

The Dispatcher

Special interest features covered in each issue:

- Autonomous and self-driving cars
- Map data and navigation
- Data privacy
- Third party automotive services
- Regulations and Standardisation

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In the Next Issue

BREXIT: *The future of cooperation between the British vehicle manufacturing and service industry and the EU countries*

Telematics Industry Insights by Michael L. Sena

Report from Dispatch Central

GM's CEO, MARY BARRA, says her company's stock is undervalued. She made this statement in early June, the day before the company's annual shareholder meeting. If it is undervalued, compared to what? GM's stock closed at \$29.57 on 8 June. It had a price/earnings ratio of 4.4 (Yes, very low.) and a market cap of \$45.5 billion. By comparison, Ford, its closest competitor, closed at \$13.36 on the same day, had a P/E of 6.09 and a market cap of \$52.1 billion. Maybe Ford's stock is really undervalued. Barra had something else in mind when she made her claim. "Look at what we have been doing for the past several months! Haven't we convinced you yet that we are a new, high-tech company?" I guess not. The stock dropped after her remarks.

On the Forbes 100 List of Most Valuable Brands published this May, GM had one brand out of its total of four car brands on the entire list: Chevrolet at #59. Ford (one brand) was at #35. Only Toyota among car companies

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Apple has invested \$1 billion in Didi Chuxing, a competitor to Uber operating in China.

Toyota has invested \$100 million in Uber to develop car leasing options, work on self-driving cars together and secure a channel for selling cars to Uber drivers.

VW has invested \$300 million in Gett, previously known as GetTaxi, an Israeli-based competitor to Uber that has services in 60 cities worldwide.

Volvo Car Group's VP of Electrical/Electronics & e-Propulsion, Thomas Müller, has left Volvo. He was brought in by the previous CEO, Stefan Jakob, and is one of the last of his appointees to leave.

Third Party Automotive Services

WHICH CAR OEM offered its buyers the first free roadside assistance service during the warranty period, and when did it occur? *Cross Country Automotive Services* (now known as *Agero*) claims to have created a 'new industry approach by signing up the first national automobile manufacturer for warranty roadside programs' in 1981. When I was consulting to AAA in the mid-80s, I was told that Peugeot had contacted them with the idea in the early 80s, but AAA had turned them down. Peugeot found a willing provider

(CCAG, maybe?), and the rest, as they say, is history.

In Canada, the first OEM with warranty roadside assistance was Jaguar Cars of Canada, and it was *Oracle the Assistance Group* (today *Sykes Assistance Services Corp.*) that was the service provider. OEM warranty business allowed the RAC in the UK to grow from a few hundred thousand members to seven million in the early 1990s.

Thirty-five years seems to be an adequate amount of time for the parties involved in this service to decide whether it is worth

continuing. The OEMs appear to be concentrating more and more on the price of service, having turned the contracting over to purchasing. It's business as usual for purchasing, pressing suppliers with demands for lower prices and penalty clauses for not meeting performance criteria.

Walmart began pressuring its suppliers for massive price reductions just to do business with them—because of the volume of goods they could potentially sell. The result was

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and
HONK™

Both companies were founded in 2014 with the same business model: on-demand roadside assistance accessed through a mobile app. The customer pays for the service only when it is used; the service provider gets paid when the service is delivered. The driver in need requests the service, the service providers in the vicinity are notified and make their bids, and the platform chooses which one gets the job. Sound familiar? They both want to be the 'uber' of breakdowns. It's them and a few others doing the same against the motor clubs, which offer many more services, but with an insurance (i.e. pre-pay) model, and the OEM warranty services. Agero has its own app-based service called **Blink**, and the motor clubs will eventually have to respond.



A Cambridge, MA-based four-year-old firm added roadside assistance to its app arsenal, competing with *urgent.ly*, *Honk* and *Blink*. Its main business is matching car repair workshops with customers.

What the Car Companies Are Doing

ACEA (European Automobile Manufacturers' Association) is the industry group that represents the European car and truck industry. It has prepared a **Strategy Paper on Connectivity** (April 2016) that clearly and concisely describes the vehicle industry's perspective on why and how data should be transmitted to and from vehicles to ensure safety, security and personal privacy. It has been written to address proposals being discussed within business and government circles about the method of delivering data from vehicles to third parties.

