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21ST CENTURY AUTO TECH-NOLOGY

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CRASH COURSE:
How Auto Technology is Changing Claims

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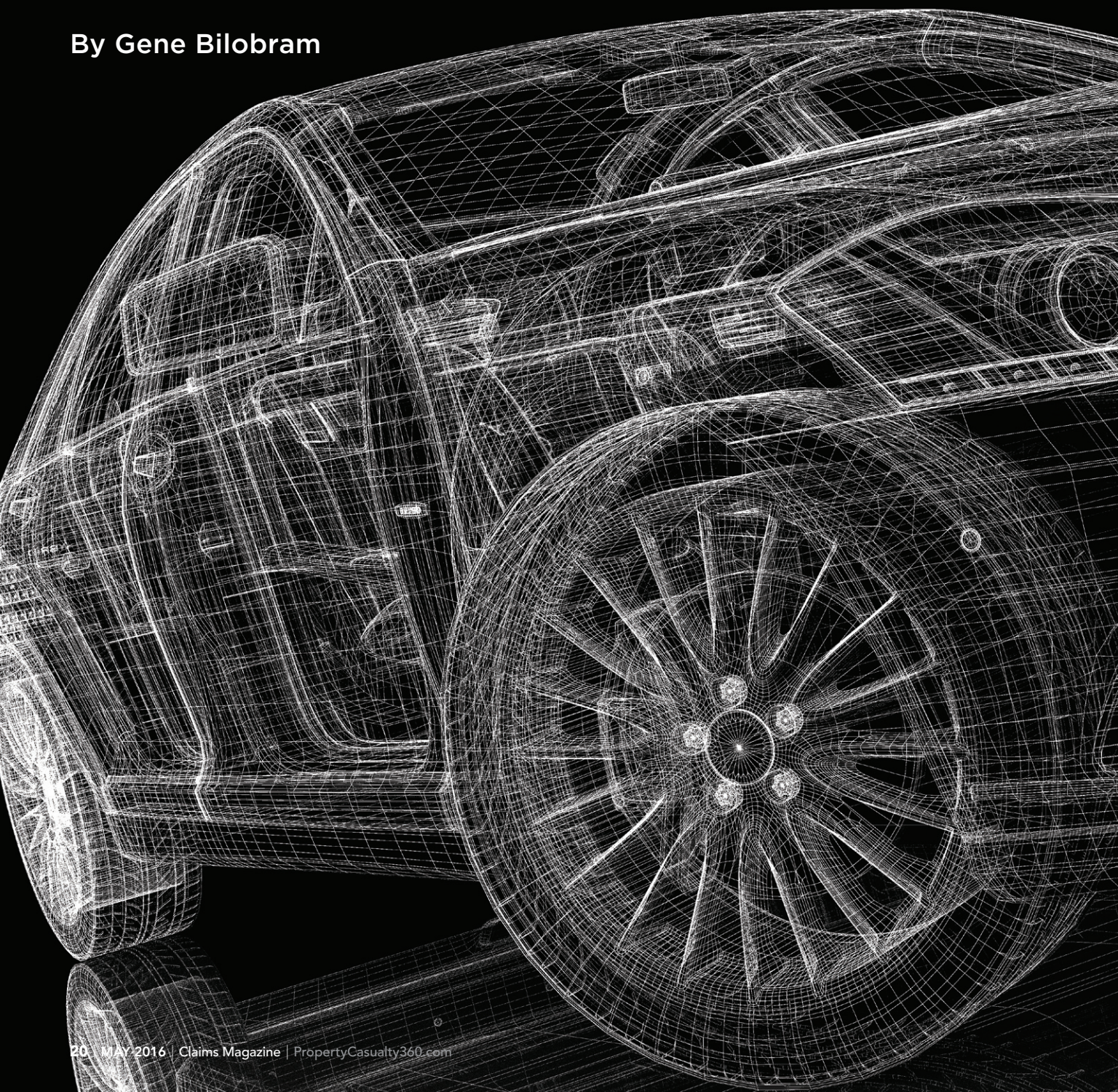

