Contributed by Bob Chabot

Diagnostic Synergy You Can Use

Vehicle communications and diagnostics don't have to overwhelm

Opus Group, the parent company of Drew Technologies, announced on June 16, 2017 it had acquired Autologic Diagnostics Ltd. Drew Technologies is a world leader in vehicle communications, notably in J2534 diagnostic devices reprogramming hardware and remote assisted vehicle programming services. Autologic provides market leading software, hardware and professional support call center services that enable the global automotive aftermarket to diagnose and fix passenger vehicles.

"Both firms will continue to operate as standalone entities," said Lothar Geilen, CEO of Opus. "We are excited about the acquisition of Autologic, due to its status as a world leader in advanced automotive diagnostics. We see a great fit between Autologic and Drew Technologies. Autologic's presence in the U.S., Europe and Australia will help Drew Tech expand its offerings well beyond the U.S. market, while Drew Technologies helps to round out and fortify Autologic´s offerings."

Emerging Trends Spur Growth Opportunities

There's a lot of buzz surrounding the computerization of the vehicle and advent of the connected car. There's also controversy and concern about its arrival. The truth is … the connected car is here. Being equipped with internet access allows the sharing of data with other devices, both inside as well as outside the vehicle. While that provides many benefits, it also presents many risks. Shops need to consider how secure their internet- and cloud-based resources are. The automakers and aftermarket also need to figure out how to cooperate effectively for the benefit of everyone, especially their joint customers. Autologic bridges the gap between the two, as a worldwide provider of cloud-based, Internet of Things (IoT) enabled, and vehicle-connected diagnostic technology that delivers OEM licensed data and expert know-how to independent aftermarket shops.

Leading up to the acquisition by Opus, MOTOR had met with Autologic Diagnostics Ltd. personnel — Chief Technology Officer Mark Stamp, Head of Group Operations Tony Gill (referred to below as Autologic) — several times between AAPEX in early November 2016 and the Equipment and Tool Institute's ToolTech gathering in late April 2017, just prior to the purchase being finalized and officially announced. The focus of our conversation was the arrival, progression and deployment of the connected vehicle and some of the related issues impacting the aftermarket.
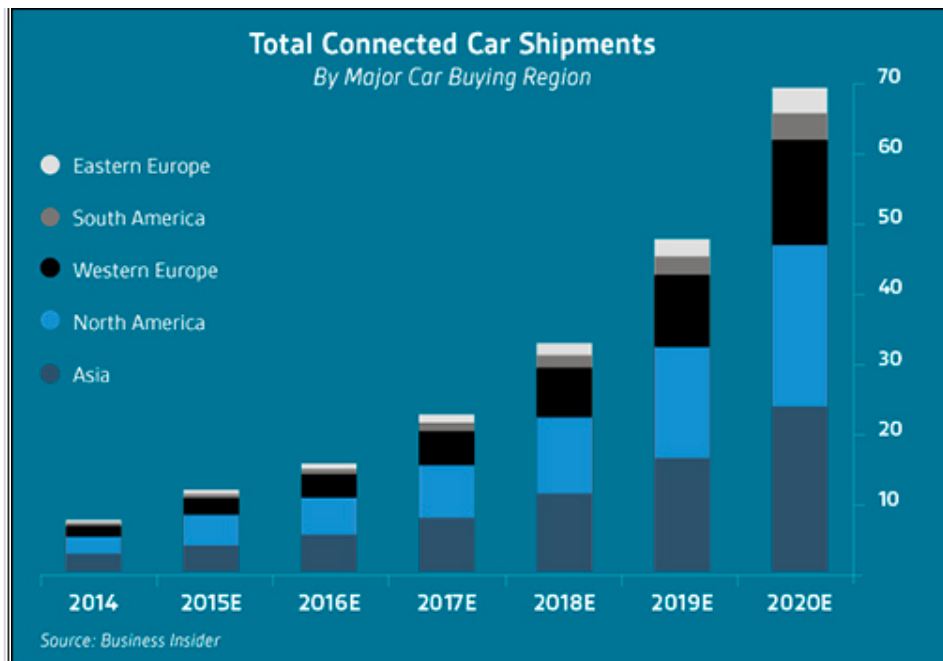
Connected vehicle shipments are projected to reach 70 million annually by 2020. (Image — Business Insider / Booz & Co.)

MOTOR: How would you define the connected car?

