Connected Cars | Infotainment | Insurance Telematics | ADAS | Vehicle Tracking

SMART AUTOMOTIVE

JAN-FEB 2015 VOL.2 ISSUE 1

Victor Canseco
Delphi

Joel Hoffman
Intel

Andreas Mai
Cisco

Clive Taylor
Garmin

Danny Shapiro
NVIDIA

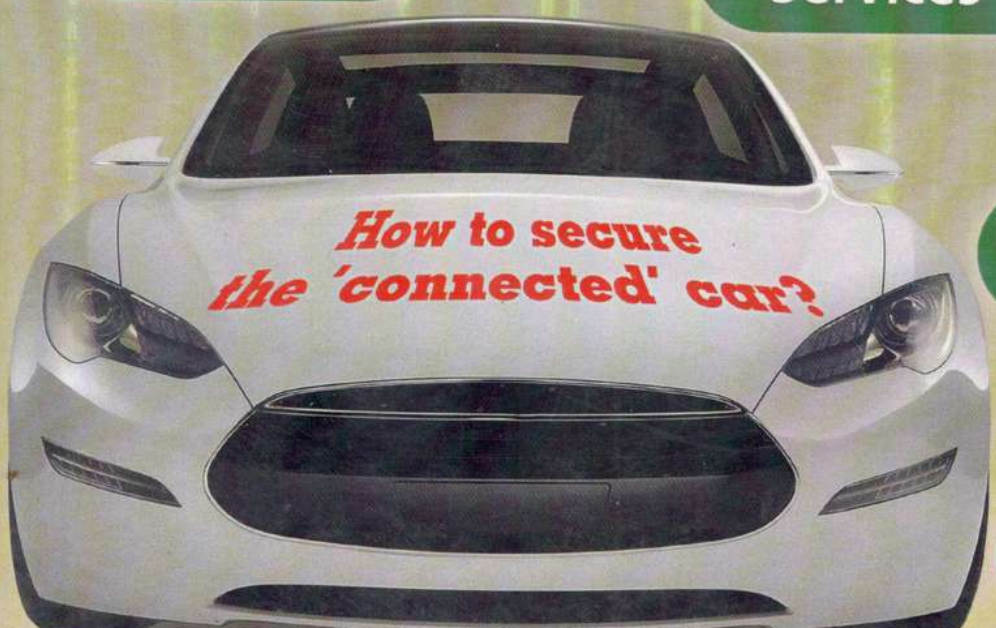
David Hatton
Ford

Emergency Services

Concierge Services

Remote Updates

Driver Assistance



aquila Track

GPS GSM SMS RFID BASED TRACKING & MONITORING SOLUTIONS

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ARAI Progress through Research

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S 101 — Ruggedized IP67 Enclosure — U 101 V1

Parameters	Description
GSM Module	Quad Band GSM, GPRS: class 10 / 12
GPS Module	66 acquisition-/ 22 tracking channels, Ultra high tracking/navigation sensitivity: -165dBm1
Antennas	GSM-GPS Internal Antenna
Communication Interface	TCP/IP on GPRS.
Record Storage/Buffer	5000 Tracking Records.
Ports/Interface	1-USB Device type, 1 Analog I/O and 2 Digital I/O, 1 Ignition ,1 Voice channel (optional)
Speed Sensor	GPS(default)
Motion Sensor	NA
LED Indication	Processing, GSM, GPS, USB Detection
Connectors	6 Pin power mate connector
Power Supply	Wide DC input voltage range (9V - 32V),
Internal Battery	1500mah, 5 to 8 Hr backup,
Enclosure	ABS Plastic Casing IP67
Temperature	Operating: -10°C to +55°C Storage: -10°C to +85°C
Dimension (mm x mm x mm)	98L x 73.1 W x 25 H in mm
Weight	160 grams

Parameters	Description
GSM Module	Quad Band GSM, GPRS: class 10 / 12
GPS Module	66 acquisition-/ 22 tracking channels, Ultra high tracking/navigation sensitivity: -165dBm1
Antennas	GSM-GPS Internal Antenna
Communication Interface	TCP/IP on GPRS.
Record Storage/Buffer	20000 Tracking Records.
Ports/Interface	1-USB Device type, 1 Analog I/O and 2 Digital I/O 1 Ignition, 1 Voice Channel, Serial Port
Speed Sensor	Real time(optional), GPS(default)
Motion Sensor	Accelerometer
LED Indication	Processing, GSM, GPS, USB Detection
Connectors	8 Pin power mate connector
Power Supply	Wide DC input voltage range (9V - 32V),
Internal Battery	1500mah, 5 to 8 Hr backup,
Enclosure	ABS Plastic Casing IP67
Temperature	Operating: -10°C to +55°C Storage: -10°C to +85°C
Dimension (mm x mm x mm)	115 L x 80 W x 25 H in mm
Weight	165 grams

iTriangle Advantage

- Standalone, Plug and play, Compact Tracking Device
- Advanced Power Management with Internal Battery
- Comprehensive Fleet Management Capabilities
- Driving Behavior Management
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- Analog and Digital Sensor Support
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- Auto-registration on power up
- Ruggedized IP67 Enclosure

Supported Accessories

Note: We pursue a policy of continuous research product development. Specifications & Features are subjected to change without notice

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Editorial

Shamik Ghosh
Business Editor

Autonomous Cars are just marketing claims

The 2015 International Consumer Electronics Show (CES) in Las Vegas, NV was chock full of connected car technologies. This year, CES was marked by the record number of connected car demonstrations. Virtually every car maker was unveiling advanced features to keep us safer and in 'always connected' mode.

Mercedes Benz revealed the concept 'egg' F 015 car touting it as 'Luxury in Motion' which resembles somewhat like a lounge while Audi A7 Sportback drove itself from Silicon Valley to Las Vegas without any assistance. Whether you have an iPhone 6 or a Nexus 6, Volkswagen has cars compatible to almost any smart phone; and of course BMW showcased cars that park themselves. From the technology front, companies like Qualcomm, AT&T, Broadcom and many others have announced their full-fledged entry into the connected car realm. Surprisingly, some automotive pragmatists even called it the "Car Electronics Show".

Autonomous Cars remained the most common and debatable topic of the previous year. Google said goodbye to 2014 by unveiling a fully-functional prototype of its driverless car. The car makers have also rolled out their strategy to bring market-ready autonomous features in the near future, however their approach is not as bold as Google's. Instead they are adding sensors, apps, augmented reality, wearables in a piecemeal fashion, thanks to their tech-savvy partners. Ironically, Ford's CEO Mark Fields said during his keynote at CES, *"Autonomous Cars are just market claims and we aren't ready for it"*.

In this Jan-Feb issue of Smart Automotive, we bring to you the upcoming tech-trends being discussed by some of the eminent leaders in this niche. We have an exclusive story on Connected Car Hacking by Israel-based startup Argus wherein they talk about how a car that uses an OBD-II device can be hacked while it receives remote updates. In another article, NVIDIA's automotive head explained how graphics processors would shape up the future of the cars. Besides this, we have articles from Intel, CISCO, Delphi, Garmin and other global organization that are working extensively with the car makers.

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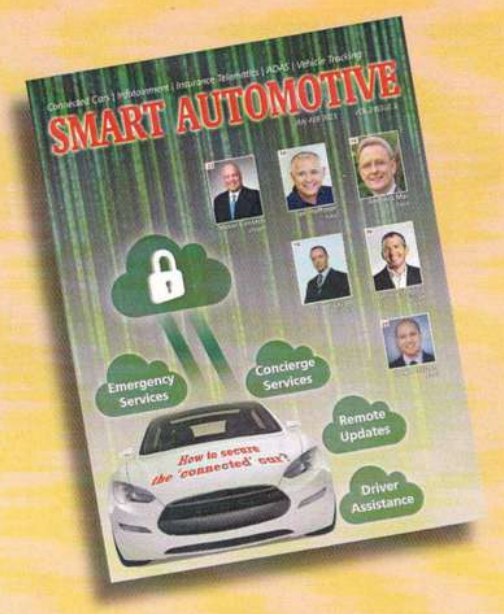
About this issue...



Smart Automotive

the Jan-Feb 2015 issue!

In this issue, we bring to you in-depth insights into the latest megatrends that have shaken up the entire automotive industry. Be it autonomous cars or Internet of Cars, fleet efficiency to driver behavior; the content has been engagingly prepared by some the eminent leaders in the industry.

Some of the contributors in this issue are BMW, Ford, Intel, NVIDIA, Garmin, Cisco and more...

Happy Reading!

In this Issue...

Content

Whats New

Ford dumps Microsoft in favor of Blackberry for its all new SYNC 3 infotainment system

Vehicle Telematics help reduce traffic congestion during peak hours in Milan

UBI faces Snag in India despite attempts by general insurers

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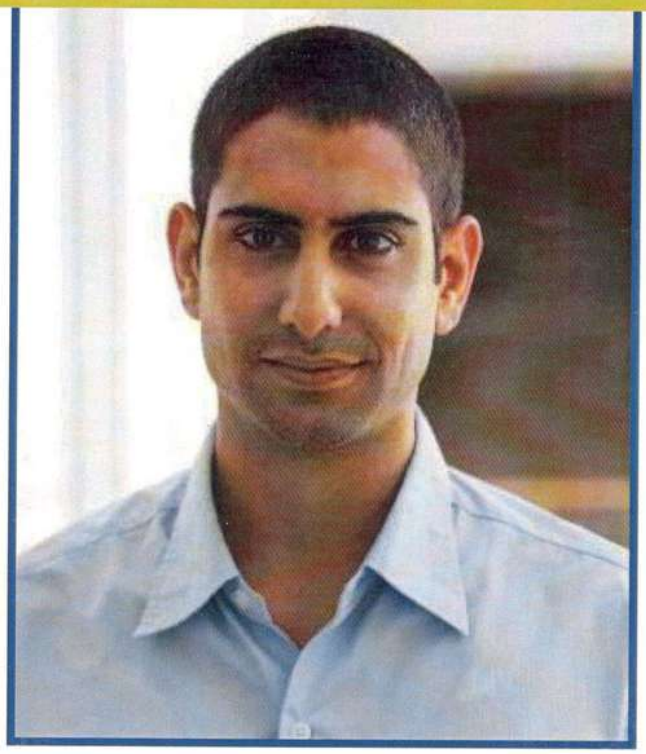
Connected Car: A potential cyber security issue

If it is CONNECTED, it is HACKABLE!