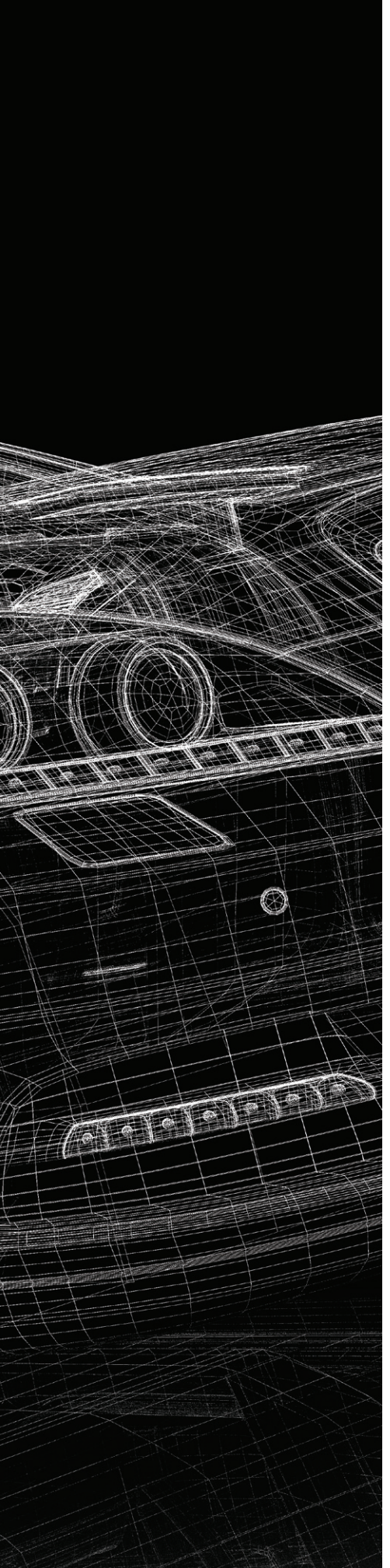

Automotive technology is evolving at a seemingly breakneck pace. New vehicles are making their way to auto body shops and into the hands of an industry that is not quite prepared. Claims professionals must quickly get up to speed while gaining the knowledge to handle these new technologies in the event of a crash.

"Like it or not, the robots are slowly taking over a driver's chores," states Frank Rowsome, Jr. in a *Popular Science Monthly* article, "What It's Like to Drive an Auto-Pilot Car." While that statement seems timely, it is actually from the April 1958 issue. The arrival of the autonomous vehicle (AV) that captured Rowsome's imagination more than a half-century ago, appears to be within sight.

Much of the technology that will power tomorrow's self-driving vehicles is present in the collision mitigation and collision avoidance systems in today's newer vehicles. The radar, lidar, GPS, sensors and cameras providing input data to the Advanced Driver Assistance Systems (ADAS) will likewise provide input data in the AVs to come. Of course, the self-driving vehicle may utilize "camera version 7.0," but it will be a camera all the same.

Some premium vehicles boast in excess of 75 on-board computers and, in the aggregate, more than 100 sensors and cameras. To be effective, many of the cameras and sensors are located on or close to the outside of the vehicle, making them vulnerable to collision impact. With the vast array of sensors and cameras encircling the vehicle in a 360-degree manner, almost any impact will directly affect or be within inches of these devices, and the components may sustain damage or become compromised as a result of even the most innocuous seeming fender bender.

Simple repairs become complex

Concerns with physical damage aside, today's advanced automotive systems require specialized procedures in almost any repair situation. A simple windshield repair becomes more complex when a vehicle has a camera mounted behind the glass. A stone chip located in the camera's field of vision would require the windshield's replacement. Honda and Toyota caution against the use of non-Original Equipment Manufacturer (OEM) glass. In vehicles with Adaptive Cruise Control (ACC) and other systems, Honda warns anything other than an OEM windshield "may cause these systems to work abnormally" because "the camera will not be able to aim properly."

Some manufacturers require camera calibration procedures when replacing a windshield. Special targets are used to aim the camera while the vehicle is on a flat surface. An automotive scan tool may be necessary to perform the task, and it seems the mobile glass installers are not prepared for this change.

Once simple bumper repairs now require special instructions due to Blind Spot Monitoring (BSM) sensors located behind the rear bumper. At least one manufacturer states no body fillers should be used on the bumper cover in the area of the sensors. On a 2014 Mazda 6, "repairs to rear bumper using putty" is listed as a possible cause of BSM malfunction. A BSM radar test is needed when replacing the rear bumper. Certain Audi models require calibration of the lane change assist control unit when the rear bumper cover is removed and installed, or if the rear bumper cover was damaged by impact.

The consumer already has this type of information in some cases. For instance, Chrysler has the following in the owner's manual of vehicles with blind spot alert: "NOTE: If your vehicle has experienced any damage in the area where the sensor is located, even if the fascia is not damaged, the sensor may have become misaligned. Take your vehicle to an authorized dealer to verify sensor alignment. A sensor that is misaligned will result in the BSM not operating to specification."

