

CONFERENCE REPORT

Highlights and insights to share with your colleagues, clients and partners

Conference wrap up:

- **A concise overview of the conference buzz at a glance**
- **8 key takeaways: your review of the main industry themes and topics addressed**

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1.

Overview

How can the automotive industry respond to changes in consumer behavior while playing a role in a more connected transportation infrastructure? This question, while it has been simmering for years, came to the forefront in this year's TU-Automotive Detroit conference. The Detroit conference, held June 3 and 4, 2015, brought together more than 3000 senior executives from every sector of the connected-car industry, as well as top analysts and academic researchers. It featured three key areas: telematics; autonomy; and mobility. More than 150 expert speakers discussed the most important themes, including the use of big data; identifying and delivering the right consumer services; how software will define the connected-car experience; and what role passenger cars will play in the future.

Automakers have made progress in rolling out connected-car services, but consumer awareness, acceptance and enthusiasm are still not strong. Navigation remains the most desired and used service. "Keep the consumer at the center" was reiterated over and over by speakers; but there is not clarity on what this means.

The auto industry has made great progress in expanding its partner ecosystem, as evidenced by the many startups, as well as companies that are expanding into automotive. More exhibitors, more speakers and more variety in attendees illustrate this even greater openness.

Automobiles can play a role in smart cities and multimodal transportation. Taxi alternatives, car sharing and autonomous vehicles can fill gaps between public transportation and help citizens cover the first or last miles of their journeys.

There is no agreement on whether car ownership and/or car sales will decline. Some see personal vehicles replaced by taxi alternatives, ride sharing or better-planned public

transportation. But analysts noted that car sales are still strong and that outside of urban centers, individuals will still need to have a car available.

There is big opportunity in the data generated by connected cars, as well by combining that with other data sources such as other elements of the internet of things. Vendors have begun to offer solutions to help automakers make use of their big data. But organizational and business-model barriers remain.

The most immediate monetization prospect for automotive big data would be capturing after-sale service revenues. But the lack of congruency between OEM data and dealers' databases has hampered even this.

There is a new emphasis on autonomy, now that most major OEMs have revealed their roadmaps. But transportation experts warned of the dangers of overselling this technology: The day when someone can sleep or watch videos on the way to work is far in the future. Meanwhile, there are challenges with no known solutions to the problem of keeping the driver alert and in the loop when autonomous systems are operating, so that she is prepared and skilled enough to take over in an emergency.

Having weathered the last depression and come back strong, Detroit is poised to take a new role as a hub of innovation in mobility. The launch of Techstars Mobility at Ford Field is only the latest in an influx of transportation-focused technology companies.

What follows are key takeaways from the event.

2.

Key Takeaways

Consumers rule

Klas Bendrik, senior vice president and group CIO of Volvo Car Group, gave the second-day opening keynote, and hit the customer experience angle hard and often. He said that four domains – sensors, broadband, mobile devices and the cloud – provide the opportunity for new business models in the future. “The connected vehicle and connected customer is a genuine opportunity that is accelerating exponentially,” he said. “If automakers don’t grab this opportunity, someone else will – like Uber.”

Earlier that week, TU-Automotive named Volvo Car Maker of the Year, and the company unveiled its connected-car services recently.

Chris King, senior vice president of customer success at Zuora, was one of very many other presenters who described the hyper-connected and hyper-demanding consumer of today. He said they demand personalization, real-time information, immediate fulfillment, ongoing value and memorable services. He said that subscription services can provide increased personalization by moving from a traditional database record with the basics of name, phone, email and a couple of social media accounts to a robust subscriber identity that tracks transactions, history, usage metrics and service requests and consumption.

In the live audience poll, more than 50 percent thought that the user experience was the biggest challenge to our industry, with security a distant second.

Andrew Hart, a director of SBD, and Michael Chadsey, vice president, vertical lead, industrial, transportation and financial services for Nielsen, presented results of a consumer survey that found a tight correlation between familiarity and desire. But getting to familiarity is difficult. Hart noted, “As we sprint to

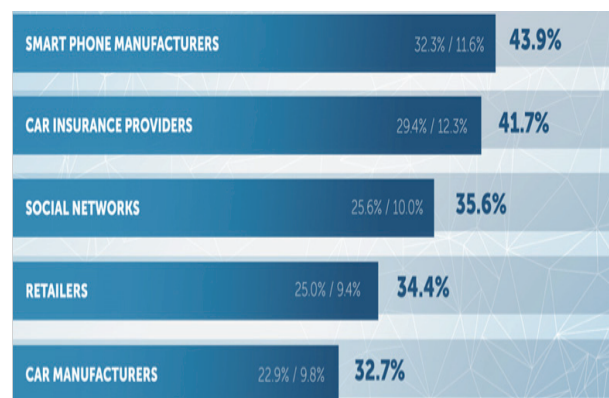
develop new features, consumers are struggling to keep up.”

In that regard, Lochbridge presented the results of a new consumer study that found that consumers feel more comfortable sharing not only personal information but also vehicle information from car-based applications via smart-phones instead of automotive platforms.