Ofer Ben-Noon
Co-Founder & CEO
Argus Cyber Security

You're in your car, slowing down in favor of a red signal– but suddenly your car decides on its own to speed up and turn right. If it hasn't happened yet, it will soon, affirm cyber security experts. As cars become connected to the Internet and to external devices such as smart phones, smart keys, diagnostic tools and other vehicles, they are more vulnerable to cyber-attacks. This is because modern vehicles are equipped with a multitude of computing modules that are hooking up to the Internet, and that's where hackers live. With a bit of effort, hackers would even be able to access a vehicle's Electronic Control Units (ECUs), allowing manipulation of a car's engine, brakes, airbags and other safety systems or vehicle components

The very thought of driving an Internet-enabled car may seem fascinating enough. But the thought of 'being driven' on road by hackers may shiver your spine as well. Naturally, this can have substantial impact on the safety of vehicles and to the reputation of car manufacturers. Moreover, if remote services are not secure enough, customers will not agree to use them, let alone pay the associated recurring costs.

Preventing the connected car from such security mayhems is the mission of Tel Aviv-based cyber tech startup Argus Cyber Security, run by former members of Unit 8200, the intelligence arm of the Israel Defense Forces. In a recent interaction with Telematics Wire, Ofer Ben-Noon, the CEO of Argus explained about the various potential cyber threats that a connected car is vulnerable to and the methods to prevent them.

Cyber-security for connected cars-Why should one care?

It is of no doubt that as an important component of the Internet of Things (IoT), connected cars will make our daily lives easier. We already have connected cars running on roads equipped with Wi-Fi using 3G and 4G data connections, allowing drivers and passengers to use the Internet in their vehicles to get directions, tune into cloud-based music services, and much more. Car companies are using the data connections to ensure that drivers don't get lost or don't take excessive risks, and monitor the condition of vehicles to ensure that they don't break down on the road. But hackers will be able to take control of vehicles by hacking into those connections as well.

Hence, the security aspect is one of important issue for the automotive industry and should be well looked-after. We believe, as well as leading researches, cyber experts and government officials that cyber security is a top priority for the automotive industry, if not more.

Is it true to say that if a car is 'connected'; for sure it is vulnerable?

Yes. The equation is simple - if it is connected it is 'hackable'. It is inevitable that every connected device will eventually be compromised. Cars are becoming more and more connected,

and the explosive growth in applications and features create a new vector of cyber vulnerabilities.

What are the various safety-critical points in a car that could serve as 'Points of Interests' to a potential hacker?

Since we believe that car hacking is inevitable event, it is very important to protect the mission-critical components of the vehicle from being influenced by connected and vulnerable devices (e.g. infotainment and telematics systems).

Source: Zubie

POIs depend on the motivation of hacking a car. Hacking cars can be done by car thieves, terrorists, hackers seeking reputation and more. Hackers can use this knowledge for minor cyber crimes like cyber ransom, false reading of a speedometer, unlock doors, prevent ignition and even taking control of the steering wheel or brakes. For example, imagine yourself trying to start your car in the morning but the engine won't work. After that you get a message on the multimedia system demanding you to pay a ransom otherwise your car will never start again. Will you not pay to drive your car again?

OEMs keep updating features through 'over-the-air' updates. Do you think this is one of the critical times when hackers can penetrate and get hold of your car?

Since consumers expect their devices to stay up to date with the latest features and performance improvements, OTA update is now a standard feature of mobile phones, tablets, and other connected devices, and connected car is no exception. In fact, consumers eagerly anticipate new firmware releases and become frustrated if their device doesn't receive timely updates.

'Over-the-air' updates should in fact increase the security of the system, as it may enable the car manufacturers to update the vehicle and fix vulnerabilities as they are discovered. However, this kind of remote access to the vehicle might pose a problem if not implemented properly. As we've mentioned before, there are many other possible penetration methods to get a full access and control of your car.

Recently, our team has been able to remotely hack a 3rd party aftermarket connected device- **Zubie**; install a malware on it and demonstrate how we can influence a vehicle's mission-critical components. After reading the source codes of Zubie's device, the Argus learned that the communication protocol supported remote over-the-air updates to the Zubie device. Since the entire communication was based on the non-secured HTTP protocol, the device was not verifying the authenticity of its control server. In addition, the downloaded software updates were not digitally signed. This means an attacker who was able to take over the server or its DNS address and could send malicious software updates to the in-vehicle device. One practical method of taking over the DNS address is to hijack the GPRS cellular connection between the device and its server by setting up a rogue base station and performing what's commonly referred to as a "Man-In-The-Middle" attack.

Once taken over, the Zubie device may have enabled an attacker to remotely take control of a Zubie equipped vehicle from anywhere in the world. Up till now awareness to cyber security issues in the automotive industry has been limited and definitely did not receive the same attention cyber security has received in other industry sectors. The case we brought here is just one out of potentially many and there will always be new vulnerabilities out there.

How can Argus help mitigate the connected car security challenges?

Argus' solution is unique in its holistic approach to the problem. Argus' Intrusion Prevention System (IPS) is based on patent-pending Deep Packet Inspection (DPI) algorithm which prevents a vehicle's critical components from being hacked in

Team Argus "The 8200 Alumni" (L-R): Zohar Zisapel, Chairman; Oron Lavi, VP R&D; Ofer Ben Noon, CEO; Yaron Galula, CTO

Zubie is an aftermarket device that can be plugged into the OBD-II on vehicles that date back as far as 1996 and receive data on their driving habits, car performance and trip information. Devices like the Zubie are gaining popularity with drivers and car insurance companies; because they offer information on driving habits and promotes good behavior behind the wheel. Some insurers offer motorists discounts for good driving based on this data.

real-time. Moreover, helps the OEM to constantly stay up-to-date with current and future cyber threats. I am confident that our innovative yet robust technology is well positioned to face hazards, which are dynamic and ever changing in their nature. It provides the most efficient solution for the automotive industry by protecting the critical components from being compromised; hence protecting the passenger's safety. Argus also has a cyber-consulting service for carmakers to use to detect threats and find vulnerabilities in the network elements of existing and future vehicle models.

IPS does a thorough analysis of the communication packets, the segments of data that enter and exit the vehicle. Because the range of communications in a vehicle's infrastructure is limited – it's supposed to be sending or receiving only specific kinds of communication to specific IP addresses – the analysis can quickly determine if anything is amiss, preventing a vehicle's critical components from being hacked in real time. The system can be integrated into any vehicle production line to ensure that it is not tampered with. The system can also generate reports and alerts for remote monitoring of a vehicle's "cyber health."

Argus also has a cyber-consulting service for carmakers to use to detect threats and find vulnerabilities in the network elements of existing and future vehicle models.

Argus also has a cyber-consulting service for carmakers to use to detect threats and find vulnerabilities in the network elements of existing and future vehicle models.

What is your opinion on 'a common data standard for cars' with proper encryption techniques on top?

There are many things that need to be done in terms of security, beginning with proper architecture design and having a strong protection layer within the vulnerable devices inside the vehicle.

We don't believe there is a "silver bullet" solution. It is the combination of security layers, from in-car security to the network itself. Encryption might be part of a solution, but having a common standard for data is something which might take a very long time, while the problem is here and imminent. ■ ■ ■

OCTO

The reliable w

Park Your Car and Go Public!

A unique fusion of public transportation and vehicle telematics

Vehicle Telematics help reduce traffic congestion during peak hours in Milan

Who would think that one day somebody might pay you for keeping your car at home and taking public transport?

The "Park Your Car and Go Public!" initiative is an innovative and eco-compatible project that aims to reduce CO2 emissions from traffic congestion and improve quality of life by reducing the time citizens spend in cars and encourage them to use public transport instead.

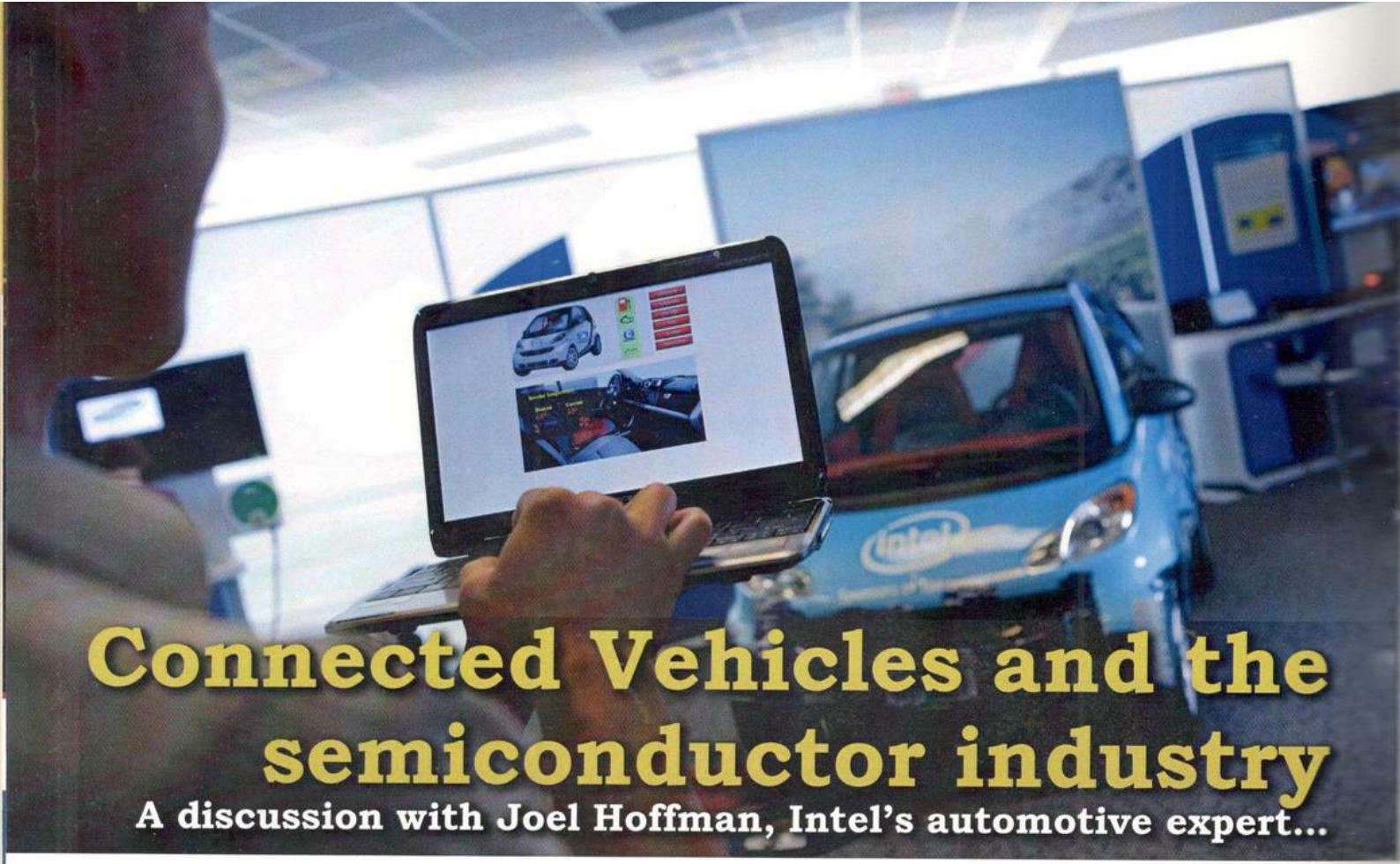
Actually this is the concept of a trial managed by Italian motor insurer UnipoSAI, the Municipality of Milan, Italy, ATM - the Milan Public Transportation System and technology partner Octo Telematics.