Autologic: Simply put, a connected car is one fitted with Internet access and a local area network (LAN). The combination of these two technologies allows the vehicle to share internet access with other equipment, inside and outside the vehicle. Communication with devices outside of the vehicle can be categorized in two ways: vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I).

The other term that is key to understanding the connected car is the Internet of Things (IoT). The IoT is a system of computing devices that can communicate with one another and transfer data and actions back and forth without human interaction. It has been around for a long time, well before becoming a common topic of conversation at work and home.
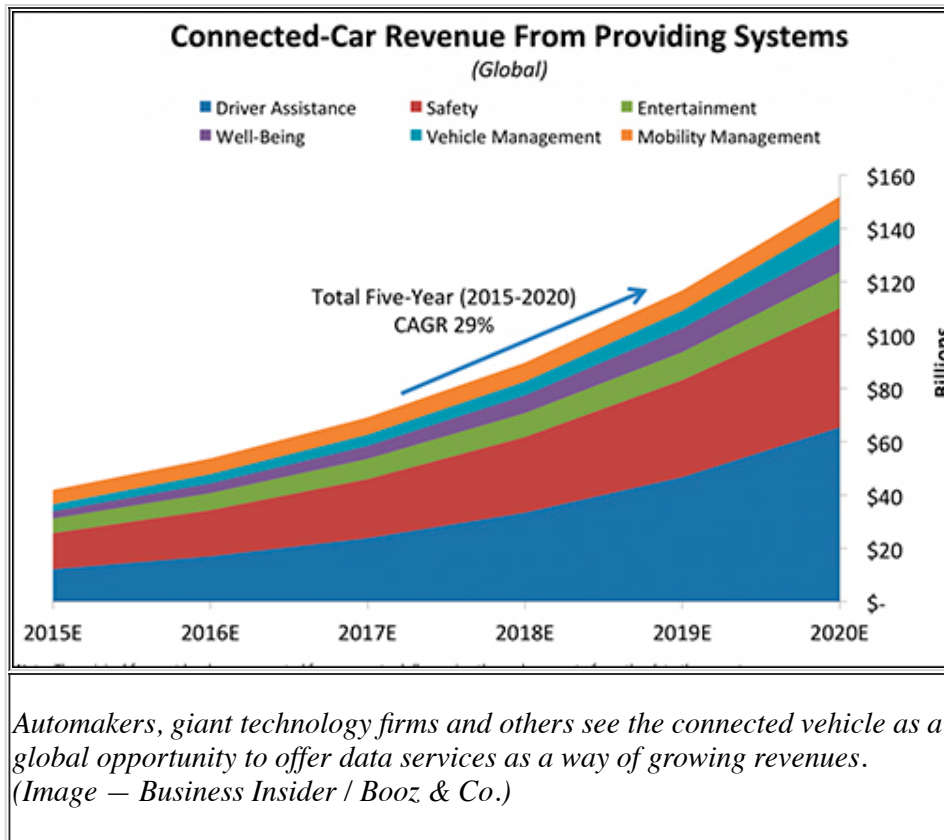
These devices range across many types of smart devices, such thermostats, lights, refrigerators, security and surveillance equipment, healthcare equipment and others. Automobiles and transportation system technologies — such as telematics, driverless technology, infotainment systems, security and more — also fall within the realm of the IoT. By 2020, according to the research firm Gartner, there will be more than 250 million connected vehicles on the road and over 25 billion IoT devices globally.

MOTOR: What benefits and concerns do connected vehicles pose?

Autologic: The benefits and advantages of a connected automobile are limitless and prevalent across many areas. Examples include access to the internet, messaging, email, apps and social media; audio and video streaming; remote access via tablets or mobile phones to control the vehicle (such as Heating, Ventilation and Air Conditioning and other systems); automatic emergency calls in the event of accident; real-time traffic information; and the real-time monitoring of the vehicle's health and early warnings of potential issues.

Connected car technology is also crucial to the development of autonomous vehicles. Capable of navigating with little or no human input, communication between vehicles and their surrounding environment will inevitably provide

location information to warn of and prevent collisions. All this sounds great, but there are concerns about data access. Other than the obvious one of privacy (e.g. having big brother watching everything you do, or commercial firms using data for marketing purposes), the advent of the connected car also raises safety and security issues. Imagine if someone could electronically hack into your vehicle, either directly or indirectly (via a connected device such as a phone), then disable the braking and/or steering systems, increase the engine speed or even shut off the engine while driving. Now those are frightening threats.