This is a problem for OEMs and suppliers alike. Dan Teeter, director of vehicle connected services for Nissan, said that customers are beginning to understand what connected-car services are and, because of that, beginning to expect them. Teeter said that Nissan has provided simulators for the recently announced NissanConnect Services that will make it easier for dealers to understand and sell them, as well as help customers understand how the services work before they get into the car and on the road.

Chadsey pointed to another disturbing fact from the survey: Infotainment features were at the bottom of the satisfaction level. Highly dissatisfied infotainment owners are twice as

Figure 1: Who would you trust with your personal data?



Source: Lochbridge

likely to be confused, 30 percent more likely to be over 55 and 36 percent more likely to be male. "But these are the people buying a lot of the high-end vehicles with a large amount of content in the vehicle," he pointed out.

David Taylor, managing director and CTO of Aupeo, said, "We are moving from apps to services. Consumers have their preferred services, and they want them everywhere." They may be less attached to some services than others, for example, music providers may have more loyalty than a weather information provider.

Tim Evavold, director of automotive delivery for Covisint, exhorted everyone to worry less about their brands and more about delivering value. Among OEMs and partners, he said, "There won't be a winner if they focus on the win. We need to focus on how the drivers win. We have to embrace interoperability and then foster the brand experience."

What do consumers want?

Maps and navigation is still the most-desired in-car service. That was made clear by a panel of six consumers, as well as survey data from 14,000 car owners presented by Baron Weather. (Their second most-desired service was weather information.) Whether that navigation comes from the phone or embedded navigation has more to do with the quality of the service than where it resides. One consumer noted that maps on her phone seemed to not work well in Detroit, but the embedded navigation did a fine job of getting her around.

Roger C. Lanctot, associate director of the global automotive practice of Strategy Analytics, emphasized that embedded navigation is not going away. "Embedded maps are selling quite well," he said, "and the future looks good because automated driving requires maps."

Ultimately, the answer to driver distraction and fumbling with screens and interfaces is to have the car be more intelligent and anticipate things without the driver having to give commands, according to Gary Strumolo, manager of vehicle design and infotronics for Ford. "Consumers don't want to have to tell the car what to do," he said. "A line of apps on the screen of the car is a dead model."

Martin Rosell, managing director of Wireless Car, agreed. Today's remote cabin heating and cooling are convenient, but why not sync the car with the driver's calendar, he asked. The car could push a messaging asking if it should heat or cool

because the driver's schedule showed him due at the office in an hour. He added, "It could also ask if you want to open the windows if the car gets too warm while your dog is waiting for you in the car. And wouldn't it be nice if the car had exactly the desired temperature when you enter it at the airport car park after you've just returned home from a flight? All these things can be done."

Smarter, better navigation

Navigation has the opportunity to expand beyond simple way-finding to become a key component of semi-automated and autonomous driving when combined with vehicle-to-vehicle and vehicle-to-infrastructure communications.

"We see a major disruption in the navigation landscape going forward," said Niall Berkery, vice president of business development for Telenav. Today, most companies have multiple map sources, including information laboriously collected by cars cruising the roads, like Google does. Instead, he said, "We can get highly accurate position information from connected cars."

Distributing that data back to drivers is equally important. We see map landscape changing dramatically. Telenav has new technology that can update a single attribute to the map database and then populate that to in-car systems, instead of having to download an entire fresh map.

Alain De Taeye, on the management board of TomTom, introduced that company's own advancement: a new architecture with a "fusion engine" that correlates information from multiple sources, including map databases and connected cars. He said the system provides high quality with efficiency. "Every map in the database is immediately releasable," he said. "We may have 5 million versions available each day." But only updates are delivered.

Map companies and navigation providers said that their services could aid autonomous driving by providing important information to the car in advance of its own sensors picking it up. Telenav has a concept that it calls Road Ahead, which Berkery, describes as "leveraging the cars ahead of you as your eyes and ears." Vehicles anywhere from a few seconds to several minutes ahead of one car feed information from sensors or basic onboard electronics into a cloud. This system could provide close to real-time information about changing road conditions, for example, flooding, ice or a new pothole.

Ericsson is trialing Road Friction Information, a service that uses complex event processing and streaming analytics to

determine when a vehicle has hit a bad patch of road. It can then warn cars one kilometer away from the hazard, while sending the information to road authorities.