The initiative allows drivers insured with UnipolSAI in Milan to take advantage of a special offer aimed at reducing city traffic congestion. The policyholders will receive a credit of €1,50 – the cost of one public transportation ticket - for every day their vehicles remain parked during peak hours. Participants will be able to collect their tickets (for a maximum value of €30) at any ATM ticket machine in Milan by inserting the pin code provided by the insurance company.

The initiative is made possible thanks to Octo's Unibox/Smart Car telematics device that is be able to monitor which policyholders leave their vehicles at home from Monday to Friday, between 7:30 am and 7:30 pm, for the duration of the three-month initiative going from November 11, 2014 to February 11, 2015.

This interesting initiative demonstrates that connected cars and their drivers can be linked smartly with the other transportation modes in a city to create value.

Text: Shamik Ghosh



Connected Vehicles and the semiconductor industry

A discussion with Joel Hoffman, Intel's automotive expert...

Intel has had a long presence in the connected car space. The Santa Clara-based semiconductor giant that gave us the first integrated circuit is now making its presence inimitable within the automotive industry. Intel has already introduced a slew of hardware and software products, which it calls 'In-Vehicle Solutions", to the market. It has penned down multi-million dollar deals with OEM's like Ford for the so-called Project Mobii that focuses on novel in-car UX design and connectivity. Meanwhile, Intel affirmed that it is Internet of Things Group achieved revenue of $482 million in the first quarter, up 32% year-over-year, thanks largely to strong demand for in-vehicle infotainment (IVI) systems.

In an interaction with Telematics Wire, Joel Hoffman, Automotive Strategist, Transportation Solutions Division of talks about the Intel's initiatives in connected cars.

How does automotive fit into the scheme of Internet of Things (IoT)?

Automotive in IoT is not well defined yet, but IoT can make a more advanced driving experience possible. The car is one of the largest data generators a consumer has. Many are unaware that their vehicle actually produces gigabytes of "data exhaust" that can be intelligently combined with data collected from elsewhere, such as the roadways, intelligent transportation systems and consumer devices, and aggregated to alert drivers about conditions on the road ahead, help better manage traffic and create safe and more secure in-vehicle experiences.

Connected Car present an 'ocean' of opportunities for Silicon Valley companies

Consumers yearn for an automotive experience that is as personalized, intuitive and connected as their smartphone and are willing to pay for functionality and features touching on two key desires: safety and convenience. That's where folks like us can intervene.

Silicon Valley is known for birthing new consumer and information technology markets. There, products can be thought up, programmed, and prototyped so quickly because the business ecosystem includes young talent, deep pockets, and a culture of multi-disciplinary collaboration. Mistakes happen, but they tend to be momentaneous. The ability to iterate rapidly and to get near-instant feedback from a community of users enables this. Move fast and break things.

But, this is the antithesis of what the OEMs are about!

This speedy approach does not work with cars. Auto manufacturers may have mastered the streamlining of production lines once a car has been designed and certified. But, with many layers of suppliers involved, the design process itself still takes years. Today, carmakers are clearly hedging their bets. Most are working with both Silicon Valley giants and a variety of other players involved in creating mobile-device integration tools for the aftermarket.

Intel recently collaborated with Ford on research for Project Mobii to explore how perceptual computing can make driving more intuitive and enjoyable. We looked at applications that could use interior cameras to identify drivers in order to deliver seamless personalization by automatically adjusting in-vehicle information to each driver, and limiting the amount of personal data presented if passengers are present. Additionally, if Project Mobii does not recognize the driver, a photo is sent to the primary vehicle owner's smartphone, who can then set permissions and restrictions for specific features.

Semiconductor and automotive working together…Has the time come?

This is a very exciting time to be involved in the automotive industry. We're already seeing some high-end cars coming equipped with advanced systems like adaptive cruise control that uses radar to monitor traffic and apply the brakes when necessary. There are cars now that can park themselves or alert you when you drift outside your lane. There are definitely challenges that come with integrating ever more sophisticated technology into the car. However, Intel brings a breadth of experience in consumer electronics and enterprise IT and is also taking a holistic automotive investment approach across product development, ecosystem growth and groundbreaking research efforts to enable the auto industry to keep pace with innovation.

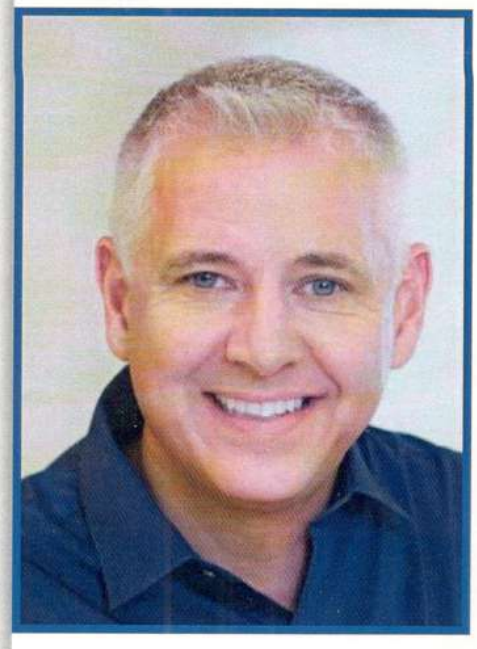
Focus on services, not on features

Initial services are focused on assisting the driver. We want usable voice-activation features to attempt avoiding distraction. True, reliable voice integration is what drivers are waiting for.

Apps that quickly locate ride-sharing opportunities are a popular feature for urban drivers and millennial, who are buying cars in fewer numbers than previous generations. Helping coordinate these options will save consumers time and money, and help reduce congested traffic. Some of the most sought after apps are the more practical, like those dealing with weather and those identifying the most affordable local gas prices and hotel options. Another popular app feature will be quickly locating open parking spots. There's also a big demand for integrated vehicle infrastructure apps. These apps give drivers real-time updates on the performance of their vehicles and insight into where efficiency can be improved. We are seeing this already in apps that provide route guidance suggestions based on fuel economy and current traffic conditions. The cloud will connect us to subscription services that will make this easy and automatic.

'Autonomous' readiness

We have the technological capabilities right now to develop some autonomous



Joel Hoffman
Automotive Strategist
Intel Corporation

capabilities, and have seen some impressive experiments over the past few years. Consumer demand already exists; Intel conducted a global survey earlier in 2014 that showed broad support for driverless vehicles and smart infrastructure. The next big step is to adapt the technologies being used in the pilot programs run by different car makers and tech-titans into an automotive and safety certified format at affordable cost. This is a high priority for Intel as we have described our recent development accelerators such as the Intel In-Vehicle Solutions platform, a family of hardware and software products designed to enable carmakers and their suppliers to more quickly and easily deliver in-vehicle experiences that consumers demand, while reducing the cost of developing them. Today most automakers are focused on innovation in areas of convenience today and see a noticeable path to advanced driving and autonomous driving. ■■■

The blurring line between **Autonomous** and **Assisted** driving

By **Shamik Ghosh,** Associate Editor | Telematics Wire

@GHOSHAMIK

2013-14 has been the years for self-driving vehicles so far. This period has seen groundbreaking announcements from the leading automotive companies like Volvo, GM, Audi, Nissan, BMW and Tesla and a significant amount of press coverage regarding, what is expected to revolutionize the face of mobility and personal transportation-the **self-driving** or **autonomous** cars.

Market research and consultancy firms have published a large number of conflicting autonomous driving studies and forecasts, all of which usually fail to pin down a firm date when self-driving cars would go mainstream. In the United States, Florida, Nevada and California have passed laws allowing the testing of self-driving vehicles on public roads and European countries are closely following this development. And of course, the much-hyped Google's self-driving car project remained as one of the most discussed and shared piece of information amongst the automotive geeks.

All this has led automotive experts to a belief that a commercially viable fully autonomous car is still a 'distant reality'. From a careful investigation of the announcements by automakers as well as the market projections, it is believed that "autonomous driving" does not imply fully-autonomous self-driving vehicles but represents a wide range of semi-autonomous or **'assisted driving'** technologies. These technologies help minimizing the driver intervention by simply automating manual routines but cannot eliminate it completely. This contrasts with the fully autonomous driving, which has the more ambitious goal of emulating drivers rather than simply automating tasks.

