will be required and who has the ability to override the vehicle's autonomous features. Thus, the question becomes whether the driver could still be liable for failing to intervene in time to stop the accident if, for example, he could neither reasonably nor safely intervene to prevent an accident because he was distracted by an electronic device.

At least one author has theorized that the proper party for assigning liability "will often be the party in control of the vehicle at the time the accident occurs."[36] However, it might not be as simple as whether the vehicle is operating in autonomous mode at the time of the accident. The fault apportionment could be a complicated question of fact, depending on which autonomous function is involved and the extent to which the operator oversees or overrides the autonomous function. For instance, Volvo's 2016 XC90 Pilot Assist system "will brake and accelerate to match the traffic speed—as well

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34 *Id.*

35 *Id.*

36 Jeffrey K. Gurney, *Sue My Car Not Me: Products Liability and Accidents Involving Autonomous Vehicles*, 2013 U. ILL. J.L. TECH. & POL'Y 247, 271 (2013).

as steer for you in line with the car ahead—up to 30 [miles per hour]."[37] However, even this autonomous system requires that the driver take control of the steering after the vehicle goes above thirty miles per hour. In addition, if the vehicle is stopped for more than six seconds, the XC90 relinquishes control back to the driver.[38] This time limit exists because of concerns that the driver will become distracted if given longer periods of time.[39] The car also makes an audible beep if the operator's hands leave the wheel for more than a few seconds.[40] This, again, is an intentional design choice: Volvo does not want a driver to take his hands off the wheel even while the XC90's autonomous driving functions take control of the wheel on the driver's behalf.[41] Other semiautonomous features take over braking and acceleration but still require input from the driver for steering.[42]

Because even cars with autonomous or semiautonomous features still require driver input in particular circumstances, whether the driver should have or could have intervened to avoid a collision could be a question rife with complex factual issues in cases alleging product liability. Critical questions are likely to include: (1) whether and to what extent the driver was being attentive to traffic conditions; (2) what type of control the vehicle had at the time of the accident; (3) whether the driver was warned to take control before the vehicle collided with something; (4) whether the feature should have been designed differently to require the operator to take control earlier or later or not at all; (5) whether the warnings provided to the operator were adequate; (6) whether a defect in the vehicle caused the autonomous abilities of the vehicle to malfunction; (7) whether the driver could have avoided the collision if he had been paying closer attention to the road or if he had intervened at a different time; and (8) whether the collision was avoidable with or without the technology. Arriving at answers to these questions may be difficult.

Because many car accidents are the result of human error, autonomous vehicles may dramatically reduce the number of collisions.[43] However, as illustrated above, the legal complexity of the remaining incidents is also

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37 John R. Quain, *Look Ma, No Hands! Volvo's Amazing Car Tech*, TOM'S GUIDE (June 2, 2015), http://www.tomsguide.com/us/volvo-xc90-test-drive,news-21023.html.

38 *Id*.

39 *Id*.

40 *Id*.

41 *Id*.

42 Kessler and Vlasic, *supra,* note 24.

43 *See* Trainor, *supra,* note 33 ("Estimates show that as much as 90 to 95 percent of car accidents are caused by human error, so the number of accident-related lawsuits should drop significantly when autonomous cars become commonplace. PricewaterhouseCoopers forecasts a reduction of traffic accidents by a factor of 10.").

likely to increase—both in terms of the claims brought against the various actors and the fault apportionment between the parties.[44]

C. THE FUTURE FOR DESIGN DEFECT CASES

The technology for semiautonomous and autonomous vehicles already exists, but the automotive industry is moving slowly in incorporating this technology into vehicles, starting only with more expensive luxury models.[45] It will likely take years before the technology is widely accepted, demanded by the general public, and then introduced into more affordable trucks and cars.[46] Thus, although the technology currently exists, it is not yet generally accessible even though it could dramatically reduce the number and severity of vehicle accidents. Features such as those that detect blind spots and other hazards could prevent common accidents that occur because of inattention or careless driving. If these accidents were to occur in vehicles that lack this safety technology, auto manufacturers may be asked their reasons for installing it only in certain models and omitting it from others.