In view of this information and more, researching each job for manufacturer repair guidelines is a must. Resources like I-CAR training, CCC ONE Repair Methods, Mitchell Repair Center Tech Advisor and ALLDATA Collision are available to learn which repair circumstances would entail additional OEM procedures. Toyota has Collision Repair Information Bulletins (CRIBs). Select CRIBs, training courses and other useful resources can be found at Toyota's Collision Repair and Refinish (CR&R) training site (www.crrtraining.com). Other manufacturers also offer repair information at no charge or by subscription.

Sometimes the repair process itself can cause trouble. The disconnection or dislocation of any number of electrical system parts can create issues requiring resolution. Shops routinely remove and install (R&I) parts to gain repair and refinishing access. In doing so, diagnostic trouble codes (DTCs) are often set and need to be resolved to pre-accident condition. DTCs are alphanumeric codes that assist the technician in pinpointing and resolving issues. The only way to identify and resolve DTCs is through the use of an automotive scan tool attached to the Data Link Connector (DLC) located under the dash.

Bruce Tschida, owner of Lake Marion Collision in Minnesota, and president of the national Alliance of Automobile Service Providers (AASP), stated the following in a recent interview: "Simply removing a door side mirror can trigger a fault code in some vehicles. Jobs requiring major disassembly may set off a dozen or more codes. The job is not done until the vehicle is scanned and all related codes are properly cleared. If the codes are not cleared, the shop hasn't met its promise of pre-accident condition no matter how good the outside of the vehicle may look."

The MIL myth

The Malfunction Indicator Lamp (MIL) is the little light that shines on the dash in the shape of an engine, or text like "Service engine soon," to alert of an issue requiring attention. It is one of a host of dashboard indicator lamps in modern automobiles that can include the shape of an oil can, wiper blades, "ABS," "SRS" plus dozens more possible configurations depending on the vehicle. Some vehicles display text to describe a problem. As important as these indicators are, a warning lamp only tells so much. While the presence of a dashboard light tells you there is a problem, the absence of one doesn't mean no issues exist.

There are upwards of 15,000 potential trouble codes and typically only a dozen or so dashboard lamps. Some trouble codes will never trigger a warning lamp. There are also pending and suspended codes that will not set a warning lamp until a later, potentially less convenient point in time, like on the weekend when the customer has the car and cannot reach anyone at the shop or insurance company.

With over 100 million lines of computer code on some vehicles, it seems unreasonable to expect a handful of dashboard lamps to address all of them. Still, many consumers and too many auto body shops falsely believe that No light = No problem. As a result, vehicles with unresolved DTCs are leaving the body shop every day. Quoting Aldous Leonard Huxley, "Facts do not cease to exist because they are ignored."

Some repairers assume that a replacement sensor or control module, being a new part, should plug in and work straight from the box. Not true. These components usually require some level of aiming, initialization, programming or calibration.

Dave Benbow of Dave's Mobile Diagnostics in Lahaska, Pa. says, "I get several calls a week from body shops in a panic that the Lane Keeping Assist (LKA) or Forward Collison Warning (FCW) malfunction message is showing and the customer is on their way to pick the vehicle up. In many cases they replaced or simply disconnected a system component that requires an additional procedure the shop was not aware of. Eventually, these shops learn to schedule an appointment in advance to avoid surprises at the end of the repair."

The need to recalibrate sensors and cameras is not always displayed with a dashboard indicator or a DTC. As far as the vehicle is concerned, the sensor is working. The input data provided by the sensor is assumed to be accurate and the computer makes decisions accordingly. If a sensor or camera is not correctly calibrated to provide accurate readings, the corresponding vehicle system cannot be expected to perform with the same reliability that the manufacturer intended. Keep in mind that these devices typically supply data to several vehicle systems simultaneously.

"We operate in a world where simply disconnecting the car's battery has ramifications," states Doug Kelly, CEO of Collision Diagnostic Services. "Some are only minor nuisances like resetting the clock and radio presets. In other cases, a series of reset or relearn procedures are needed to restore proper function to vehicle systems. Failing to do so can mean a customer without air conditioning, a key fob that doesn't work, a car that won't start or a safety system not functioning within the factory established settings. Since there is often no corresponding warning lamp, our remote technicians are trained to perform output tests and to help shops ensure all systems are operational."

Once and for all, the industry must dispel the notion of the dashboard light as a diagnostic tool and start utilizing the real tools and information available. This will yield benefits to all parties in the claims process. The most important being the benefit of consumer safety.