The European Commission, which is being egged on by the motor clubs and independent auto repair chains, is preparing a Regulation (EU-speak for a law that has to be written into the laws of each and every country in the EU) that will force car and truck makers to send data directly from their cars to any and every service provider, including Google, Apple, Facebook, car repair chains, insurance companies and roadside assistance companies. The only requirement that must be fulfilled, according to the Commission's proposed Regulation, is that the owner of the vehicle grants permission for this transmission.

The vehicle industry, represented by ACEA, says that all data sent from a vehicle or to a vehicle should pass through a physical checkpoint operated by the manufacturer of the vehicle. In real terms, this checkpoint is WirelessCar for Volvo Cars and Volvo Trucks, Jaguar Land Rover, among others; it is Verizon Telematics for Mercedes-Benz; it is BMW's own TSP for BMW, Mini, Rolls-Royce. The reason, as stated very well in the ACEA paper, is security. From this point, if requested by the owner

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Third Party Services (continued from p.1)

the offshoring of manufacturing, with over 80% of all non-perishable goods sold in Walmart stores in the US being produced in China or in other low labor cost countries. It is possible, but hardly advisable, to off-shore the call center operator services, but it is not in the cards to off-shore towing services. Drivers in North America or Europe who have just experienced a vehicle breakdown, or worse, an accident, will not appreciate being taken care of by a

call center operator in a far off Asian country. If OEMs are not willing to pay for a service that customers will appreciate, it would be best if they just stopped offering the free warranty breakdown service. Let the customers pay for their own services, as they did before someone came up with the bright idea to offer it free. The OEMs can watch while their cars are towed to independent workshops, as they were back when drivers did not expect a free ride.

"The best place to charge your car is where you charge your phone.

Would you take your phone to a gas station to charge it?"

Elon Musk, Tesla CEO

The 'Musketeer' had just broken the news to investors that future buyers of the yet-to-be-produced, lower cost Model 3 sedan would have to pay to use the Super-charger stations dotted around the countries where Teslas are sold. Buyers of Tesla's higher-priced models, the X and S, get to charge at these stations for free. It seems that Tesla's number crunchers have come to the conclusion that offering free electricity is not the best way for the company to turn a profit, which has eluded Tesla since its founding. Instead of charging at home or at a place where the luxury car owners would foot the bill, they appear to be (over)using their privilege to top up their batteries at Tesla's power pumps. Musk's deductive reasoning seems to be:

Your phone runs on a battery.

Your Tesla run on a battery

Therefore, your Tesla is a phone.

Musk definitely sounded disappointed in his customers' penny-pinching habits. I have been known to charge my phone in airline lounges (free coffee, too). I guess I would be in for a real scolding if I owned a Tesla. Maybe if those Super-chargers didn't look so much like gas pumps....

Insuring Connected and Self-driving Cars

THE IDEA OF LIABILITY INSURANCE for car drivers is not that old. Although the very first automotive liability insurance policy was written in Dayton, Ohio in 1897, the first car insurance company was started ten years later. The company was Amica, and it is still in business. Massachusetts and Connecticut were the first states to make auto insurance compulsory, in 1925. In Europe, the first compulsory car insurance scheme was introduced in the UK with the Road Traffic Act 1930. This made it compulsory for all vehicle owners and drivers to be insured for their liability for injury or death to third parties while their vehicle was being used on a public road. Germany enacted similar legislation in 1939.

In the intervening years, no-fault insurance has been introduced and usage based insurance policies are being offered, but the basic concept remains unchanged: a car owner pays a company to assume the financial liability if an accident occurs.

There are three parties who bear the potential financial responsibility for damage to property or injury to persons caused by a vehicle: the vehicle owner; the manufacturer of a vehicle; or, a mechanic who repairs a vehicle. It is the owner who pays the insurance policy, and if the owner allows someone else to drive the vehicle that is his or her privilege. If an individual purchases a self-driving car, and turns

the driving over to the non-human brain controlling the operation of the vehicle, that should also be up to him or her. If a company (e.g. Hertz, Uber, Volvo), or a public transit authority decides to operate a fleet of self-driving cars, it seems clear that they will need to purchase the insurance. In the case of the car manufacturer as fleet owner, they will have all three risk areas: owner, builder and maintainer.

The promise of self-driving cars is that they will be 95% safer than cars controlled by a human brain. If that turns out to be the case, companies in the car insurance business will have to find another way to earn a living. They've had a good run for a hundred years.

Who is at fault if an accident happens when a non-human brain is driving the vehicle rather than a human brain? The brain maker? The car maker? The car owner?