This question essentially amounts to a design defect question. Under the Indiana Product Liability Act (IPLA), a plaintiff must establish that "(1) he or she was harmed by a product; (2) the product was sold 'in a defective condition unreasonably dangerous to any user or consumer'; (3) the plaintiff was a foreseeable user or consumer; (4) the defendant was in the business of selling the product; and (5) the product reached the consumer or user in the condition it was sold."[47] With respect to a design defect case in particular, "the plaintiff must compare the costs and benefits of alternative designs" and demonstrate that "not only could [the alternative design] have prevented the injury but also was cost-effective under general negligence principles."[48] Plaintiffs often point to the use of a particular safety feature in other models in an attempt to establish the feasibility of a purported design alternative.

If plaintiffs fail to produce alternative designs and an expert to testify on the costs and benefits of alternative designs, plaintiffs risk the entry of summary judgment.[49] In the case of autonomous and semiautonomous fea-

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44 It is beyond the scope of this article, but if autonomous and semiautonomous features improve safety and reduce collisions as dramatically as many industry analysts believe, it is not difficult to envision a situation in which a driver of a vehicle without these technological features is involved in a collision and found to be negligent for driving a vehicle that lacks them.

45 *See* Kessler and Vlasic, *supra,* note 24.

46 *Id*.

47 Piltch v. Ford Motor Co., 778 F.3d 628, 632 (7th Cir. 2015), *reh'g denied* (Apr. 1, 2015) (referencing IND. CODE § 34-20-2-1).

48 Pries v. Honda Motor Co., 31 F.3d 543, 545-46 (7th Cir. 1994).

49 *See, e.g., Piltch*, 778 F.3d at 628 (affirming the decision of the district court to grant summary judgment to Ford, in part, because plaintiff failed to set forth a reasonable alternative design or a properly qualified opinion witness to support his design defect theories).

tures, these designs exist, are being implemented in ever-expanding numbers with each model year, and have demonstrated safety benefits. So long as plaintiffs retain a properly qualified opinion witness to testify effectively about the costs and benefits of those alternative designs, plaintiffs might survive summary judgment and succeed in presenting their design defect theories to a jury.[50]

III. Potential Solutions

A. The Automotive Industry Attempts to Tackle Cybersecurity

Recognizing that thwarting cybersecurity threats posed by automotive technology required a multifaceted approach, Intel recently established the Automotive Security Review Board (ASRB) "to research and collaborate on ways to improve automotive security products and technology."[51] The ASRB intends to "establish security best practices and encourage making cybersecurity an essential ingredient in the design of every next generation car."[52] "Members of the board" are expected to "perform ongoing security tests and audits to formulate both best practice recommendations and design suggestions to benefit automakers as a whole, which will then in turn help keep drivers and passengers safe in today's modern vehicles."[53]

B. States Modify Laws to Permit Testing of and Develop Regulations Concerning Autonomous Cars

Indiana has not yet joined those states that have enacted autonomous vehicle legislation. Many of these states' laws are limited to preventing local governments from banning the technology as long as it complies with all applicable safety regulations.[54] Some states have taken it a step further, however, and regulated the use of such vehicles and the extent to which manufacturers could face liability.

1. Regulations of the Use of Autonomous Vehicles

The District of Columbia recently passed a law that limits the conditions under which an autonomous vehicle may operate on public roadways in the District of Columbia:

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50 The issue of preemption is outside the scope of this article. However, the failure to implement certain technologies could theoretically be addressed at some point in the future with this defense, depending on regulations enacted on the subject of autonomous and semiautonomous features.

51 *Intel's Automotive Security Review Board (ASRB) Benefits Industry*, Intel, https://www-ssl.intel.com/content/www/us/en/automotive/automotive-security-review-board.html.

52 *Id.*

53 *See* Osborne, *supra,* note 14.