Truly interconnected devices

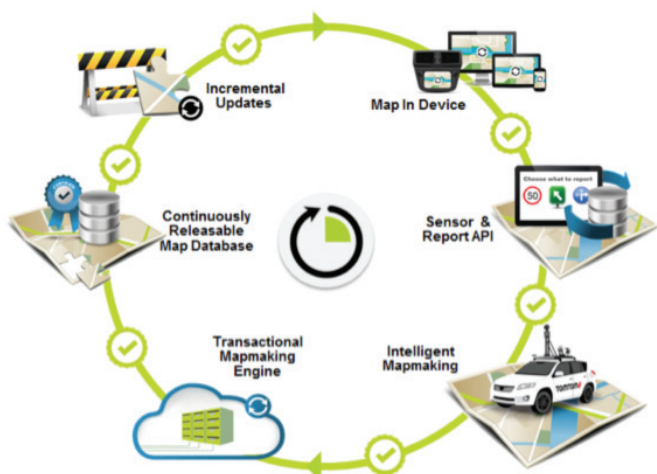
Our industry has long said that the car is the most expensive mobile device people own; one of the biggest trends is bringing the car into an individual's connected device landscape. For example, TomTom announced a portal called MyDrive that will allow you to plan your route on a tablet, for example, send it to a PND or a car's navigation system, and then to a mobile device like a smartwatch or phone to complete the last part of your route on foot.

"Synchronization across devices will deliver the best user experience," said De Taeye. "One application travels with you over multiple devices so you can make use of the form factor that suits you best [at that moment]."

Magnus Lundgren, head of connected vehicle cloud for Ericsson, identified three disruptors that are in the process of disrupting society: broadband, mobility and the cloud.

As the amount of devices per human and per household continues to grow, car makers must connect their cars and services with even more things in the Internet of Things. At the conference, Volvo Cars announced the release an updated version of its Volvo On Call smart app that lets drivers control settings, lock or unlock the car, as well as locate and utilise many other Volvo services from their smartwatches.

Figure 2: Delivering realtime maps



Source: TomTom

Figure 3



Source: Movimonto

To fully realize the potential of the connected car, OEMs and suppliers must work together, said Mahbulul Alam, CTO of Movimonto.

Internet of Everything

So, as the car becomes an element of the Internet of Things, the phone may continue to play a central role.

But other devices must also connect to the car. Steffen Neumann, manager of app development for Mercedes-Benz R&D noted that in the past year and a half, Mercedes has moved toward smart-home services, allowing cars to send information to smart watches and the Nest thermostat. But should the car become a platform for whatever comes along? Including Google and Apple?

"Certainly," he said. "It depends on how you implement it." While Mercedes will support both of them, he explained, "Ultimately [the automaker] is responsible for the car." He mentioned that the consumer tech giants are focusing on infotainment, not safety or core automotive services.

Much innovation and competition is coming in this sector in terms of providing platforms for in-car connectivity and/or connection to the Internet of Things. Several announcements at the conference highlighted this hot sector:

Neusoft Automotives demonstrated its C³-Alfus In-Vehicle Infotainment platform for the OEM market, with dedicated connectivity and cloud services.

NNG LLC, a leading developer of global automotive navigation software, today announced its newest product offering, the NavFusion Platform. The NavFusion Platform is designed to improve the driving experience with a holistic approach to car-life integration, using the reliability of in-car infotainment, the personalization of smartphones, and the independence of connectivity to create a user-focused and OEM-controlled platform. The platform is fully customizable, deeply integrated, and can be branded to the specifications of any OEM.

NNG announced the NavFusion Platform that combines static and dynamic connected content, navigation, ADAS, in-car map updates, personalized infotainment and predictive maintenance. The NavFusion Platform will add Abalta Technologies' WEBLINK platform to better incorporate smartphones into vehicles.

Magellan demonstrated Smartphone Box, new technology that upgrades low-end head units with smartphone capabilities.

Security matters

An increasing issue with IoT is security, warned David Miller, chief security officer for Covisint. All the connectivity options provided by auto manufacturers are certainly convenient, he said, "But what most of us don't fully understand are the security consequences of exposing all of our personal information, data and passwords with this advanced connectivity. Connected cars need to offer unified and interoperable user experiences to keep driver information secure, which will not be possible without collaboration across the automotive and technology industries."

Another looming issue, Miller said, was removing personal data from the car and other connected devices. "I spend all this time connecting my car to everything; what happens when I sell the car?"

Providing a secure vehicle architecture is getting more difficult and more critical as the car's attack surfaces increase, according to Andrew Poliak, global director of business development for QNX. "Growing complexity plus increasing connectivity equals security vulnerability," he said, identifying a variety of attack surfaces from removable media and third-party applications to improper application

sandboxing and operating system-level privileges, or even a compromised back end.

He identified six layers of security needed for modern vehicles:

- Securing a device itself
- Securing the connection to backend infrastructure
- An architecture that limits the amount of code and the way the code interacts
- A secure operating environment with varied permissions and privileges
- A security application layer
- Secure connections for over-the-air updates

At the top of all this, Poliak said, OEMs need a chief of cybersecurity to ensure that there's a "chain of trust."

At the show, Certicom and QNX announced a partnership to provide a security framework for automakers and automotive tier 1 suppliers with pre-integrations to simplify the manufacture and deployment of secure, connected vehicles.

Autonomy vs. consumer expectations

Awareness of advanced safety and autonomous driving is growing, but now, we may be overselling autonomy to the general public.