Ok let's dwell deeper into assisted driving…Assisted driving features have been around for decades however they have not been heeded until most recently. All of us are familiar of the cruise control feature that helps the driver to maintain a uniform speed. However, today's cruise control exploits advanced sensor and radar technologies to not only manage the speed but also automatically adjust speed in order to maintain a proper distance between vehicles in the same lane. For an instance, if the lead vehicle slows down, the system sends a signal to the engine or braking system to decelerate. Then, when the road is clear, the system will re-accelerate the vehicle back to the set speed. In terms of vehicle telematics, this is generally known as **Adaptive Cruise Control (ACC).**

Another popular assisted driving feature is the **Lane Departure Warning (LDW)** that helps prevent a sleepy or distracted driver from accidentally drifting out of the lane. It uses cameras and radar to detect lane markings and triggers a warning if the car starts to leave its lane without a turn signal being activated. The

Mercedes-Benz S-Class uses a vibration in the steering wheel for this purpose.

One of my personal favorites is the **Blind Spot Monitoring** system that monitors the area next to and behind the vehicle. If another vehicle is present in the close proximity, the system would illuminate a warning light on the side-view mirror (in some cases the rear-view) indicating that it is unsafe to move over. Recently, GM's Cadillac engineers have taken this technology to a new level by adding live HD video streaming to the rearview mirror which could enhance the rearward vision by 300%.

Some of the others features are **pedestrian detection, forward collision warning, curve control, queued driving** or **"platooning"** and many more.

All the aforesaid features are being added to the modern vehicles in a piecemeal fashion by the car makers, sometimes touted as a key differentiator from the previous models. But the question over which the critics debate is which car company is providing what level of automation.

The US **National Highway Traffic Safety Administration (NHTSA)** provides some answer to this, albeit half-baked. Last year the agency released a set of technical parameters that puts the **Advanced Driver Assistance System (ADAS)** of various car makers on a scale ranging from Level 0 to Level 4 automation. NHTSA believes that none of the car company is providing ' autonomous' or 'self-driving' features, or a Level 4 automation. David Strickland, Commissioner of NHTSA affirms, "A self-driving car doesn't make sense to us, car that assists the driver surely does. Though our agency is studying self-driving vehicle technology, but a fully autonomous vehicle is "far off in the future." According to NHTSA, application-oriented automation, such as parking assist and emergency braking, are already available, and when these technologies are integrated with the steering control, they will ultimately begin to reduce the need to driver control of the vehicle.

General Motors was the first one to run with the flag of developing vehicles with self-driving features. But GM's idea is not to bring a self-driving car at once, but to add 'autonomous' features step-by-step, version-by-version. In a recent demonstration of its Cadillac SRX prototype, GM told the media that the car can follow the pace of traffic and prevent an unwanted lane change__ though the driver must always be ready to take back the wheel. This announcement is in full sync with other car makers, who always preach the wisdom of getting onto the self-driving bandwagon with a philosophy of "add this then that".

Annie Lien, a former senior engineer at **Audi** who oversaw Audi's assisted driving efforts says, "Moving too quickly could leave the first self-driving cars without certain features--such as the ability to safely pull onto the shoulder of a highway, instead of just stopping in traffic, if a sick or sleeping driver does not retake control. That is a safety-critical feature that has be worked on and perfected over the time. If you skip steps, this could be 'the' step that you skip.

Volkswagen also backs the idea of assisted driving where the driver retains permanent control. The company took an initiative, called AdaptIVe for development and testing of new autonomous functions for cars and trucks. Prof. Jürgen Leohold, Executive Director of Volkswagen Group Research who leads the AdaptIVe project states, "Even in the highly automated stage, the system takes over the actual driving, but the driver still has to remain alert because he has to be ready to reclaim control when requested. Then there's the highest stage where the system drives the car and if the driver fails to retake control when requested, the system carries on by itself. But this is a far-fetched reality".

Even the newcomer **Tesla** doesn't support the idea of making a self-driving car but the company looks forward to a day when vehicles can drive themselves completely. In its new all-drive wheel or the 'D' concept vehicle, the premier electric car maker has outfitted a slew of new 'autopilot' features backed by an array of cameras, sensors, and software. But it isn't autonomous yet and not cheap either, starting at around USD 70,000.

But, this risk-averse thought process of car companies do not seem to be as bold as Google's sink-or-swim approach. Last month, the company wowed its followers by unveiling a fully-functional prototype of self-driving car that masters the navigation of city streets and the challenges they bring, from jaywalkers to weaving bicyclists. The Internet-search giant is trying to build a car so amazing that could take the passenger from Point A to B without needing the driver's input. Forget driver input, it doesn't even have a steering wheel. It has also claimed to have logged over 700,000 miles by mid 2014, although not on public roads.

However, such cars way too expensive at this time for the vast majority and will remain so in the near-foreseeable future inspite of the certainty of ongoing technologicaladvancesandpricereduction due to high volume manufacturing. For

e.g. the roof-mounted LiDAR system used in the self-driving prototype itself costs around USD 70,000, let alone the cost of other sophisticated hardware and software.

On the other hand, a fully loaded **Cadillac ATS** sedan with a Driver Assistance package comes with at least 18 electronic eyes, in form of sensor and cameras. IT includes eight ultrasonic sensors to help with parking, six radars to cover short, medium and long distances, a backup camera and a camera behind the rearview mirror for lane departure warning and forward collision warning. This entire suite of driver assistance features can be bought at an additional cost of USD 3200, which is quite affordable. John Capp, GM's Global Director of Active Safety says, "GM will put the automated road trip feature in an add-on package for a price close to the $3,000 that Cadillac buyers already pay to outfit a car with sensors and cameras for driver assist features."

Summary

We are not debating over whether 'self-driving' cars are realizable or not. The question is, "Do we really need them?" Some might argue that such cars would help avoid crashes caused by human errors; others would say they will ease our traffic congestion and boost fuel economy. But at the end of the day, it's a machine. The safety of the driver and pedestrians is still at stake. It doesn't get much more risky than a technology that would turn cars into robots. Imagine reading a top headline as, "A running machine kills two" on a Sunday newspaper. Ron Medford, Google's Director of Safety for self-driving cars supports "People shouldn't think that there will never be an accident. Autonomous cars will be much, much better than a human, but they won't be perfect."

Hence, thinking of a car that drives itself is far too early. It may come into being down the line, but then the timeframe should be measured in decades and not in years.

Talking about today, it's the assisted driving that matters to both car companies and the customers. The industry will keep looking for incremental improvements in their products and customers will keep asking for more.

That's where both the present and future lies.

Ford dumps Microsoft in favor of Blackberry for its all new SYNC 3 infotainment system

Ford recently announced the third version of its infotainment system Sync 3, and it has become a big deal for consumers, investors, and the automaker itself. Both Sync 1 and Sync 2 relied on Microsoft's software to process voice instructions uttered by vehicle owners. With Ford's latest released Sync 3, the company has dropped Microsoft in favor of QNX.

SYNC 3's more conversational voice recognition technology, a more smartphone-like touch screen and easy-to-read graphics will help millions of drivers connect with their lives and control their smartphone while on the road. SYNC 3 begins arriving on new vehicles next year. Ford took a customer-centric approach in developing SYNC 3, drawing on 22,000 customer comments and suggestions, plus insights gleaned from research clinics, market surveys and tech industry benchmarking.

Although SYNC 3 is optimized for hands-free use, an all-new touch screen delivers an experience similar to a smartphone or tablet. Quicker response to touch as well as voice commands and smartphone-like gestures including pinch-to-zoom and swipe are central to SYNC 3, along with crisp, modern graphics.

SYNC 3 reduces on-screen complexity and prioritizes the control options customers use most. The home screen features three zone choices – Navigation, Audio and Phone.

With SYNC 3, simply saying "play <song, artist, album or genre>" prompts the system to play the desired song, artist, playlist or album; there is no need to identify the desired category. To switch back to a radio station, the user just says the name of the SiriusXM station or terrestrial radio station number.

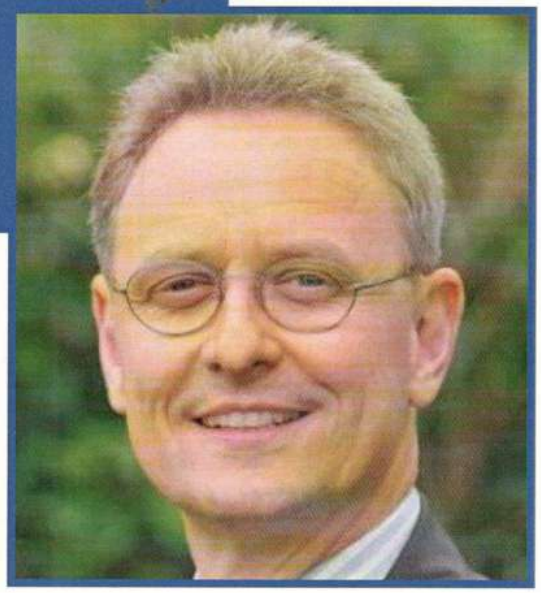
When connected to an Apple iPhone, SYNC 3 offers seamless integration of Siri Eyes-Free control. Drivers can seek Siri's help by holding down SYNC's "Push to Talk" steering wheel button – much as they would hold down the button on an iPhone to initiate a Siri session.

Ford was first to bring voice control to in-vehicle apps with AppLink™, and the experience is further improved with SYNC 3. AppLink allows customers to connect their smartphone to their vehicle and control their compatible apps using voice commands or buttons on the vehicle display screen. AppLink now automatically discovers smartphone apps including Spotify, Pandora, Stitcher, NPR One, SiriusXM Radio and iHeartRadio Auto, and displays their unique graphics and branding. Music and news apps are automatically displayed along with other media sources, just like AM/FM or SiriusXM.

Developers easily can integrate branded apps into AppLink, providing Ford customers with an experience on the vehicle screen similar to what they see on smartphone screens.

Text: Simmi Sinha

Source : Ford



Internet of Cars

Andreas Mai
Director-Smart Connected Vehicles
Cisco

"Connected cars could do for the automotive industry what smartphones did for the phone industry."