54 *See, e.g.,* Tenn. Code § 55-8-202(a) (2015) ("No political subdivision may by ordinance, resolution, or any other means prohibit within the jurisdictional boundaries of the political subdivision the use of a motor vehicle equipped with autonomous technology if the motor vehicle otherwise complies with all safety regulations of the political subdivision.").

(a) An autonomous vehicle may operate on a public roadway in the District; provided that the vehicle:
  (1) Operates without a driver actively manning the controls on public roadways;
  (2) Has a manual override feature that allows a driver to assume control of the autonomous vehicle at any time;
  (3) Has a driver seated in the control seat of the vehicle while in operation who shall be prepared to take control of the autonomous vehicle at any moment;
  (4) Obeys all traffic laws; and
  (5) Operates on alternative fuels.[55]

For purposes of this law, the Council of the District of Columbia defined *autonomous vehicle* as "a vehicle capable of navigating the roadways of the District and interpreting all existing traffic control devices without a driver operating any of the vehicle's control systems."[56]

The Committee on the Environment, Public Works, and Transportation recommended approval of the D.C. law, known as the Autonomous Vehicle Act of 2012, finding that "autonomous vehicles will be a large, important part of the District's future transportation network."[57] It was important to the committee that the bill "still require a licensed driver to be present and ready to take control of the vehicle at any time."[58] The committee, however, remained open to the possibility that—upon proof of reliability—the council could amend the bill "to remove the requirement of a licensed driver."[59] The Committee on Finance and Revenue also provided a favorable recommendation. In its report, that committee recognized that there were no autonomous vehicles registered in the District.[60] However, the bill was expected to lay "the necessary parameters for the regulation of autonomous vehicles."[61]

Nevada legislation similarly reflected a concern that autonomous vehicles remain accessible to human intervention during operation:

(1) An autonomous vehicle shall not be registered in this State unless the autonomous vehicle meets all federal standards and regulations that are applicable to a motor vehicle.

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55 D.C. Law L19-0278 (2013), *available at* http://dcclims1.dccouncil.us/images/00001/20120927113516.pdf.

56 *Id.*

57 Committee Report on the Autonomous Vehicle Act of 2012, Committee on the Environment, Public Works, and Transportation (Nov. 28, 2012), *available at* http://dcclims1.dccouncil.us/images/00001/20130321125733.pdf.

58 *Id.*

59 *Id.*

60 Committee Report on the Autonomous Vehicle Act of 2012, Committee of Finance and Revenue (Nov. 28, 2012), *available at* http://dcclims1.dccouncil.us/images/00001/20130321125329.pdf.

61 *Id.*

(2) An autonomous vehicle shall not be tested or operated on a highway within this State unless the autonomous vehicle is:
  (a) Equipped with a means to engage and disengage the autonomous technology which is easily accessible to the human operator of the autonomous vehicle;
  (b) Equipped with a visual indicator located inside the autonomous vehicle which indicates when autonomous technology is operating the autonomous vehicle;
  (c) Equipped with a means to alert the human operator to take manual control of the autonomous vehicle if a failure of the autonomous technology has been detected and such failure affects the ability of the autonomous technology to operate safely the autonomous vehicle; and
  (d) Capable of being operated in compliance with the applicable motor vehicle laws and traffic laws of this State.[62]

Like D.C.'s Autonomous Vehicle Act, Nevada's statute requires the presence of a human operator ready to take control of the vehicle at any time and requires that the manufacturer provide a means for the operator to manually override the autonomous functions of the vehicle at any time. Nevada's statute also places an affirmative obligation on car manufacturers to provide the driver with two different alerts. First, the autonomous vehicle must be "[e]quipped with a visual indicator located inside the autonomous vehicle which indicates when autonomous technology is operating the autonomous vehicle."[63] Second, the vehicle must be "[e]quipped with a means to alert the human operator to take manual control of the autonomous vehicle if a failure of the autonomous technology has been detected and such failure affects the ability of the autonomous technology to operate safely."[64]

Thus, Nevada seems to be concerned not only with a driver's ability to retake control of the vehicle at a moment's notice but also with implementation of safety measures that alert the driver when the car is operating in autonomous mode and when the driver needs to retake control. As discussed above, these capabilities could create multifaceted questions of fact focusing on whether the operator could have or should have intervened in time to avoid a collision, even if the vehicle fails while operating in autonomous or semiautonomous modes.