The driver needs a driver's license, but the car insurance is owned by the car owner. As U.S. torte lawyers have shown us, cars can sometimes do strange things on their own, and then it will be the manufacturer who will have to foot the bill. When all else fails, the car owner can always claim that it was the mechanic who didn't tighten the screws properly.

What the Car Companies Are Doing (continued from p.2)

of the vehicle, data can be sent to any and all service providers, and messages from the service providers to the vehicles would be returned along the same path. The point is that there would be one, and only one, connection to the vehicle, not multiple connections.

ACEA states that the vehicle industry is committed to personal data protection as well as transparency and self-determination for the user. They have committed to designing their vehicles and services so that 'where possible, customers can choose whether to share personal

data'. The issue is how this data will be shared. The vehicle industry is working on standardizing (ISO/TC 22) the **Extended Vehicle** concept, which provides access to vehicle data in accordance with clearly defined technical, data protection and competition rules. Once the data is at the OEM-specific Extended Vehicle back-end, it can be delivered to any service provider of the customer's choosing.

This is a win-win-win approach, or, in game theory terms, a **non-zero-sum** result. The customer has choice, the vehicle OEM ensures security and the

service providers can all compete on equal footing. The alternative is definitely zero-sum: the OEM retains all of the cost and responsibility with no benefit; the customer has a less secure vehicle and much less control over how the data exiting the vehicle is actually used; and, the European service providers will find themselves being overwhelmed by the global platform operators.

One can hope that the Commission will have learned from EU eCall that it is better to provide regulatory guidelines and leave the solutions to the manufacturers.

With the Extended Vehicle concept, there will need to be agreements between each of the car and truck manufacturers and the service providers on the content and format of the data that will be transmitted. This could be another area for standardization. Another—better—possibility can be MOBiNET, a concept for a mobility marketplace platform that will link the users of mobility-related services with service providers, and service providers with data and content.



Extended Vehicle Server as example of B2B Service Provider delivering data to a B2C Service Provider.

MOBiNET is a Framework Programme Seven project with thirty-three members.

“Route guidance systems are needed because of the mismatch between what cities were designed for and how they are presently being used. Few cities were consciously designed to facilitate wayfinding, not even for people moving slowly on foot, and particularly not for cars and trucks moving much faster than a walking pace.”

A Proposal for Future Route Guidance Systems.
M.L. Sena (2005)

You can find it on my web site under the category: Papers
www.michaellsena.com/papers

In one of the largest auto industry recalls to date, Ford was forced to front the repair bill for more than 20 million vehicles after a safety defect in their transmission system caused more than 6,000 accidents, 1,700 injuries and 98 deaths. At the heart of the recall was a failed safety catch, which allowed Ford's automobiles to spontaneously slip from "Park" to "Reverse" without warning. Accounting for damages claimed in lawsuits, the recall ended up losing Ford around \$1.7 billion according to company officials.

The Future of Automotive Navigation

I SENT YOU ALL A NOTE in early June and asked you if you had something on your ‘find out more about it’ list that I could cover in these pages. Many of you responded with suggestions. Thank you. About a third of them were related to navigation and mapping. I will save for a future issue a discussion of the claim made by a company called *Mapbox* that it has the “first lane guidance map designed for car companies to control the in-car experience.” My reaction when I read that claim was: Really? With *Open Street Map*? So I thought I should do some proper research before jumping to uninformed conclusions.

With the advent of advanced driver assistance systems (ADAS) that use map data as an additional sensor, supplementing radar, LiDAR, cameras and other sensors, map data began to be used by machines to support machines in driving functions. Before ADAS, map data in

vehicle navigation systems was used by machines to deliver visual, written and spoken instructions to humans. We are now beginning in earnest the task of determining what will be needed to deliver data to machines that will perform both the tasks of controlling and driving autonomous vehicles as well as navigating them.

Just as the first navigation maps from Navteq and Tele Atlas were different from the first routing maps from MapQuest and AutoRoute, ADAS maps form a different, but related genre compared to turn-by-turn route guidance data. They are an enhanced sub-set. I have never felt satisfied with the machine navigation ‘Turn left; Turn right; You have arrived’ paradigm—as you will see if you read the paper referenced in the left sidebar. It is not a natural way for humans to navigate. However, this data will work splendidly for the machines that will be driving

the autonomous cars. These machines will need to know where they are going, and they will need to perform all the functions that we humans perform when we drive that have nothing to do with navigation. On top of this, the machines will be taking care of all the ADAS activities in the background.