Every year, eight million traffic accidents cost 1.3 million lives and injure more than seven million people. Globally, we waste more than 90 billion hours in traffic jams, generating 220 million metric tons of carbon equivalent to wasting at least $1 trillion of the global gross domestic product (GDP). In the United States, congestion alone costs $750 to $950 per vehicle per year, totaling $150 billion to $210 billion. Much of the industry's focus is on building more fuel-efficient vehicles (including electric vehicles), but even the most fuel-efficient car cannot escape the inefficiencies of urban traffic. Some of these are:-

- 11-13 % of time is wasted in urban congestion.
- 7-12 % of urban traffic is created by people looking for parking.
- 10-17 % of urban fuel is wasted at traffic-light stops when there is no cross-traffic.

Connected vehicles have the potential to provide better customer care, lessen insurance costs, ease congestion through "smart road" pricing, and create a cornucopia of new business models and profit pools for various industry players. According to Cisco, connecting vehicles on a unified communications network platform can help abate many of the personal and societal costs and create a yearly savings of more than $1,400 per each vehicle we connect:

- $550 for vehicle owners by reducing operating and insurance costs.
- $420 by reducing the societal cost of crashes, congestion and pollution.
- $300 for the automotive industry, by reducing costs of warranty, service, remote diagnostics and prognostics, over-the-air updates, more data about what their customers want, and closer CRM - all enabled by connectivity.
- $160 which in light of the many great startups around conservation that are surfacing and new business models such as location based services, electronic parking, ride sharing, etc.

"The Internet of Cars" is a catalyst for new business models along the entire mobility value chain: from building and servicing cars, cloud based infotainment and location based services, to crash prevention and intelligent traffic management.

One of the most important service would be an **advanced driver assist system (ADAS),** where previously independent sensors, control units and actuators on-board of vehicles are connected with each other and potentially external sensors on other vehicles (e.g., via DSRC) and the roadside to make operating vehicles safer.

Another example is **remote diagnostics.** Once all the subsystems are connected, we can extract data from this subsystem and merge it with other pools of data that could help identify potential warranty issues like call center data, social media data, quality data, dealership communication, etc. To be able to manage this avalanche of data, processes have to be connected across organizational silos (e.g. Warranty Management, Quality Management, Supply Chain, Dealer Operations, Parts & Accessories, Customer Communication) to effectively reduce the detection to resolution cycle.

The unified 'one-to-many' approach

Connected cars could do for the automotive industry what smartphones did for the phone industry. By integrating smartphone capabilities into

vehicle ergonomics with an intuitive, voice controlled UI/UX, automakers will not only enhance the in-vehicle experience, but will also promote a hands-free approach that reduces the risks of driver distraction.

Future cars will augment our driving capabilities and make our travel experience safer and more convenient. While en route, cars will proactively propose to visit friends nearby, restaurants with special lunchtime deals, hotels at night time, and alternate options to use time more productively when congestion is unavoidable.

Ubiquitous vehicle connectivity not only allows automakers to ride the wave of smart mobile technology, but also enables a fundamental strategy shift from merely building cars to selling personal travel time well-spent. It is not enough merely to connect vehicles to the Internet. To provide the full benefits of vehicle connectivity, the automotive industry also needs to connect the extended value chain.

One approach is to combine all of a vehicle's specialized communication systems under a single unified communications platform. Cisco estimates that by using a multipurpose, on-board communication unit instead of separate devices for audio, telematics, satellite radio, navigation, insurance dongle, Wi-Fi, intelligent traffic system/ dedicated short-range communications, tolling, and parking, stakeholders could save approximately 25 % of the one-time hardware and software costs. They could save an additional 40 % per year in operating costs by using a single service platform. This would reduce the total one-time costs from $400 to $300, and annual operating costs from $600 to $360.

Challenges

Today, the value system of personal mobility is under attack by a new generation of drivers that cherish social media and technology more than a car. This is scary news for an industry whose products have typically represented the second-largest expense (after home purchases) for an average household over the last century. It is no longer enough to sell personal transportation; people want a personalized driving experience that keeps them connected to everything that is important to them—friends, information, music, maps, schedules, and more.

Cyber security also poses a lot of challenges in the connected car segment. Modern vehicles use a wide range of communication interfaces to connect with the outside world. These communication interfaces, such as OBD-II, USB, Bluetooth tethered smartphones, embedded cellular modems or onboard Wi-Fi expose the vehicle to a growing range of security threats. The most damaging threats, however, emerge as vehicles begin to connect to the Internet and to support more advanced applications such as over-the-air firmware updates. Malware can infect a vehicle through its communication interfaces and cause severe consequences.
Attackers can remotely access and control vehicle's onboard systems, steal private data from vehicles and users' connected devices, monitor vehicle locations, and modify ECU software. Crime and terrorism organizations can exploit the vulnerabilities of connected vehicles to disrupt the transportation system. Therefore, an advanced security solution is urgently needed to adequately protect connected vehicles. The lack of such an adequate security solution not only exposes existing vehicles to growing security risks but also prevents many applications from being introduced into vehicles.

At Cisco, we have a number of highly valuable security products and services to holistically protect connected vehicles against cyber attacks from chip to cloud level. Our end-to-end security reference architecture is designed to set the industry standard for securing connected vehicles.

We believe that the automotive industry will converge toward a factory-installed on-board unit for providing vehicle connectivity. This unified communications platform will provide the connectivity for basic telematics, voice, and data services, including off-board navigation, traffic information, location-based Internet services, video, and gaming.

These trends and requirements are likely to make connecting vehicles a multi-carrier and multi-technology play, and will drive the emergence of carrier- and technology-agnostic platforms. Service providers will need to respond to the new customer demands by developing new business models to fund the on-board unit and connectivity costs, and to fend off commoditization and margin pressure.

Increasing fleet productivity through vehicle telematics

For many years, telematics and fleet management systems (FMSs) have benefitted businesses of all shapes and sizes by reducing fuel costs, tracking critical assets, and improving driver safety. This rapid growth is fostered by the uptake of fleet telematics in urban buses, motor coaches, taxis, emergency vehicles, rental fleets and light commercial vehicles in various developed and developing economies.

As a result the value of fleet management systems have grown beyond simple improving efficiencies, and began to positively influence the behaviors of drivers for improved driver safety, customer service and a quicker return on investment. In this article we will see, how various type of businesses are leveraging on fleet telematics to increase productivity and overall efficiency of their fleets…

Public Transport Buses and Motor Coaches

The public transport buses are often lumped together with motor coaches, but they are a distinct market segment with many unique requirements, particularly an ever growing reliance on complex intelligent transport systems (ITS) fleet operators use to optimize vehicle deployment in real time, manage fuel consumption and ensure passenger comfort through driver monitoring and timely passenger information.

Demand for ITS is increasing around the world as a growing number of cities are embracing public transportation to fight traffic jams, improve air quality and better serve swelling populations. Commitment to carbon footprint reductions is already part of tendering requirements in many countries.

The public transport authorities are increasingly tied to whether ITS operators can add value to riders through real-time passenger information systems that employ a combination of electronic signs at bus stops and smartphone apps with route planning and real-time updates.

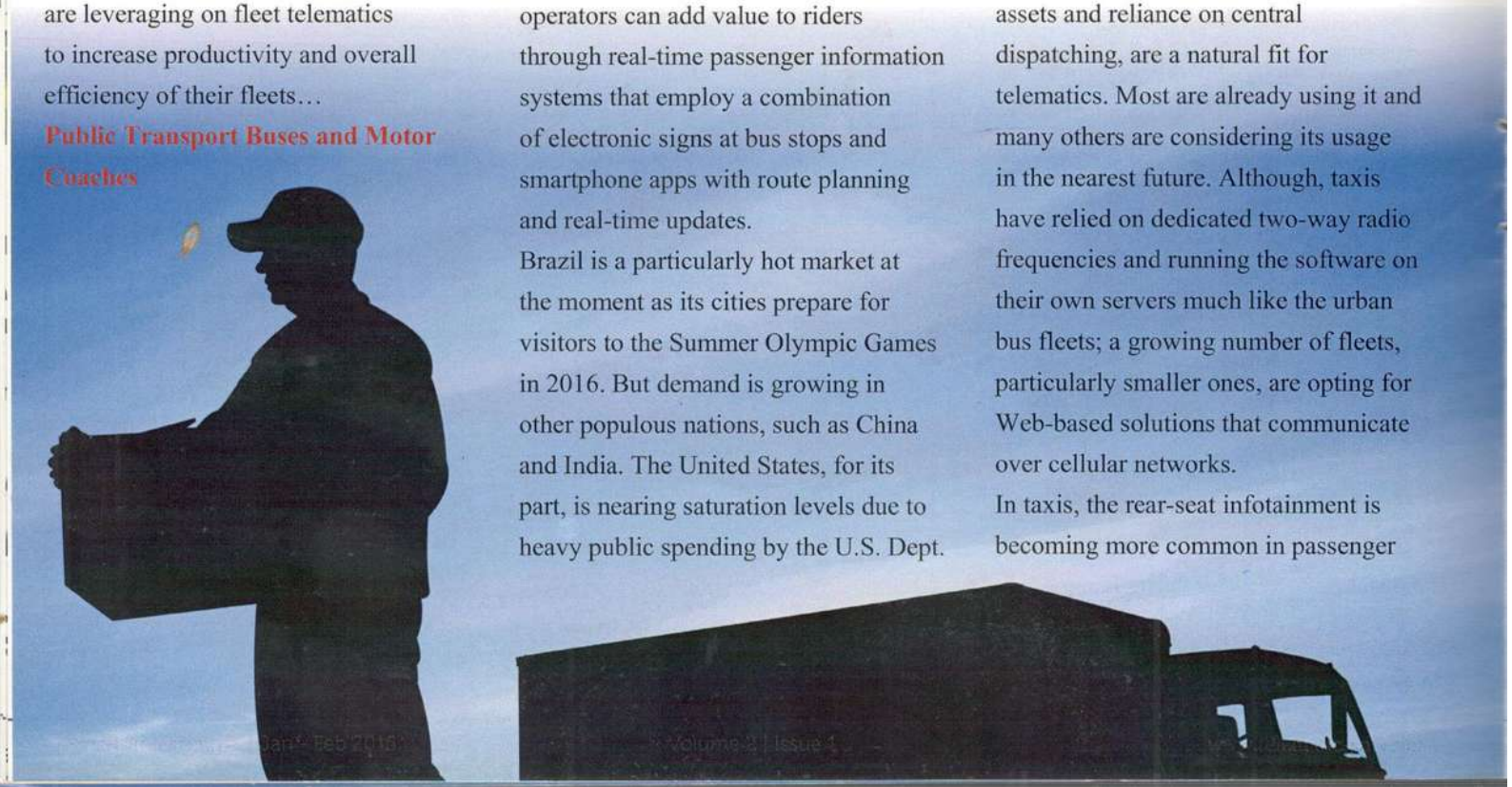
Brazil is a particularly hot market at the moment as its cities prepare for visitors to the Summer Olympic Games in 2016. But demand is growing in other populous nations, such as China and India. The United States, for its part, is nearing saturation levels due to heavy public spending by the U.S. Dept. of Transport and Dept. of Homeland Security, aimed at securing public transit following 9/11 attacks.