In his keynote presentation, Ken Laberteaux, senior principal scientist in the Toyota Research Institute of North America, warned that the effects of autonomy are not as clear as some people think. Crunching the numbers on current driving behavior and making some predictions based on historical data, he concluded that, without policy changes in the United States, level-2 and level-3 automated driving are likely to increase highway speeds, via reduced congestion and accidents; increase total vehicle miles traveled; and increase commuting distances, by making it less onerous for suburban denizens to commute into cities.

"Many predicted societal changes need at least Level 4," with no human operator, he said. Because of that, he thinks it's important to distinguish between NHTSA's current definition of level 4 and true, driverless autonomy.

Telenav's Niall Berkery agreed, warning that, while automated driving is sexy, for at least the next decade, the expectations of drivers will not be met, due to limitations in car software and government regulations.

A panel of experts working on legislation and regulation for autonomous driving discussed the human-behavior hurdles. Cathie Curtis, director of vehicle programs for the American Association of Motor Vehicle Administrators, said drivers will need to understand when automated driving is engaged – and understand how quickly they need to take back control. This challenge may be worsened by the different levels of automation provided in different vehicles and by various manufacturers. “When someone goes into a dealership and say they want to buy an autonomous vehicle, they may not understand what [exactly they will get] and features they do or do not expect,” she said.

Bryan Reimer, a research scientist at MIT, explained that in NHTSA’s 2 or 3, where humans have some role, the differences between levels may not be clear to the vehicle’s operator. “When I get into a vehicle and don’t touch the gas pedal or steering wheel, my operator’s view of the technology in the vehicle doesn’t necessary map cohesively with the vision of the design team,” he said.

When it comes to the human/machine handoff, he added, “There are few answers.”

Jude Hurin, from the management services and programs division of the Nevada DMV, provided insights from his state’s guinea-pig status as the first to provide licenses for self-driving cars.

For example, the DMV might require car owners to provide proof that they understand the technology on their vehicles. But what happens when she lends the car to someone else? He suggested, “We can implement safety features, for example, to make sure the borrower can’t access the autonomous features.” He said that state governments and the federal government must partner with the auto industry to figure out what kind of training and certification drivers will need in the future.

Hurin also provided the example of Daimler’s testing of autonomous trucks in Nevada as an example of how regulators and the auto industry can work together. At one point in planning for the rollout, the Nevada DMV asked Daimler what would happen if the driver had a stroke and could not resume command when the truck left an autonomous zone. So Daimler added a feature that would automatically slow the truck and navigate to a safe stop if driver didn’t respond in 10 seconds. “This is a perfect example where when we are working correctly with the industry and throw out the red tape, we can take a commonsense approach,” Hurin said.

The ethical car

Should cars have their own sets of ethics? This is the quandary set out by J. Christian Gerdes, director of the Center for Automotive Research at Stanford. He pointed out that human drivers frequently break rules of the road in order to increase safety or to enable a better traffic flow. For example, if a car is merging onto a highway where traffic is going 70 miles per hour, but the speed limit is 55, should an autonomous car obey the speed limit but create a less-safe situation? Or, when passing a bicyclist, should it cross a double yellow line in order to provide clearance for the bike?

“In the real world, driver desire for safety outweighs the desire for legality,” Gerdes said. He suggested programming in some flexibility for self-driving cars, based on Isaac Asimov’s Three Laws of Robotics:

1. Do not collide with a pedestrian or cyclist.
2. Do not collide with another vehicle unless that would conflict with law #1.
3. Do not collide with any other object in the environment unless avoiding that object conflicts with laws 1 or 2.

He also posed the question of whether humans should ever be allowed to override these laws. “Will risks to other road users outweigh the driver’s right to control?” he asked.

While Stanford’s CAR had a professor of philosophy embedded with it last year, he said that many of these ethical questions remain unanswered.

New notions of liability

David Strickland, a partner in the firm of Venable LLP – and, of course, former head of NHTSA – and Bryant Walker Smith, assistant professor at the University of South Carolina School of Law, presented the latest thinking on liability issues for autonomous cars: In the case of a crash, in what cases would the OEM be liable?

Walker pointed out that liability is not binary, and that in litigation involving car crashes there are often multiple parties that could have liability. However, he asked whether we should hold self-driving cars to the same standard as a human driver, that is, would a human have been able to avoid a particular accident? If an autonomous vehicle performs less well than a human, the automaker will likely be liable, he said. Ditto if the autonomous system performed less well than another manufacturer’s system. But what if the car performed better

than a human but still could not avoid a crash?

Strickland did not think our current liability system will be turned upside down. However, he said, "We will have situations where it will be tested, and there will be litigation on how to clear it up."

Multimodal transportation challenge

While OEMs have been discussing how they will prepare for a world in which there are – possibly – fewer personally owned vehicles, this concept took a central role in TU Detroit 2015, with its own track.

Chris Thomas, founder and partner in Fontinalis Partners, an investment firm focused on mobility startups, defined intermodal transportation as a mosaic of options. He laid out the ideal of flying into a city, jumping into a rental car without having to visit a rental counter, getting out and leaving the car when you encounter a traffic jam to jump on a bike rental for the last mile of travel.