Shifting liability

There has been no shortage of conjecture surrounding the impending arrival of self-driving vehicles. Prognostications point to radical changes in automobile insurance as we know it, with

a business model shifting from insuring the driver to product liability insurance for the manufacturer, as the driver becomes a passenger and the vehicle becomes the driver. If history is any guide, automakers are not going to simply roll over, accepting any and all liability. The purported liability model is further obfuscated by the fact that AV systems will likely have intervals where the driver will assume control.

Assuming that liability can be easily shifted to the manufacturer can create a liability trap for insurers. An automaker can only attest to the reliability of vehicle systems at the time the vehicle rolled off of the assembly line. Between that time and an incident alleging a malfunction, there may be mitigating factors that a manufacturer will seek to offset if not completely shift liability away from the automaker. A repair shop or insurer that fails to provide allowances for necessary procedures following a crash, may be held liable should a malfunction occur at some future point in time.

The belief that the burden of complete and proper repairs falls solely on the repairer may be misguided. In the era of the direct repair shop, lines have become sufficiently blurred as to who is responsible for the repair plan. Expect to see more requests for diagnostic scanning and procedures like calibration in shop-prepared estimates. Allowance or denial of these requests can place an insurer in a position of acting responsibly or being culpable respectively.

Volvo and Mercedes have already indicated they would accept liability in an AV crash. However, we have yet to see the fine print which will likely include various liability limits and disclaimers. In a 1994 report, "Tort Reform and Smart Highways," D. Randall Ayers opines on the subject of liability regarding Intelligent Vehicle Highways Systems (IVHS) long before the technology was introduced in production vehicles. "IVHS equipment manufacturers could also attempt to limit or avoid tort liability through the use of liability disclaimers in the signed sales agreements." Post-crash diagnostic scanning and calibrations should be near the top of the liability disclaimer list.

Although the AV liability model is unclear at present, it is nonetheless imperative that insurers have a strategy to assess and assure a vehicle's electronic health in the aftermath of a loss. Semi-autonomous is here with the conventional insurance model still in place. A clean bill of health from a diagnostic scan report may prove to be an effective tool to shoot down allegations of negligence or bad faith.

Diagnostic scanning: The roadmap to successful repairs

With the evolution in vehicle design, today's collision repairer must adopt a more holistic approach to vehicle repair. Ergonomic engineering and space utilization have meant substantially more components in far less space. Auto body shops have had to increase their mechanical aptitude along with the size of their tool chest. One such tool crossing over from mechanic to colli-

sion shop is the automotive scan tool. Body shops are using scan tools for such things as air bag systems, programming modules, sensor initialization and diagnostic scanning to identify and clear trouble codes.

"Instructors at Toyota's CR&R training centers recommend performing one vehicle diagnostic scan during the estimation process and another during the vehicle's final quality check," explains Eric Mendoza of Toyota Motor Sales, USA, Inc. "Identifying a DTC before repairs begin may eliminate a supplement, while identifying a DTC before handing the keys to the customer will help assure customer satisfaction."

Paired with vehicle teardown, pre-repair scanning offers tremendous benefits. By discovering hidden electrical system damage at the beginning, supplements and cycle time can be significantly reduced, and loss reserve accuracy is improved. Costly mistakes such as fixing a vehicle that should be a total loss can be avoided. Another benefit is the ability to determine whether an issue is loss-related, which can shut down an argument beforehand.

Post-repair scanning is important to check the electronic health of vehicle systems and clear any lingering fault codes before the customer picks up the vehicle. This proactive approach is not only prudent, it helps fulfill the "good faith" of safe and proper repairs inherent in most insurance policies and regulated by many state insurance departments. Post-repair scanning helps avoid rental vehicle extensions due to last-minute dashboard lights.

The proliferation of automotive technology should support an ongoing shift to in-house (at the body shop) diagnostics and related tasks. The OEM dealership and local mechanic will not be completely precluded in this shift. Overall collision scanning volume should continue to grow to the benefit of all players. Vehicle technologies that are too new or specialized to handle with non-dealership options will likely become a dealer sublet, as should any procedure that cannot be performed to OEM standards.

As diagnostic scanning becomes standard operating procedure in the collision repair process, in-house and what I like to call "in-house outsourcing" solutions, are destined to become standard as well. There can be better transparency and control in-house. New products and services significantly mitigate costs to the insurer. Tow fees are saved by eliminating the need to flatbed the vehicle to an outside shop. Reduced cycle times of in-house options serve to reduce rental vehicle charges. Ultimately, the mutually beneficial nature of in-house solutions should lower the wall of resistance that typically ensues with new and non-included procedures.