Unlike solutions for urban bus transportation, which emphasize complex systems management and optimization, motor coach telematics is built to suit vehicles that travel long distances on highways and make few stops. In this the demand is more for vehicle tracking, driver and passenger safety and fuel consumption management. Solutions that help lower fuel consumption are in demand by both urban bus fleets and operators of motor coaches, though bigger savings can be achieved in the urban bus segment, particularly through reductions in idling.

Taxis & Radio-cabs

Taxi fleets, with their widely dispersed assets and reliance on central dispatching, are a natural fit for telematics. Most are already using it and many others are considering its usage in the nearest future. Although, taxis have relied on dedicated two-way radio frequencies and running the software on their own servers much like the urban bus fleets; a growing number of fleets, particularly smaller ones, are opting for Web-based solutions that communicate over cellular networks.

In taxis, the rear-seat infotainment is becoming more common in passenger



vehicles in several major US cities including New York and Chicago. This is also requires that taxi cabs are equipped with passenger information systems, which include a back-seat display that gives them a map with current location, plays TV clips with information about the city and even accepts a credit card swipe.

On-duty Emergency Vehicles

Police, ambulance and fire department fleets are another area where the scope of telematics is immense, however, unlike with taxis, penetration levels are surprisingly low—30 to 40% in the US. The large police departments in the United States already track their fleets using on-board telematics unit, but smaller outfits are far less likely to. One reason for this slow growth is that patrol officers resist the idea of being monitored. For an instance, if the officers wish to take a halt at their favorite sandwich shop during the lunch time, they wouldn't like to be monitored. No one would…
In ambulances, the fragmentation of fleets among a number of different stakeholders i.e. hospitals, insurance companies and private companies—slows down adoption.

Car rentals

Car rental fleets is one area where fleet telematics is not only rare but also desisted, as many customers don't want to be tracked while renting a car. The opposition stems in part from past instances of rental companies using telematics to charge fines for policy violations, such as leaving the state without authorization or over-speeding. A further impediment to higher penetration rates is the fact that installing and servicing tracking hardware would only add to the already long checklist of things for car rental companies to do to keep their fleets well utilized.

Light Commercial Vehicles (LCVs)

In the light commercial vehicle segment, fuel efficiency improvements using fuel level sensors are the biggest selling point. The German CV-giant Daimler stated that fuel efficiency improvements in light commercial fleets can add up to as much as 30% with the right kind of driver coaching and driver behavior monitoring. On the other hand, heavy-duty trucks fuels savings are much lower, ranging between 10-15%, though they add up to more money saved due to the trucks' higher average fuel needs.

Penetration of smartphone, tablet and PNDs in fleet management

In the consumer market, Tablets and Smart phones have become critical to the daily lives of both our private and public world. Application and content choices allow for many tasks from email to entertainment to be accomplished through an easily accessible and portable connection. But these consumer devices are often not designed to survive the demands of a fleet environment. Just ask anyone who has tried to navigate with a tablet affixed to their windshield, or has witnessed their device's screen shatter when the unit has fallen a few feet from the dashboard to the floor! Fleet customers demand that their specific needs to be met.
We envision that the next -generation fleet management systems to be purpose build automotive devices, with superior navigation, fleet centric features, the openness to enable custom applications, and the connectivity to interface with a wide variety of application specific peripherals. These systems must be rugged and responsive in a wide range of environmental conditions, and provide end users and their service providers a balance of flexibility and control when managing content, access, and applications. Such devices must be sensitive to the economics of our time, and provide all the important benefits at a price that is within reach of small business, and deployable with scale.

At Garmin we look forward to serving the fleet systems needs of our customers with our latest product introductions, and our continued development of telematics-based solutions. In the future we will continue to investigate creative and innovative ways to improve the productivity of fleets and work tirelessly to increase the return on investment of our customers and end users.

Clive Taylor
Director
Fleet Management, EMEA + APAC
Garmin International

BMW ConnectedDrive making its way to the untapped markets

BMW has always seen in-vehicle connectivity as a transformational environment for creating a new generation of better services to its customers located in almost every part of the globe. Services that can adapt to the driver's personality, conserve energy, lower emissions and improve safety. However, there still remain those regions (especially BRICS) that are in very preliminary stages of adopting telematics as a service. BMW sees these regions emerging as potential telematics hubs in years to come.

***Carlos Briselli** of BMW do Brasil explains about the penetration of vehicle telematics and infotainment in the LATAM region. He also explains the company's strategy to comply with the Brazilian telematics legislation (CONTRAN 245).*

What differences do you see in terms of the adoption of vehicle telematics services between LATAM and other markets like US and pan-Europe?

US and Europe are mature markets regarding Telematics, in these regions, the usage of telematics services are distributed all over the automotive industry for services and end-customers. The difference from LATAM markets is that once the benefits have being realized by the industry (ex.: logistics and services) the usage is being increased, but with some limitation. One of the limitation factors for the telematics growth is the MNOs infra-structure in LATAM countries combined with an old fashion legislation that doesn't allow such a great advance in terms of MNO infrastructure keeping the connectivity prices high. Beyond this fact, the benefits are being felt by the one's investing, and the big Connected Car trends are focused on Telematics services to increase security, productivity and customer satisfaction.

You oversee the BMW's ConnectedDrive roll out strategy. Would you like to share with our readers about some of its key features that have emerged as 'preferred' services amongst users in the recent past?

Today the focus is to give the customer's in the car some of the tools that they are used to have in their home and work. The Connected Drive tools promote for the customer while in traffic jams: productivity, comfort and security. One of the most required features is the mail reading feature, where the customer can synchronize his personal mail account and Connected Drive Account, and have access to his own mailbox within the car. In some countries, you can also dictate a message and the car transcribe what is spelled into the message to be sent. Other great feature for the big cities is the RTTi (Real Time Traffic Information) where you can have up to date information about the traffic situation on the route to your destination, you can save a lot of time using this kind of feature. Beyond that we are planning to have: Concierge Services, Emergency

Services, BMW Online, Remote Services and Teleservices.

How is BMW working to comply with the Brazilian legislation (CONTRAN 245) on Stolen Vehicle Recovery? What was its reaction following the proposed regulatory delay?

BMW has being investing resources and time to comply with the resolution 245 from Contran. We had, in the past, setup our vehicle delivery center and brand new vehicles to meet the requirements of the resolution. Delaying the launch is a little bit unexpected but from the legal side and government perspective this is a really big project, the investments are heavy and the development of a final solution to have everything up and running takes time, so it is understandable from OEM perspective.

The ideal scenario is to have one final solution for the 245 resolution and everything working fine and smooth, no matter how much time it takes.

Do you think vehicle telematics can prove as the next-generation CRM tool?

Yes, for sure, telematics can be the next-generation CRM tool. From business perspective it is really amazing how much you can surprise your customer using Telematics. The data from the Teleservices tickets contains a great amount of data which is called CBS – Condition Based Service, so the dealers can be aware of the needs of the car before the customer itself. It is really surprising to receive a phone call from the dealer having all the parts and the appointment ready to service your car. In some cases, the customer didn't even realize of his car's need, this is Premium Service.

Carlos Eduardo Sampaio Briselli
ConnectedDrive Manager
BMW do Brasil

In your opinion, how can the regions not using connected car services be sensitized about its benefits? Is BMW doing something along that line?

Well, the benefits of connected car can be felt within the statistics all over the world, including Brazilian Market:

• Between the years 2003 and 2010 the population has increased 13% in Brazil, meanwhile the raise of vehicles was of 66%

Source: Confederação Nacional da Indústria (CNI).

• The time spent in mobility for the Brazilian citizens was 20% between 2003 and 2010 – Source: CNI, 2012.

• 96% of the cities (with +100.000 habitants) is covered by 2G networks and 90.9% is covered by 3G.

Source: Teleco.

• The average distance of a regular Brazilian is 22,3km/day and the average time spent in this track is about 64 minutes (between home and work) – *Source: CNI, 2012*

• Until 2017, 60% of the world fleet of passenger cars will be connected.

Source: ABI Research, 2012.

• Today only 11% of the passenger vehicles of the world are connected. Source: ABI Research, 2012.

• There are 94.2 million of Brazilians with Internet access, the Brazilian Market is today the 5th most connected in the world. Between 2007 and 2011, the access to the internet in Brasil raised from 27% to 48% of the population - *Source: Ibope Media, 2012.*

There is a huge potential in Connected Car usage for intelligent services like Run-time Type Information(RTTi), car sharing, car parking, tracking, after-sales services, connected application, etc. BMW is investing in Connected Car heavily and is bringing Connected Car for the most potential markets like Brazil, Russia, Mexico and South Africa. The next steps are to have all BMW Markets having Connected Car offers. ■■■

Connected Car

from a Tier-1 automotive supplier perspective

As the connected car verging on becoming ubiquitous in EU and Americas, the role of Tier-1s becomes utmost important. Unlike the traditional automotive market, the connected car may require a different approach to supplying components, which are now divided between hardware and software. Here, the role of a Tier-1 would be more of a 'coordinator' instead of a 'system provider'. On one hand they will take the specs from OEMs and generate a set of requirements to the lower tiers; they will also serve as consultants to automakers, helping them understand the possibilities and market developments.