So, autonomous cars will need three types of map data: navigation, ADAS and driving. The first two are covered by the maps that Navteq (sorry, Here) and TomTom have created and are further enhancing that include detailed road topography and geometry, network topology (what I have called the *Deep Structure*) and all the rules of using the network (*the Surface Structure*). The third type, what the driving machine will use to manoeuvre the vehicle in every possible environment, the visual map, is what the different competing groups are now attempting to create.

Vehicle Data Issues

WHOSE DATA IS IT ANYWAY? I have been pondering the veracity of the assertions made by groups who claim to represent the interests of consumers that data generated by the sensors in a vehicle belong to the owner of a vehicle. The May issue of *The Dispatcher* was devoted principally to data privacy in connected vehicles, and included a discussion of the proposed EU General Data Protection Regulation. What this regulation states is that a car is the private property of the owner of that vehicle, and anything related to it belongs to him or her. I recently had a mail exchange with a good friend about the ACEA Strategy Paper (Page 2), attempting to explain the ACEA position. It ended with his assertion: “It’s my car; it’s my data; I decide where it goes. Period.” *Hmmm....* We left it there. I have a different view. I do find it quite odd that we so easily hand over all types of personal data to social media apps, search giants and shopping sites, but when it comes to a company that makes a machine in which we actually en-

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Vehicle Data Issues (continued from p.4)

trust our lives, we become prudish, pedantic and absolutely priggish.

First, we must distinguish between three types of data: data that are generated by all of the sensors and systems that are built into a vehicle; data that are generated during the course of a driving cycle; and personal data that are put into the vehicle by the driver or owner (e.g. contact phone list, music preferences and other non-vehicle-related personal data). If you bring personal data into a vehicle via a smartphone application, and your vehicle supports an interface integrated with the vehicle's HMI (e.g. Apple CarPlay), then it is up to the OEM to decide what it delivers to the applications it displays. What is yours, and what the OEM gives to you is yours as well.

Data generated by the on-board sensors are fed back into the systems that help drive the car. Some data (e.g. speed, seat belts in use, sudden deceleration) are constantly processed so that they will be delivered to both emergency services (public or private) and to an Event Data Recorder in case of a crash. Access to EDR data is strictly controlled by state or federal laws, but in no case is the data accessible to the driver or owner of the vehicle.

During the past twenty-five years, computer-based electronic control units (ECUs) have gradually replaced many

Autonomous Driving News

GOOD NEWS for autonomous cars or bad news for electric cars? It's a question of how you interpret BMW's announcement in early June: "*BMW has transformed its "i" division into a development centre for self-driving cars marking a major strategic shift for the unit which previously focused on making lightweight electric vehicles.*" BMW have dubbed the shift **Project i Next**.



The i3 is a quirky little thing. Its owners sing its praises, but BMW sold only 25,000 of the little cuties in 2015, and 5,000 of the sporty i8. By contrast, 339,000 Minis were sold last year. So it is little wonder that the company wants to concentrate its efforts and its financial resources in an area of potential growth and interest to its customers, and leave electric field to those who seem to know how to do it better.

I received and read a report written by the International Transport Forum at the OECD titled Urban Mobility System Upgrade: How

of the mechanical and pneumatic control systems in vehicles. A 2013 study released by Frost & Sullivan found that mass market cars by then had at least 20 million to 30 million lines of software code, while premium cars could have as much as 100 million lines controlling essential systems. They estimate that by 2020 the amount of software will increase by as much as 50 percent. Another interesting fact is that today, between 60 and 70 per cent of vehicle recalls in North America and Europe are due to software problems. In the U.S., a car is subject to a recall up to ten years after a recall has been declared. The OEM is responsible for informing every current owner of a vehicle by registered mail (!) and fixing the problem at no cost to the current owner. Imagine if we could fix all cars over-the-air.¹

I have checked a number of sources and found that the average age of vehicles has been rising and is now over eleven years. We hold on to our cars longer as well, and it is now between six and eight years. The gap means there is at least one more owner. At present, in the U.S. there are 40 million vehicles on the road that were subject to a recall, but which have not been fixed. Either the owner has ignored the registered letter sent by the OEM, or, much more likely, the OEM's letter never reached the second or third owner of that vehicle. If the vehicle owner can decide where ALL data shall be directed from the vehicle he or she is driving, this problem will only worsen. If the OEM owns the problem, don't you think it's only right that the OEM should own the solution?