2. Limitations of Liability for Manufacturers

Michigan passed the following law in 2013, providing for the limitation of liability for the manufacturers of vehicles with autonomous technology under certain circumstances:

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62 Nev. Rev. Stat. § 482A.080 (2013).

63 *Id*. § 482A.080(2)(b).

64 *Id*. § 482A.080(2)(c).

(1) The manufacturer of a vehicle is not liable and shall be dismissed from any action for alleged damages resulting from any of the following unless the defect from which the damages resulted was present in the vehicle when it was manufactured:
  (a) The conversion or attempted conversion of the vehicle into an automated motor vehicle by another person.
  (b) The installation of equipment in the vehicle by another person to convert it into an automated motor vehicle.
  (c) The modification by another person of equipment that was installed by the manufacturer in an automated motor vehicle specifically for using the vehicle in automatic mode.[65]

As defined by Michigan law, *automated motor vehicle* means "a motor vehicle on which automated technology has been installed, either by a manufacturer of automated technology or an upfitter that enables the motor vehicle to be operated without any control or monitoring by a human operator."[66] *Automatic mode* means "the mode of operating an automated motor vehicle when automated technology is engaged to enable the motor vehicle to operate without any control or monitoring by an operator."[67] Thus, under Michigan law, vehicle manufacturers will be liable only when "the defect from which the damages resulted was present in the vehicle when it was manufactured." According to the committee that proposed this legislation, the law was intended "to provide immunity for vehicle manufacturers for alleged damages resulting from the conversion or modification of a vehicle into an automated motor vehicle unless the defect from which the damages resulted was present in the vehicle when it was manufactured."[68]

C. AN UNPRECEDENTED STEP: MIGHT CAR MANUFACTURERS AGREE TO STRICT LIABILITY TO ENCOURAGE LAWMAKERS AND THE PUBLIC TO ACCEPT INNOVATION?

Although some states have started the process of regulating autonomous cars, the federal government has yet to follow suit. To respond to concerns such as those raised about the potential liability of autonomous vehicles, the automotive industry is speaking out and taking the lead in an unprecedented way.

A recent seminar organized by Volvo in Washington D.C. included a speech entitled, "A Future with Self Driving Cars—Is It Safe?" In that speech, Volvo's chief executive, Håkan Samuelsson, "called out federal regulators for not taking charge to establish a framework for regulation and

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65 M.C.L.A. § 600.2949b(1) (2013).

66 M.C.L.A. § 257.2b(1) (2014).

67 M.C.L.A. § 257.2b(3) (2014).

68 2013 Michigan Senate Bill No. 663, Michigan Committee Report, Michigan Ninety-Seventh Legislature—Regular Session of 2013.

testing of autonomous vehicles."[69] If federal regulators fail to take action, Samuelsson opined that the United States "risks losing its leading position due to the lack of Federal guidelines for the testing and certification of autonomous vehicles."[70] In a statement encouraging lawmakers to take action, he said that Volvo "would 'accept full liability whenever one of its cars is in autonomous mode.'"[71] According to Samuelsson, "We are the suppliers of this technology and we are liable for everything the car is doing in autonomous mode."[72] He added, "If you are not ready to make such a statement, you shouldn't try to develop an autonomous system."[73] Other leaders in autonomous driving technology have reportedly agreed with Volvo; both Google and Mercedes-Benz, for example, "reportedly said they will accept full liability if their self-driving vehicles cause a collision."[74]