Shamik Ghosh *looks at this new set of responsibilities for Tier-1s and discusses the future of connected vehicles with* **Victor Canseco, Managing Director-MyFi** of **Delphi.**

As on date, what does the global connected car market look like? What is Delphi's vision for the same?

The automotive industry has seen explosive growth in the area of connectivity in recent years. Connectivity has taken many forms – from embedded bespoke telematics offerings for consumer and commercial vehicles through much simpler smartphone tethering applications. The growth has been phenomenal – almost triple digit CAGR's depending on what one counts and the time period. The important point is that this has been one of the fastest adoptions of just about any technology in the automotive space. On the mobile side, in the last few years, mobile computing has overtaken desktop sales, and there's no going back. Smartphones and tablets are selling at a record pace. More than a billion smartphones were sold worldwide over the last year. Asia Pacific is leading with the biggest growth market. And analysts have said that new smartphone sales account for more than half of global mobile phone sales right now. Already in the US, 70% of new car buyers have a smart phone, and for buyers under 30 years old, that number is closer to 100%. All of this translates into more consumers wanting more connectivity in their vehicles, both brought in, and embedded. From 2012 onward, all of the infotainment platforms Delphi had in development offered connectivity all of them and that's the type of vehicle infotainment technologies that are coming to market right now. We expect growth to taper somewhat (how could it not?), but to remain in the 50-75% y-o-y range.

While already prevalent in the European and North American

market, there are regions that are yet to see connected car services. How can these regions be sensitized about its benefits?

These other regions will be very important to the future of connected car services. More vehicles will be sold in these regions than in Europe and North America, and, as such, will present an opportunity too large to ignore. One big tailwind helping is the overall consumer demand for in-car connectivity, which is universal and unabated. The challenge is that the systems that have been deployed in the more developed regions are for the most part too costly to meet the price points that the emerging regions require to drive widespread adoption. In the aftermarket telematics space, for example, we will need to design systems that take advantage of assets the consumer already bring into their vehicles with them; e.g. GPS in their smartphones. Moreover, the value propositions will also have to be different and will need to focus on more quantifiable benefits – perhaps stolen car recovery for consumers, or operating efficiencies for commercial vehicles fleets.

Victor Canseco
Managing Director-Software & Services, MyFi
Delphi Electronics & Safety

Delphi is entrusted with creating smarter yet safer solutions for the automotive industry. What are the most significant keys that support seamless access to services in cars while not promoting any drivers' distraction?

Clearly, more connectivity in the vehicle can increase the opportunity for distracted drivers. We already know drivers are the weak link in a vehicle safety system. This is where Active Safety technology comes in.

"One big tailwind helping is the overall consumer demand for in-car connectivity, which is universal and unabated. The challenge is that the systems that have been deployed in the more developed regions are for the most part too costly to meet the price points that the emerging regions require to drive widespread adoption."

We're seeing tremendous growth in the Active Safety area to offer a range of protections. In the last decade we have evolved into advanced driver assistance systems. The next generation of vehicles will benefit from forward-looking fusion systems like Delphi's integrated radar and camera system combined into one module. In the very near future we expect expansion of capabilities such as:

• Vehicle to Vehicle (V2V) and Vehicle to Infrastructure (V2I) communication capabilities. That's where vehicles literally talk to each other and the surrounding infrastructure to reduce collisions and improve traffic flow.
• In an automated driving mode, it will still be critical to assure the driver is in the loop, alert and ready to take over if the technology has a problem.
• We will also see software products that should increase safety by assessing the workload the driver is under (e.g. driving on a straight empty road in perfect weather vs. in a snow storm in a crowded highway surrounded by heavy long haul trucks) and assist as required as well as system that monitor driver state (e.g. head position, eye gaze, etc.)
All of this activity in Connected and Active Safety technologies is evolving in one direction: towards a convergence, that leads ultimately towards automated vehicles.

Do you face any conflicts or issues while collaborating with players outside the automotive ecosystem i.e. content providers, telcos, 3rd party app developers etc?

No. In fact, we have many technology partners. For example, the work we are doing at our Silicon Valley Office in California is helping to further develop these partnerships. We are the automotive integration expert, while many of our tech partners bring the software, cloud connectivity and app expertise to the table. We see a future where more and more collaboration between the automotive industry and the tech industry will be critical in helping automotive manufacturers and suppliers, like Delphi, to meet consumer and market demand for connectivity in the car, but safely. The safety aspect is important because we have years of safety technology development expertise. We know how to integrate these systems into a car's architecture. As mentioned, Safety and Connectivity are now converging into complex computing systems that need to be integrated into a vehicle's architecture. That's where Delphi comes in.

There have been debates on the 'built-in' vs. 'brought-in' issue with an inclination towards following a 'hybrid' approach to deliver the in-car services. What are your comments on the same?

As an automotive supplier of infotainment and driver interface systems to the OEM's, we need to remain agnostic. This means we have the capability to deliver just about any approach our customers (the auto manufacturers) or their customers (the end user) need or want. We are developing technology to support both embedded, if that's the way an OEM wants to go or brought-in, or a hybrid of both. Additionally, we are developing platforms that can support any type of OS. Our goal is to make the user experience as seamless and intuitive as possible, while also providing options and scalability to help future-proof the technology for the OEMs.

Is it true as a fact that the embedded side of OEM business is eating up the aftermarket connected devices in the auto industry? Please share your views.

Not really. Not everyone can afford a new car with all the latest electronics. Those customers who own and hang on to older cars will benefit from aftermarket connected devices. We don't see that changing anytime soon.

In your opinion, what is the most exciting part of your current role at Delphi?

I can go on for days on this, but I will give you three. First, the vision for connected cars has been around for a long, long time. Yet, until only recently the technologies did not exist to make the vision a reality in a broad scale -- in OEM and aftermarket products. At Delphi we are leading the way in creating innovative products that bring these technologies to market in our industry. Second, we can also finally see in a near-enough horizon the convergence I mentioned earlier that will lead to automated vehicles. These vehicles will be the most profound change in our industry in generations. Third, I get to work with an extremely talented team of technologists, engineers, operations and other support staff as well as a very experienced executive leadership team in my division and at corporate headquarters. You put it all together, and this is incredibly exciting. ■■■

UBI faces $nag in India despite attempts by general insurers

The concept of installing GPS devices in cars to track vehicle usage in determining motor insurance premium has not taken off in India despite attempts by general insurers.

Many general insurance companies in India had conducted pilot studies where a new technology called telematics was installed in cars. A GPS device was used to monitor the usage of the vehicle and driving habits of the car user to determine the motor insurance amount. The GPS device gathered data based on the mileage and routes taken. The insurance company then tried to price the cover based on these parameters. However, these start-up projects could not gain the title beyond 'pilot' and is yet to reach to the customers.

Insurers attribute the failure to the low ticket size of motor insurance policies and relatively high cost of safety devices. For example, the annual premium for a private care is typically around INR 5,000-6,000, around the same as the cost of the GPS device.

Here is what motor insurance experts have to say...

"Where the premium ticket size is very high, the customer finds it logical to fit these devices in the vehicle. Motor insurance premium in the Indian market is very low (1.5 % of the value of private cars, 0.8 % value of commercial vehicles) with heavy discounts thrown in, as a result of which customers consider installing these devices an unnecessary hassle."

Vijay Kumar, Chief Technical Officer of Motor Insurance Bajaj Allianz

"Future Generali, which was one of the first companies to run a pilot for the last two years, managed to collect data for a pricing model. While technically the concept can be implemented, the insurance regulator felt the Indian market is currently not ready for such a product."

KG Krishnamoorthy Rao, MD and CEO, Future Generali

"The customer uptake has not been very positive because they do not a see value in the overall proposition as in the financial plan the motor premium is very small. The customer is also reluctant to allow any infringement of his privacy, as the data goes to the company. And without the customer's consent we can't implement it."

Roopam Asthana, MD and CEO, Liberty Videocon

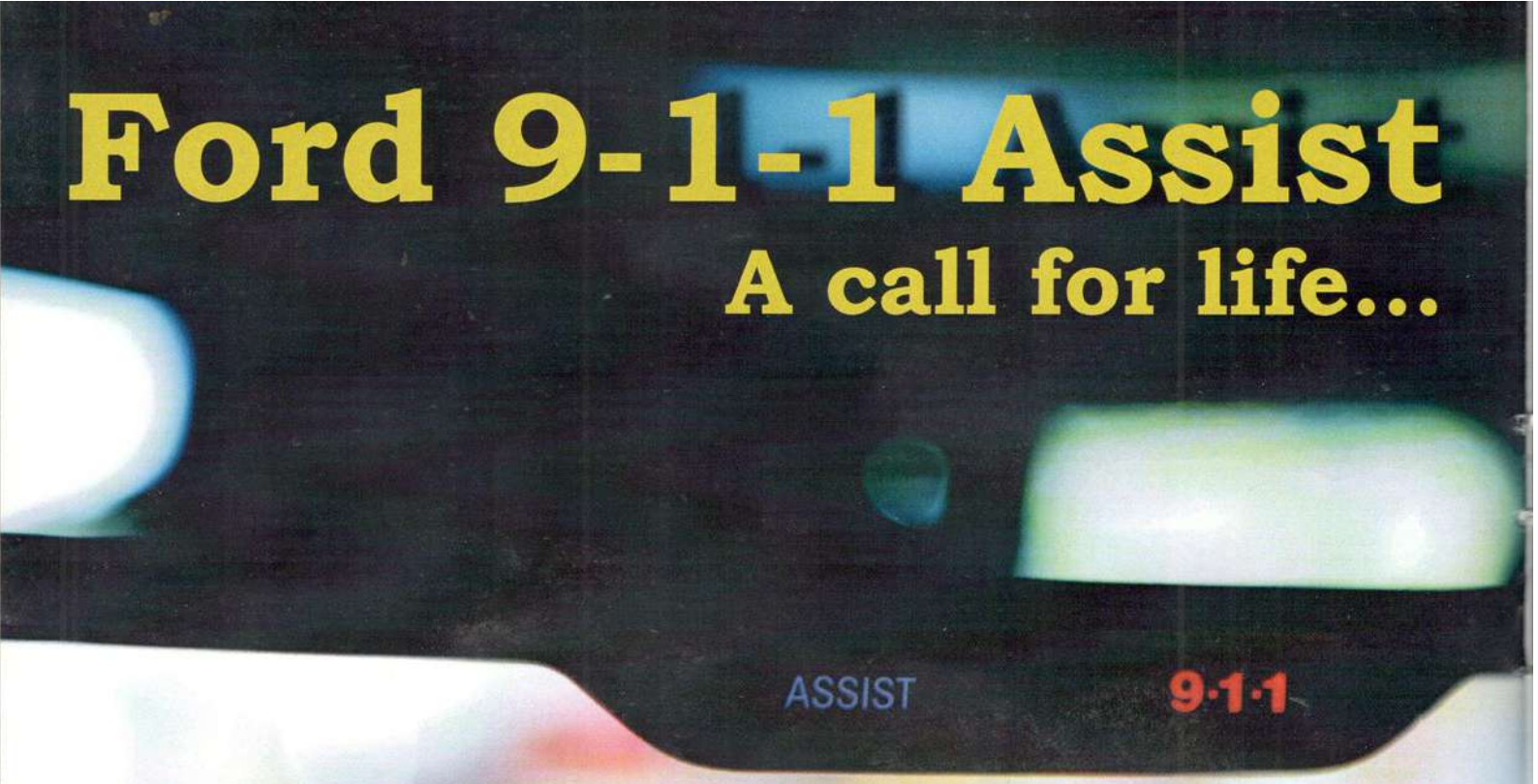
"While the price of the tracking device, at around $100, was a deterrent, insurers can look at using GPS technology in smart phones, which is free."