Automakers, giant technology firms and others see the connected vehicle as a global opportunity to offer data services as a way of growing revenues. (Image — Business Insider / Booz & Co.)

MOTOR: Why are OEMs and their partners so interested in producing connected vehicles?
Autologic: The main answer is revenue. OEMs are facing increased competition, not only from other automakers, but also from outside technology companies and other suppliers. Vehicle management, consumer, commercial, infotainment, advanced driver assistance and other features, as well as connectivity, computing and cloud-based services can all add to an OEM's offerings.

The basic strategy is that these enhanced offerings will lead to more sales, provide detailed and targeted information about what to build or include next, in addition to delivering important data on vehicle parts and performance failures to help keep their vehicles in their own service/repair networks for longer. If the OEM is the only one able to connect to your vehicle, then they become the only one able to diagnose and fix it.

MOTOR: How can OEMs leverage or monetize the technology found in connected vehicles?
Autologic: There are several ways that OEMs are well positioned to do this as it relates to connected cars. These include the sale of connected car packages (e.g. Audi is already engaged in this with its Audi Connect infotainment); utilization of the connectivity to increase brand loyalty and defend brand prices; using the data captured to increase production efficiencies in terms of quality and service differentiation; and monetizing the customer data captured for future products and

services. Currently, these packages are part of the initial purchase, but soon consumers will be able to purchase upgrades and add to these base packages over time, which will present additional sales opportunities for OEMs.

MOTOR: How do you envision the presence and introduction of connected vehicles impacting the automotive aftermarket in general?
Autologic: This is where much of the risk sits, for both the aftermarket and vehicle owners. At Autologic, we primarily see vehicles entering the aftermarket repair and service market after about three years. The vehicle is usually out of warranty, and the owner may no longer want to pay the dealership for service, so they may consider non-OE parts. Or perhaps they have a good relationship with a repair shop around the corner. Whatever the case may be, now imagine if the aftermarket repairer can no longer diagnose the faults on the vehicle as the vehicle is only connected to the OEM. How can they even begin to properly repair the vehicle?

Aftermarket tools and equipment makers need to work hard to be ahead of the curve. To do so, they must maintain close links to the OEMs, and strive to be identified as safe and secure with the capability to communicate cloud to cloud, via the IoT. Without this service differentiation, the old, hardwired, cabled access of the past will soon vanish, with its products and makers going right along with it.

Understand that it also takes time and money to develop working relationships with the OEMs. But building deeper trusted relationships takes even longer and more resources. This is probably one of the biggest challenges for those in the aftermarket. For instance, within Autologic, there is deliberation about whether or not — let alone which parties — we should allow to connect to the Autologic cloud service and have access to all this data. So it's certainly understandable that OEMs have similar considerations. Trust is the issue here, and Autologic has worked diligently to develop trusted relationships with the OEMs it has partnered with.

MOTOR: How do security concerns affect the service and repair of connected vehicles?
Autologic: Security is clearly a major issue for all parties involved. Without proper authentication and authorization on behalf of a vehicle owner and the OEMs we work with, we would not be doing our due diligence. When owners choose a repairer, they do so with some understanding that the facility can fix their vehicles; that is, it has the right knowledge, tools, equipment and other necessary resources in hand to do the job safely, correctly, completely and securely. But if the repairer doesn't have the appropriate tools, security and acceptable digital credentials to access the OEM and our cloud-based data, how can this possibly happen?

Security is a multidimensional responsibility. It's not enough for the OEM to be secure. Nor is it enough for a service provider such as Autologic to be secure. The repair facility must also be secure, and often that is the weakest link. Understand that few, if any, upfront security measures are 100 percent foolproof. Beyond having preventive security protocols in place to authenticate communications between parties, it's also critical to continually monitor communications that can trigger active defensive security measures, in the event of a successful attack or hack. In addition, security is not a one-time fix. It is a dynamic venture that must be upgraded as technology and the threats to it evolves over time.