While pieces of this system are in place in some areas, Thomas said, "We've talked about optimizing transportation options in silos. We need to optimize the whole system."

Dominique Bonte, vice president and group director for telematics and M2M, at ABI Research, gave examples of how the auto industry is beginning to play a role in multimodal transportation: BMW's i brand includes driving and transit information on the car screen, while INRIX provides transit information in Europe.

But transport optimization has a long way to go before it will be as easy as getting into your own car, Bonte added. "It will take off if you can offer intermodal travel at a lower cost than the car -- as long as it's also convenient and seamless."

Even if we achieve a more connected and efficient transportation system, that doesn't necessarily mean that car sales will decrease. Lanctot pointed out that the seasonally adjusted annual sales rate is up, and the U.S. is selling a record number of cars. "Time and again, we hear about Uber and self-driving cars, and car sharing," he said, "but the demand for cars has never been greater."

That was echoed by Thilo Koslowski, vice president and distinguished analyst at Gartner, who said, "This is the renaissance of the automobile." He sees automobiles taking the place

of much public transportation if they become shared and available on-demand.

Paolo Santi, a research scientist in the MIT Senseable City Lab, believes that car ownership going down. His lab analyzed 150 million taxi trips in NYC and discovered that 95 percent of the trips are sharable. Some mobile apps are already available to let people share rides from airports, and he thought that ride sharing would continue to grow. "Probably cars will be used for close to 100 percent of the time by a large number of users," he said.

If so, Thomas of Fontinalis Partners noted, "Cars will have to be designed very differently than they are now."

Koslowski added that telematics and infotainment will no longer be sources of innovation. The next two phases of automotive innovation will focus on connected ADAS and mobility, that is, intermodal transportation. He called this the era of the IT-defined automobile.

Devin Liddell, principal brand strategist for TEAGUE, took it even farther. Noting that so far, the biggest innovations and the hardest to anticipate have come from services like Uber and AirBnB, he said that innovations in automotive and transportation will come from companies that can "fix the seams," that is, tie together various transportation modes. "It won't be about technology breakthroughs from Apple and Google in the next five years," he said, but more likely, service innovations from someone like Starbucks."

Ecosystem flux

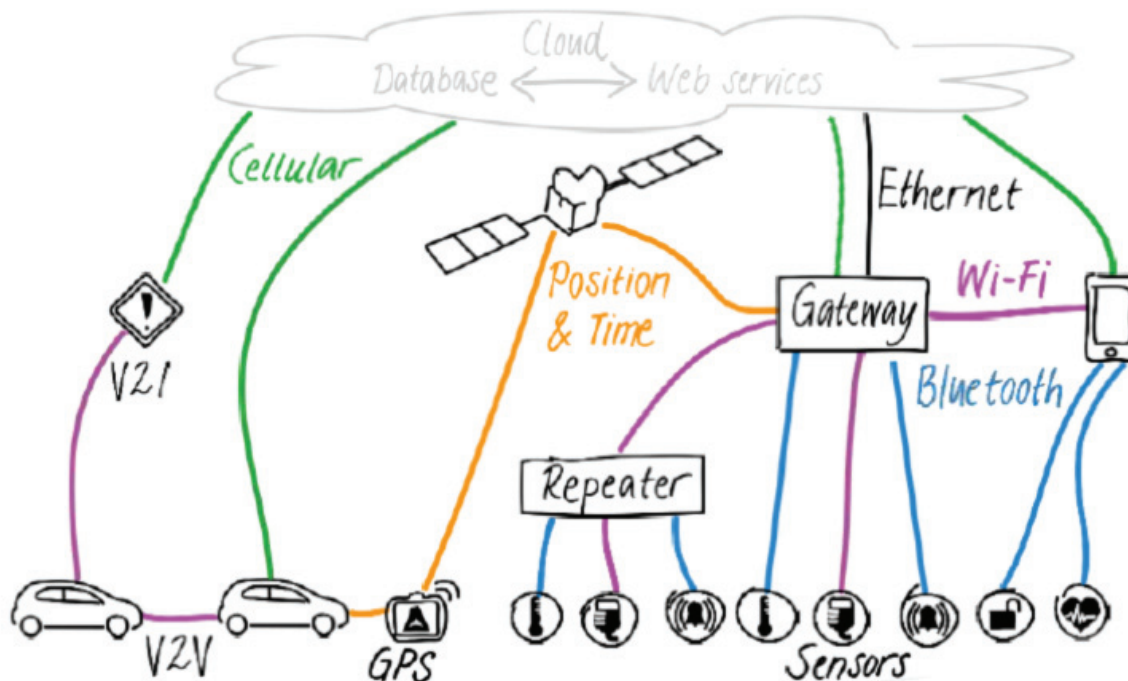
The auto industry is still in flux as traditional OEMs and tier 1s adapt to working in broader ecosystems.

Stefan Gudmundsson, a principal for automotive market development at Ublox, said full systems integration is the key to managing the various communications modalities in connected cars in order to make them highly functional for autonomous vehicles.