These bold statements could have far-reaching implications. Volvo certainly appears willing to accept liability whenever one of its vehicles causes a crash while driving in autonomous mode. If that is, indeed, Volvo's intent, then such an admission may alleviate many of the anticipated issues involved in litigating autonomous and semiautonomous vehicle product liability claims. Despite the apparent sweeping nature of these pronouncements, manufacturers may ultimately limit their acceptance of liability to instances in which the technology malfunctions. The point is that time will tell whether the industry statements about accepting responsibility are as sweeping as they seem. Manufacturers already face liability in various forms when a malfunction causes damages.[75] However, in Indiana, claimants asserting a theory of product liability relying upon proof of a design defect must comport with a negligence standard. Thus, the question (at least in Indiana) becomes whether Volvo and other car manufacturers are willing to forego the traditional questions of negligence[76] when it comes to accidents involving cars operating in autonomous modes. This would leave a (relatively) simple question: Did the vehicle that was operating in autono-

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69 Jim Gorzelany, *Volvo Will Accept Liability for Its Self-Driving Cars*, FORBES (Oct. 9, 2015), http://www.forbes.com/sites/jimgorzelany/2015/10/09/volvo-will-accept-liability-for-its-self-driving-cars/.

70 *Id.*

71 *Id.*

72 Pete Bigelow, *Can't Accept Autonomous Liability? Get Out of the Game, Says Volvo*, AUTOBLOG (Oct. 9, 2015), http://www.autoblog.com/2015/10/09/volvo-accept-autonomous-car-liability/.

73 *Id.*

74 *See* Gorzelany, *supra*, note 69.

75 *See, e.g.,* Hathaway v. Cintas Corp. Servs., Inc., 903 F. Supp. 2d 669, 673-74 (N.D. Ind. 2012) ("A product contains a manufacturing defect when it deviates from its intended design." (internal quotations omitted)).

76 To demonstrate negligence in design defect cases, Indiana law requires that an expert set forth a cost-benefit analysis of alternative designs. *See, e.g.,* Piltch v. Ford Motor Co., 778 F.3d 628, 632 (7th Cir. 2015), *reh'g denied* (Apr. 1, 2015) ("To demonstrate a design defect under Indiana law, 'the plaintiff must compare the costs and benefits of alternative designs' and 'show that another design not only could have prevented the injury but also was cost-effective under general negligence principles.'") (quoting Pries v. Honda Motor Co., 31 F.3d 543, 545-46 (7th Cir.1994)).

mous mode at the time of the collision cause the crash? Whether car manufacturers are willing to accept this form of liability (which of necessity would be self-imposed) for their autonomous vehicles remains to be seen.

IV. CONCLUSION

Although federal and state governments have been slow to adopt laws and regulations reflecting the widespread availability of autonomous technology, one thing is clear: that technology is here to stay. With even more advanced technology already in the testing phases at many automotive manufacturers and suppliers, the integration of such technology into automobiles is likely to increase in the coming years. This technology includes not only the autonomous and semiautonomous modes but also the advanced technology incorporated into vehicle dashboards and user interfaces.

There are two principal challenges this technology presents to the auto industry. First, the industry must maintain the cybersecurity of its vehicles. Making technology accessible to consumers could also make it accessible to hackers. This technology poses both a security threat to automobiles and a risk to individuals whose vehicles are collecting masses of personal data about the vehicles' operation. Furthermore, autonomous technology still has many kinks that must be addressed. Right now, available technology requires active operator input and user control. But over time, autonomous and semiautonomous modes could—paradoxically—increase the number of distracted drivers on the road. These challenges pose interesting questions in light of what were once basic tort claims between drivers. Now, even a dented fender could transform into a product liability suit with myriad claims. The liability questions become even more murky depending upon the autonomous function involved, the operator's ability to avoid the collision, and the extent to which a nonparty hacker may have contributed to the crash.

State and local governments, as well as industry leaders, are addressing these liability and developmental concerns in an ad hoc fashion. Leaders in autonomous automobile production have suggested that they may accept full liability whenever one of their vehicles operating in autonomous mode causes an accident. However, even with these concessions, the same leaders have called on the federal government to set regulations for the testing, development, and implementation of autonomous cars so that the United States does not fall behind. In the interim, Indiana and other states should be prepared to evaluate their own product liability laws and ask whether these laws are ready to address the unique challenges and possibilities that autonomous vehicles are sure to bring to Indiana's streets and courtrooms.