Quotes from the OECD Report

"The drastic reduction in the number of cars resulting from a shift to shared self-driving cars will significantly impact car manufacturers' business models."

"The deployment of shared self-driving car fleets in an urban context will directly compete with the way in which taxi and public transport services are currently organized."

"For small and medium-sized cities, it is conceivable that a shared fleet of self-driving vehicles could completely obviate the need for traditional public transport."

With an annual budget of €363 million, the OECD could have hired a good expert to write this report, rather than producing a very amateurish study itself.

The best part of the report is the first chapter, *Research review* and the associated bibliography.

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Footnotes

1. In early 2016 I prepared a report for ITU-T Study Group 16 titled: **Secure OTA Vehicle Software Updates: Operation and Functional Requirements**. Remote over-the-air firmware and software updates are performed to a very limited degree today because of the lack of both technical and procedural standards. One company that has incorporated FOTA and SOTA into its business from the outset is Tesla. Every Tesla vehicle sold is constantly connected to the Tesla connected vehicle server, and every Tesla owner is known and reachable. Tesla has been able to avoid recalls by fixing problems that they have identified themselves.

Report from Dispatch Central (from P.1)

made it to the top ten at #6. BMW (#14) and Mercedes-Benz (#20) rounded out the top 20. Apple, Google and Microsoft were numbers 1, 2 and 3 on the Brand Value list. These companies are also among the global leaders in value. What must stick in Ms. Barra's craw is Tesla, which ships money out of its factories—it has a negative P/E of 29.5—but had

a stock price of \$234 on 8 June and a market cap of \$33 billion.

A stock is worth what people will pay to buy it. GM is trying to talk up its stock and generate a buzz arounds its latest investments and acquisitions. Will it work? I am skeptical. GM has had one good idea in the last 25 years. It was **OnStar**. It was first, and

the company had the right idea to make it standard. But its top management never really understood its full implications. With all of the top-to-middle management exits since its Chapter 11 days, it has lost track of the storyline. Adding **Maven** as a new brand and talking up car sharing simply confuses both customers and investors even more.

Musings of a Dispatcher

IN JUNE, FORTY-FIVE YEARS ago, I was getting ready to make my first trans-Atlantic journey. It was in between my second and last year in graduate school, and its purpose was to study the three generations of new towns that Great Britain had built before and after the Second World War. I spent three weeks touring the British Isles and Ireland, flying from New York JFK, landing in London Heathrow and returning from Prestwick Airport outside of Glasgow, Scotland. I travelled mostly by hitching

rides in cars and trucks (lorries), but there were also journeys in trains and empty tour buses (coaches) that were on their way to pick up tour groups. It was a wonderful experience, and a year later I returned to live and work in London at what was then the Greater London Council.

As I write this, I have just spent three days in Glasgow at the ITS Europe Congress, my first return visit since that trip in 1971. The Congress exhibitions and sessions promoted re-

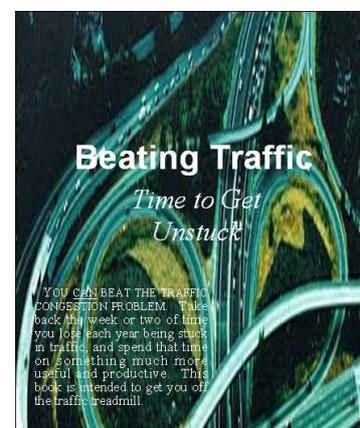
duced travel times, reduced costs and cleaner air by turning mobility into a service. The 'new sharing economy' would show the way, providing seamless, painless travel on all types of transport modes.

In 1971, I travelled the length and breadth of England, Scotland, Wales and Ireland during three weeks, and spent a total of £200 for all expenses, often offered food and a place to sleep by those who gave me rides. That was a sharing economy if there ever was one.

About Michael L. Sena Consulting AB

Michael Sena works hard for his clients to bring clarity to an often opaque world of vehicle telematics. He has not just studied the technologies and analyzed the services. He has developed and implemented them. He has shaped visions and followed through to delivering them. What drives him—why he does what he does—is his desire to move the industry forward: to see accident statistics fall because of safety improvements related to advanced driver assistance systems; to see congestion on all roads reduced because of better traffic information and improved route selection; to see global emissions from transport eliminated because of designing the most fuel efficient vehicles.

This newsletter touches on the principal themes of the industry, highlighting what is happening. Explaining and understanding the how and why, and developing your own strategies, are what we do together.



Michael L. Sena

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