Vishwas Shankar, program manager at Frost & Sullivan, said that car-sharing, including taxi alternatives like Lyft, Sidecar and Uber will remain an important part of intermodal transportation systems that let people easily plan, pay for and switch between passenger vehicles, various forms of public transportation, bicycles and walking.

Shankar identified eight factors influencing adoption of car sharing:

Figure 4: Technologies for the autonomous car



Source: Ublox

1. Population and age demographics
2. Commuting patterns
3. Subsidies such as free parking
4. Macro-economic factors such as city and country GDP
5. Corporate buy-in
6. Integrated multimodal transportation, for example, integrated city transit tickets
7. Public transportation network
8. Other strategic factors including EV charging stations and taxi fares

He noted that most instances of best practice have included public sector involvement.

Another important point he made was that the smartphone has been and will remain the key integrator in mobility services. That is, people can use their phones to check availability of transport options, look at schedules, make reservations and pay for them.

Big data, big whaaa?

Can your systems handle 43 trillion gigabytes of data? That's the amount of data we'll generate by 2020, according to Amit Jain, director of internet of things, corporate strategy, for Verizon Enterprise. "We have the volume, velocity and variety

of data," Jain said. "But how do we create value from it for businesses and consumers?"

With connected devices expected to go from under 20 million in 2014 to over 60 million by 2020 the next opportunity comes from generating value with all this information, according to Herb Cunitz, president of Hortonworks. He discussed how Hadoop, the open-source software that allows for distributed storage and processing of large data sets, can help automakers store and analyze the huge amounts of data to come from connected cars.

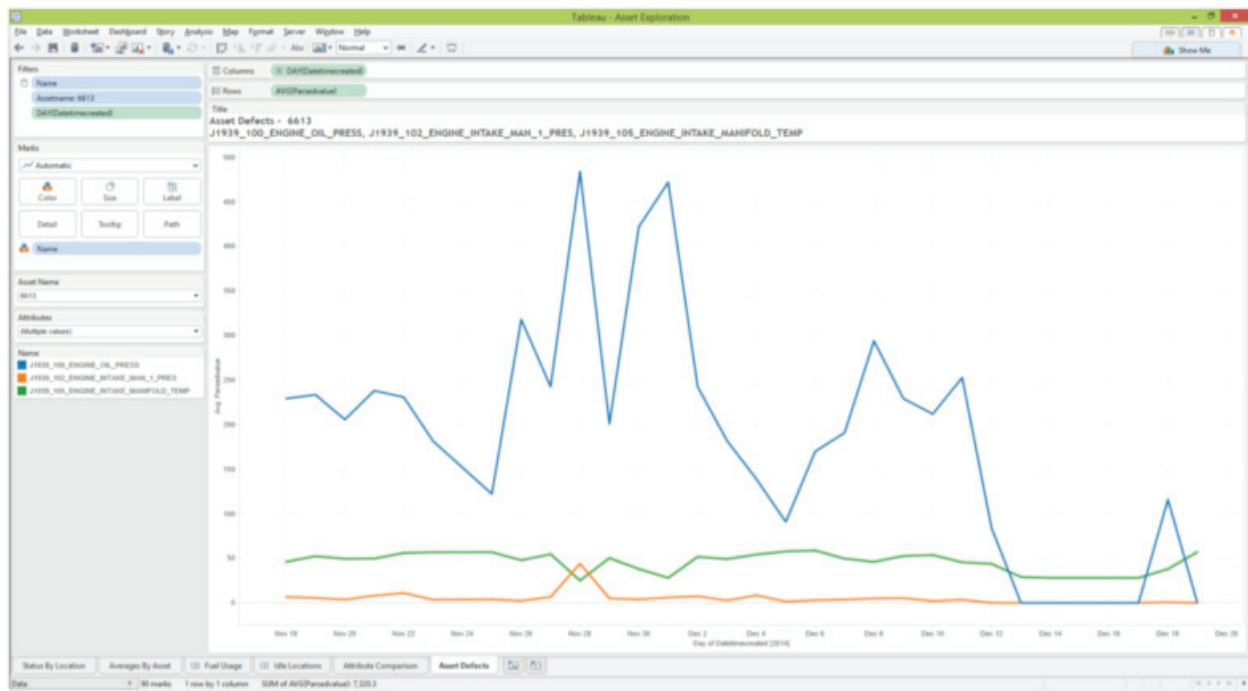
What's it good for? Cunitz said one OEM used Hadoop to analyze streaming data from connected cars post-sale in order to predict when components are likely to fail on an individual level – and then only recall cars that are likely to have that failure. Another is analyzing driver habits to gain insights on how to better to design its next generation of vehicles.

Several vendor announcements highlighted data analytics.

Dataiku demonstrated Data Science Studio, software that lets different business units identify places to innovate on telematics data.