Insurance-friendly solutions

IN-HOUSE VEHICLE DIAGNOSTICS: The auto body shop acquires and operates its own scan tools. The full in-house operator has a respectable array of equipment and software to service a comprehensive range of vehicles and applications. A skilled technician performs the work.

Benefits: On-demand, cost effective, reduced cycle time, no need to transport vehicle

Drawbacks: There is no universal scan tool for all vehicles. Proprietary systems, technological change and obsolescence play a role. A new model year may necessitate purchase of a new OEM factory level scan tool and/or software. A full in-house program is a major monetary commitment to many shops. Consequently, some shops opt for cheaper aftermarket (A/M) tools or generic code readers with limited capability operated by an employee with little understanding of vehicle electronics. This can lead to additional issues.

Bottom line: In-house solutions can prove challenging to qualify each shop in terms of skill set and capability. Congrats to the shop that has made the full in-house commitment. It is the most efficient solution with an almost seamless integration into the claims process. Full in-house shops may be an anomaly. Shops offering cheap solutions may offer no solution at all. In the midst of those extremes lies the mid-range solution shop that has an advanced A/M scan tool(s) and a good mechanic. This can be a viable solution providing the shop knows when to sublet those repairs it cannot handle.

MOBILE VEHICLE DIAGNOSTICS: An example of in-house outsourcing where the mobile technician performs all diagnostics and related work on the shop's premises. Quality technicians are specialists who handle a broad scope of vehicle electrical system repairs. The good technician's van is a treasure trove of wiring, connectors, manuals, multi-meters, laptops and scan tools (advanced A/M and OE factory level.) Serious technicians carry such tools as a power graphing meter, digital oscilloscope and special aiming/calibration targets.

Benefits: Cost effective, turn-key, no vested interest in replacing parts, hands-on problem solving, specialized knowledge, no need to transport vehicle

Drawbacks: Good technicians are in demand. It may take the technician several days to get to the shop. Technicians can vary greatly in terms of experience, equipment, software and skill sets. Costs a bit more as the technician must travel to the shop.

Bottom line: While the mobile technician can cost more, it may be money well spent. A skilled technician applies advanced troubleshooting and problem-solving to address the root cause of an issue versus a shop that throws unnecessary parts at the problem. Involving a quality mobile tech in the process can solve

complex problems and avoid costly misdiagnosis. The key is to choose wisely and schedule in advance where possible.

REMOTE VEHICLE DIAGNOSTICS: In-house outsourcing. A single interface device attaches the vehicle to a certified technician through the internet. The technician remotely applies OEM factory level or advanced A/M scan tools to perform diagnostic scanning and procedures such as reprogramming or initialization. With their patented asTech2 device, Collision Diagnostic Services (www.astech.com) in Plano, Texas, has recently launched the service in the U.S. and Canada to service most vehicles.

Benefits: On demand, advanced A/M and OEM factory level scan tools, certified technicians, cost-effective, reduced cycle time, no vested interest in replacing parts, minimal training involved

Drawbacks: Some procedures require the shop to participate, which can be a challenge. A remote technician will not be able to repair severed wires or a bent harness pin that a skilled mobile technician easily tackles. Aiming procedures using targets and tasks that involve driving the vehicle are not within the remote technician's control.

Bottom line: Limitations of remote technicians notwithstanding, it's still a very versatile first line solution. Shops in rural areas will find the asTech2 device indispensable. The company has Auto Service Excellence (ASE) and OEM-certified technicians on staff, the majority being master technicians. A dispatch system matches the vehicle and service requested to the appropriate available technician. Insurers may see value within a network of direct repair shops and staff appraisers. Appraisers have a portable estimating, auditing and second opinion tool. Used in concert with a mobile technician on call to handle the trickier stuff, the body shop is prepared for almost any situation.

Keep it simple

Advanced vehicle safety systems represent some of the most sophisticated technology the average consumer owns. Trying to understand it all would be a daunting task. Although the technology is complex, the claims handling process need not be. The proper handling of these technologies is possible with a couple of simple rules — scan and plan. Scan the vehicle to discover the problems that cannot be seen. Plan each repair in accordance with readily available OEM repair procedures. This combination will help assure that no damage goes unnoticed and no important procedure is overlooked.

Claims professionals may want to think twice before saying, "It's just a small scratch on the bumper."

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