For example, here's what happens whenever a service/repair facility is connected to Autologic. If at any time we detect a customer connected with us has been compromised, we sever the connection immediately, notify the customer of the issue(s) they need to rectify before service can be re-established, and take other in-house defensive measures to log, isolate and manage the threat. This ensures we

are able to protect our OEM partners, other shops, vehicle owners and our firm. [Editor's note: Based on MOTOR's discussion with many other tool, equipment, information providers who deliver services via the cloud or internet services, Autologic is one of a very few such companies with extensive measures like these in place today.
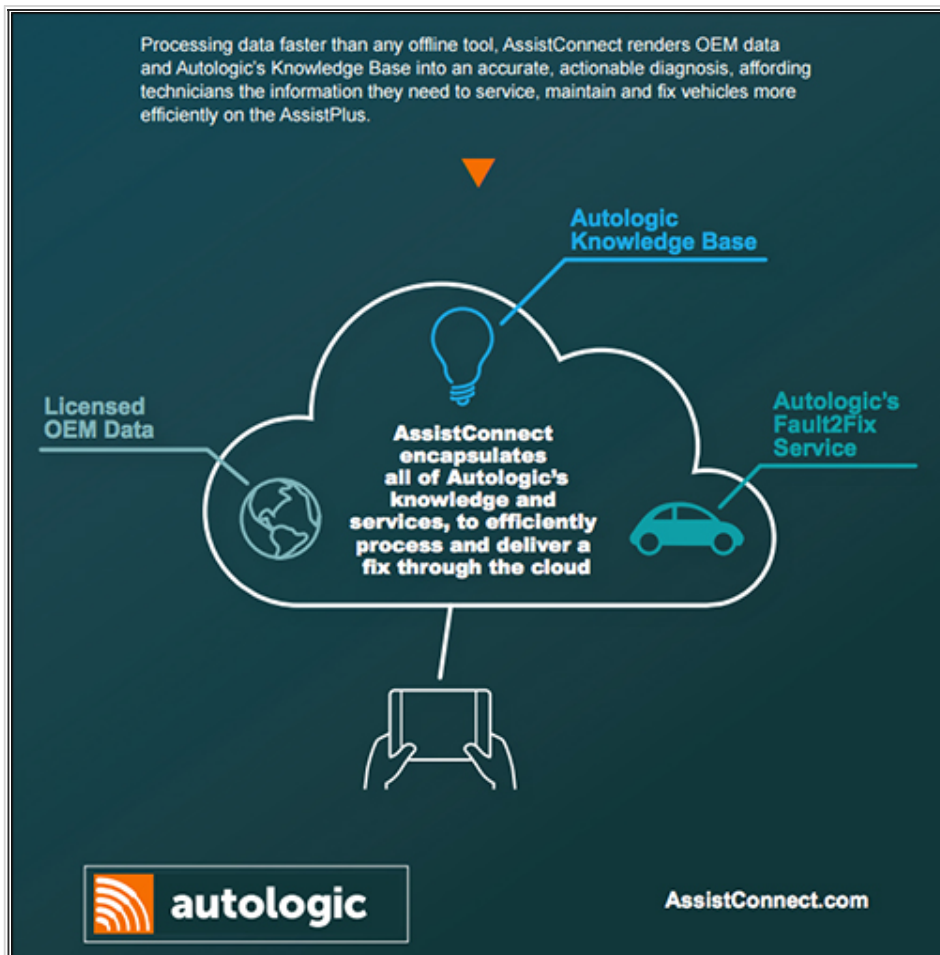
New diagnostics services, such as Autologic's AssistConnect, leverage the benefits of the cloud to streamline automotive diagnostics and make service and repair more cost-effective. In particular, independent aftermarket shops can now find faults faster, repair vehicles even more quickly, which improves both productivity and efficiency. (Image — Autologic Diagnostics)

MOTOR: More specifically, could you please comment on the challenges faced by different aftermarket segments, such as tool and equipment makers, service/repair facilities, and secondary/post-secondary educators?

Autologic: Let's begin with tools and equipment. Diagnostic tools are traditionally developed using reverse engineering methods. To do this, a physical connection to the vehicle and its data is required. Several vehicle and parts manufacturers are already planning on restricting access, via the OBD port, to selected vehicle systems, citing security concerns. This would make developing aftermarket multi-brand diagnostic tools, with any useful functionality, very difficult. The could result in OEM diagnostic platforms being the only way to guarantee full diagnostic access to the vehicle unless tool and equipment manufacturers have access to OE data. The rising trend of over-the-air software updates direct from an automaker to a connected vehicle is another potential threat.

These clearly have the potential to impact the service/repair segment. If

aftermarket facilities and professionals cannot get full access to relevant data, it will be difficult for the aftermarket to accurately and fully diagnose and repair vehicles. If the only way for the aftermarket to gain access to this vehicle data is to do so through the OEM diagnostic platform, then this incurs an added cost, which will ultimately be passed on to the vehicle owner. Driving up the cost of vehicle repair also has implications on the cost of vehicle leases, insurances, and more.