Datalight announced Reliance Edge v1.0, a power fail-safe

Figure 5



Source: Hortonworks

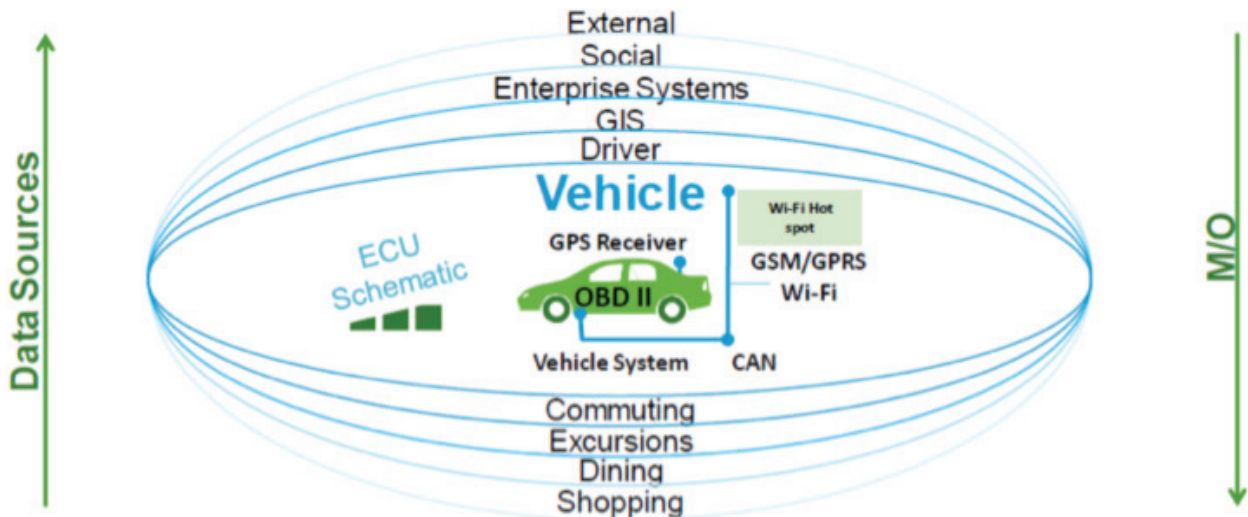
file system that lets developers building data-dependent automotive systems to reliably store and quickly access data.

Altran demonstrated VueForge, which enables data collection and management including correlation of driving style, stress level, and weather, along with vehicle health monitoring.

Monetizing all the data

Prasad Satyavolu, global head innovation for Cognizant, warned, “There will be too much data not just coming out of the car but from the people driving the car.” He proposed a two-pronged approach to monetizing the data: The first prong is product improvements using car data to create value for customers. The next, much trickier frontier is redefining business models to play

Figure 6: Sphere of monetization



Source: Cognizant

Figure 7



Source: SBD

a bigger part in intermodal transportation. His advice was, "Focus on transportation as a lifestyle enablement function."

Volvo's Klas Bendrick gave attendees a look at a recent pilot project that illustrates new business models. Volvo has digital keys available in 20 markets, so it experimented with allowing a shipping company one-time access to their customers' trunks. The transport company is given a digital key that locates the car. The delivery person opens the trunk, places the package inside, closes it and sends a text message to the car's owner that the package is available. The key expires and the package remains secure and available to its recipient.

This year marked the fifteenth anniversary of Volvo On Call, in partnership with service provider Wireless Car, and the two companies held a special media event to showcase new features in the mobile app.

As illustrated by the partnership between Volvo and Wireless Car, in order to unlock the value in data and find new business models, companies may need to expand their partner ecosystems in even more ways – if the experience of building the Mars Rover is any indication. Dan Noal, senior director for the worldwide automotive sales and solutions group of Wind River, a company that also has been involved in every Mars mission since 1997, explained how NASA and JPL had to broaden their supply chain to include academics, companies in the

components industry, and Silicon Valley startups. They also had to change the way they operated to allow for a more lateral and distributed way of working. "They involved an entire community of innovators in silicon valley and elsewhere. They said we'll provide tools and you tell us how you want to run your experiments," Noal said. His advice for automotive OEMs: "Pay attention to what disruptors are doing -- companies like Tesla and Google."

SBD interviewed dozens of connected-car executives to find out how to get the organization right. It found that, including not only IT and engineering but all the partners, dealers and suppliers, car execs could end up managing a team of more than 10,000 people. "Often there is a lack of a conductor overall," said Jeff Hannah, director North America, SBD.

Brian Simmermon, vice president and CIO of Subaru of America, which aims to deliver its first connected vehicles within a few weeks, helped make those organization changes to get telematics out of a silo. In the development phase, he said, "We spent a lot of time with business process engineering, but telematics is new technology, so we needed new partners. We don't have a dedicated group in IT or the business that is just doing telematics. Everybody is doing telematics."

Scott Frank, vice president of marketing for Airbiquity, agreed that, while OEMs have begun to accumulate increasing numbers of data points, "They are simultaneously in a nascent period of figuring out what to do with it. You can waste a ton of money wandering off into big data and analytics. Data is being collected, but the use case has not been developed for the OEM to leverage that either independently or with the dealer."