While we aren't as familiar with the specifics of the American automotive technical education model, in general, educational institutions use similar data, tools and other resources to instruct and train students aspiring to become industry-ready technicians. They'd certainly be impacted in much the same manner as service/repair, although in this case the customer is the student, not a vehicle owner. It's reasonable to expect that students in OEM-specific programs, which have closer ties with an automaker, might not be as impacted as those in general "all brands" programs. In addition, there could be a ripple effect as graduates are hired by aftermarket shop employers downstream.

MOTOR: How can the aftermarket work with OEMs to ensure all vehicles can be maintained, wherever they are serviced?
Autologic: This would be dependent on how much access to the vehicle data, information and other resources the OEM's allow the aftermarket to have. Due to the use of proprietary communication protocols the OEM's currently have sole access to their vehicles allowing them to display service requirements, pending fault information and dealership locations directly to the driver via the in-car display.

This clearly gives the OEM's dealership network a distinct advantage over the aftermarket. But the provision for access to vehicle systems by businesses outside of the OEM's is already happening. For example, companies such as Google, Apple and Microsoft already have apps installed in many vehicles that control the display interface and power the vehicle's infotainment system. To compete at the dealership level, independent shops in the aftermarket would need access to the vehicle systems to allow apps to be installed that then give the vehicle owner a choice when the vehicle needs servicing or a repair.

For this to happen, there will need to be a greater level of trust between the OEMs and the aftermarket. The OEMs want to protect their brand identity by ensuring vehicles are correctly repaired when they enter the aftermarket. To do this, the aftermarket needs access to OEM repair and maintenance information, as well as diagnostic data, to ensure vehicles are repaired accurately, safely and securely. The necessity for this is already becoming apparent with the requirement by some OEMs that vehicles undergoing collision repair be scanned pre- and post-repair for faults. Many OEM's are also recommending that their own diagnostic platforms be used to do this to ensure all systems are scanned correctly.

MOTOR: As the owners of connected cars, what role do consumers have?
Autologic: Consumers will be a major factor in how well OEMs and the aftermarket cooperate. As customers, they still have control of the vehicle and make the ultimate decision as to where they take their vehicle to get it repaired or serviced. In addition, the OEM dealership network doesn't have the capacity to cater to all new and old vehicles, so the aftermarket will inevitably have a part to play in the future. As long as the customer has a choice and the aftermarket can continue to provide accurate, safe and secure vehicle repairs and servicing, and deliver outstanding customer service, then it will continue to attract customers.

Automakers have to ensure the aftermarket is able to give customers as positive a brand experience as possible. IoT-connected, more secure, cloud-based diagnostic technologies and services have already begun to impact tool and equipment

manufacturers as well as service/repair shops. Next generation services using licensed OEM data and connected tools are already available, with more in development. These enable the processing of diagnostic data and delivery of service solutions faster than offline tools, which will help aftermarket shops remain competitive and viable.

Wrapping Up

Over the course of the discussions with MOTOR, Autologic made it clear: A steadily increasing number of vehicle features — such as remote diagnostics, telematics and infotainment, in addition to data and other resources — are using communication channels between vehicles and the cloud or other infrastructure. While the data exchange to, within and from the car provides many new technological opportunities, these channels require methodical, organizational and technical measures to ensure the functionality and protection of all vehicle features. To make that happen, automakers, the aftermarket as a whole, and service facilities in particular must cooperate in earnest. Connectivity and consumers can tolerate nothing less.

MOTOR then asked Opus to comment on how the combination of Drew Technologies and Autologic will impact the automotive aftermarket service/repair segment. "Across the world, the trends of increased vehicle computerization and connectivity have driven the introduction of legislation that forces car producers to allow non-franchised, independent aftermarket garages the ability to diagnose and repair all vehicles," noted Geilen. "This is evident in Asia, Australia, Europe (Euro 5 legislation) and the U.S. (Right to Repair Act)."

"Companies that have a presence in both the automotive diagnostics and vehicle communications sectors can take advantage of emerging growth opportunities," he added. "Both Autologic and Drew Technologies already have trusted working relationships with automakers and their key suppliers that can be leveraged to better serve our existing combined customer base of nearly 40,000 automotive aftermarket repair shops. Together, Opus will be able to provide them with market leading vehicle diagnostics and vehicle communication offerings that meet the current and incoming challenges presented by vehicle computerization and connectivity."

[**Editor's note:** *Visit* MOTOR.com *for the latest diagnostic and service insights.*]