After-sales opportunity

The lowest-hanging fruit when it comes to monetization of connected-car data is still just hanging there: Warranty management and after-sale services are not sexy but they are profitable.

In his keynote presentation, Martin Rosell, managing director of Wireless Car, said, "Telematics offer the opportunity to elevate from the reactive to the proactive" when it comes to repairs. He noted that it is fairly simple to use analytics to tell, for example, when a car battery needs to be replaced. The car owner could get a call offering an available appointment at a nearby shop instead of an unexpected dead battery. For dealers and repair shops, he added, "This could develop into proactive service planning, which opens up for just-in-time management of spare parts, and even centralization of booking services."

Those remote diagnostics and prognostics could be worth \$79 per car to the OEM, according to Andreas Mai, director of smart connected vehicles at Cisco. He said car makers could gain \$200 from each connected vehicle. The most profitable would be connected-car care – all the warranty work, repairs and tune-ups that could be sent to dealer operations instead of to independent shops, worth \$110.

Wade Hubbard, vice president of fixed operations for Group 1 Automotive, a group of dealers representing 32 brands, noted that, while 11 percent of dealer revenue came from parts and services, parts and services generated 70 percent of profits. “But we don’t hold the lion’s share of service,” he added. “We struggle with that.”

Lanctot said that one barrier is that no one in the industry has yet found a way to make telematics seem cool. Dealers don’t get compensated for selling connected-car services, and they don’t get access to the data. “There is more than \$400 billion in aftersales opportunity. We are handing it over to third parties,” he said.

Jain of Verizon Enterprise noted that approximately one quarter of warranty issues are related to software. Automakers could save even more money by patching these over-the-air before they fail.

Maybe someday. Lanctot noted, “GM can’t find the owners of cars that have ignition switch recall. It’s a very broken system.”

Automakers might need to make deep organizational changes in order to benefit from this data, Mai said. First, they will need to integrate in-car data onboard, rather than trying to transmit it all via LTE. As well, they need to consolidate pools of knowledge like call centers, dealers, vehicle and even social media and then analyze it.

The barrier is that automakers already have huge organizations to address warranty work. “Most in the industry are in stage one,” Mai said.

Dealer-FX announced 1 Solution 3.0, a suite of products that helps service departments engage with customers, manage workflow and create improvements in processes.

The Next Detroit

TU Detroit 2015 included the launch of Techstars Mobility, an incubator/accelerator for startups focused on the intermodal transportation sector. The Techstars program winnows

applicant companies in a region down to 10, and then provides \$118,000 in seed funding, intensive mentorship, and a network of mentors and alumni in return for 7 to 10 percent equity in the companies. Detroit’s Techstars Mobility program is sponsored by Ford Motor Company, Magna International, Verizon Telematics, Dana Holding Corporation, Honda R&D Americas, McDonald’s and Munich RE America.

“We want to make Detroit the hub of future mobility,” said Ted Serbinski, managing director of Techstars Mobility. He noted that the definition of mobility that this hub uses is very broad, encompassing everything from mobile apps to rubber tires – and that McDonald’s considers itself a mobility company because of its need to be accessible to customers using multiple modes of transportation.

The project received hundreds of submissions from 42 countries, and there were six main themes among the applicants:

- Ride sharing
- Energy/battery electric
- Safety/autonomous/sensors
- Maintenance
- Logistics
- Trucking/fleet management

These are the 10 companies moving to Detroit or relocating to the Techstars Mobility offices in Ford Field:

1. Ansik makes automotive service safer, quicker and more affordable a
2. CDL Warrior provides time management, communication and compliance systems for truck drivers and fleets
3. Classic & Exotics extends peer-to-peer renting to classic and exotic cars
4. Cosmos lets you browse the internet via SMS
5. Elegus Technologies has designed a separator membrane for high-performance batteries
6. Gear Brake makes a universal brake light for motorcycles
7. Motoroso combine content, community and commerce for auto enthusiasts
8. MyDealerService improves the customer experience with digital connectivity and workflow management
9. SPLT is a social ride-sharing app that connects riders and lets them split fares
10. Wise Systems provides realtime routing and analytics software for small fleets

3.

Conclusion

There may be no one-size-fits-all approach to connected-car services, but individual OEMs and their partners are taking the leap in hopes of creating closer connections with their customers even after they drive off the car dealer's lot. Meanwhile, with their paths to advanced safety and autonomous driving set, car makers have begun to ponder the bigger questions:

- How can the automobile contribute to society?
- How can the auto industry contribute to better planning at the city and regional level?
- Will people always want to own cars?
- How different from today's vehicles should an autonomous car be?
- Where will the next disruptors come from and how should the industry prepare?

One thing that's very clear is that the automotive industry no longer stands alone. Progress and profit now is contingent on playing well with others.

TU-Automotive

TU-Automotive is the reference point and communications hub for the evolving automotive technology segment as it converges with consumer electronics, mobile and IoT to re-define connectivity, mobility and autonomous use-cases.

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