Madhukar Sinha, National Head – Personal Lines, Tata AIG

Text: Simmi Sinha

Ford 9-1-1 Assist

A call for life...



As the Pan-European eCall faces delays after delays, global car makers are coming out with their own similar 'Emergency Calling' systems. Ford has integrated with its SYNC in-vehicle system; the **911 Assist** *in collaboration with* **National Emergency Number Association (NENA)** *which helps vehicle occupants in placing a call directly to a local 911 emergency operator. In addition, Ford is also carrying out an extensive education and training program to introduce the emergency communications community to 911 Assist, reaching out to Public Safety Answering Point (PSAP) operators throughout the U.S. and Canada.*

Ford's senior executive **David Hatton** *shares his views with* **Telematics Wire** *on 911 Assist. He is the product leader for global connected services and certainly the man behind Ford's global roll-out of 911 Assist.*

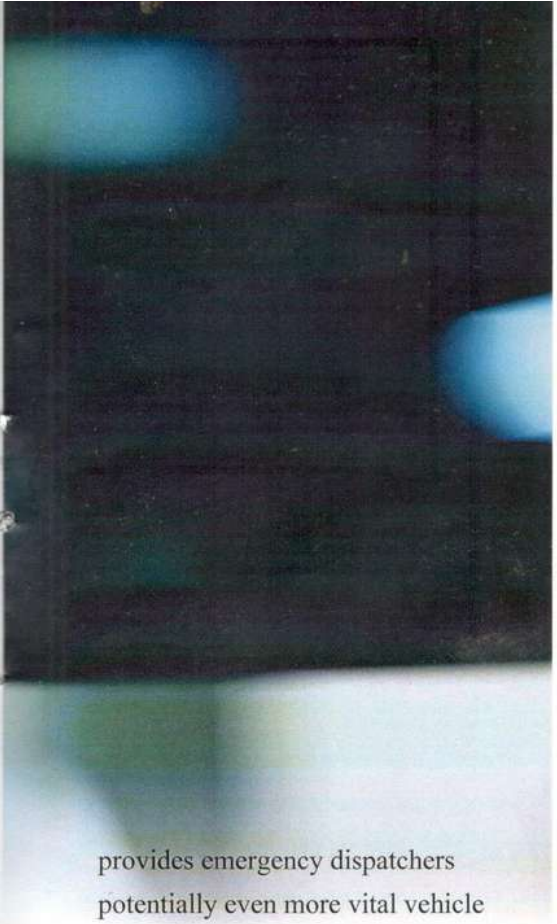
You have been associated with Ford's SYNC for a long time now. How has been your journey so far?

I started working on the development of 911 Assist in late 2007, shortly after Ford revealed SYNC in January of that year. I have been fortunate to be a part of a game-changing technology as it became a global success, and it has been an exciting journey leading the development of 911 Assist and Emergency Assistance, the global feature of 911 Assist. I have traveled all over the world and have had the opportunity to meet so many fantastic people developing and launching a product that has made a difference in the lives of so many Ford customers.

Can you share with our readers some details about Ford's 911 Assist? When we say Enhanced 911 Assist system, what exactly does 'enhanced' mean?

911 Assist makes a direct call to 9-1-1 in the event of an airbag deployment or fuel pump shut off and provides GPS location information via SYNC's voice and open line communication between the operator and the vehicle occupants. It does this using your personal mobile phone and without a subscription or monthly fee. All you have to do is pair your phone one time and set the feature to ON (selection made for privacy reasons) to make it available.

The Enhanced Version of 911 Assist



provides emergency dispatchers potentially even more vital vehicle information about the crash beyond just GPS location. It includes things like the type of accident (front/side/rear/rollover) or the number of seatbelts detected during the crash. These details can help the Operator better judge the response needed and perhaps which lifesaving resources to send to the scene.

The SYNC 911 Assist is reliant on customer's tethered mobile phone and not an embedded connection. Do you find any disadvantages in the present scheme of connectivity?

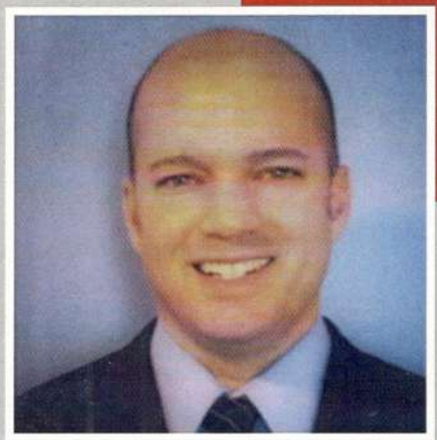
Every system has its limitations and we are upfront about the capabilities of 911 Assist. We think it has many positive features. One of the many failures we address is the costly subscription people fail to activate or renew required by many other OEMS's and their embedded solutions. One hundred percent of Ford customers with SYNC that have enabled 911 Assist can have it free for the life of the vehicle if they use their brought-in device (and who doesn't carry a phone these days). We have spent a lot of effort designing robustness into the system. For example, you can pair up to 12 phones to SYNC, and the system will use the most recently connected phone prior to the accident to place the call. If that is not available, it continues to search for another available phone to make the 9-1-1 call. This capability provides a level of redundancy in communication devices.

How is Ford, with its own Emergency Call services, taking care of the regulatory aspects arising from the on-going Pan-European eCall mandate?

We have been following the eCall legislative process closely for many years. Ford has signed the memorandum of understanding on eCall and will be prepared if legislation comes about.

Ford has worked with the National Emergency Number Association (NENA) to make 911 Assist a reality. What is the level of support Ford is getting from there?

National Emergency Number Association, or NENA, has a vision that 'any device, anywhere, anytime' should be able to reach 9-1-1. SYNC with 911 Assist seemed like a perfect fit for this vision when we first approached them in 2007. Since then we have had feedback on many design aspects of 911 Assist, especially those aspects which directly touch the operators. For example, we have tailored some of our voice message content based on their direct feedback. We partnered with NENA on education materials for the public safety answering points and we are also participate in the Next Generation 9-1-1 Program which is working on standards for the evolution of the 9-1-1 system for the good of us all.



David Hatton
Global Product Leader-Connected Services
Ford Motor Company

By what time can we expect 911 Assist becoming a mainstream feature in all SYNC-enabled Ford vehicles?

Since its introduction in 2008, 911 Assist has become a mainstream and important feature for our customers. It is already in over 7 million vehicles in the US and Canada, and by adding Emergency Assistance, we have over 9 million vehicles in total worldwide with this technology.

How does Ford gain insight on the feedbacks of various drivers using SYNC services? Does it take help from its partner telecom operators for this?

Ford conducts its own surveys, listens to customers, and monitors dealer and our supplier partners' feedback closely. The entire Connected Services team is also very passionate about good technology and follows consumer trends very closely.

The Internet Radio

working through the challenges and understanding the opportunities

The connected car market is really starting to gather momentum. If you believe the statistics from the GSMA, up to 140 million vehicles will be connected to the Internet within 4 years, rising to 600 million by 2025.

The whole concept of the "internet of Things" is finding its way into our cars, with automakers feverously working on making it easy to access content and service in a product which has for decades been protected by a conservative and risk-averse culture. With lead times for production vehicles often reaching 7 years (or more), it's fair to say automakers take baby steps to ensure they select the right services which will create the lowest impact and highest take-up.

A far cry from the turnaround of a new consumer electronics product, which can be spun in a few short months!

That's part of the problem facing automakers; people expect their cars' infotainment systems to perform the same way as their mobile devices. But more on that later.

Radio has been in the car for 100 years, is a passive medium, and continues to represent a significant in-vehicle engagement. Over the past few years Internet radio has steadily grown in both audience numbers as well as listening duration.

So what are the challenges with Internet radio in the car? Well, the first obvious one is quality of service. Those of us who use any form of streaming media know about the dreaded "buffering" issue, where either network congestion or poor service leadto agonising delays in consuming content. These issues become magnified when you're consuming streaming media in a moving vehicle. Network "blackspots" and lack of 3G/4G coverage are the two biggest contributors to unsatisfactory quality of service in the car.

This is a particular area of interest for us. My team have been working for several years on cloud-based live stream transcoding services to solve the problem. By reducing the size and type of packets sent to the vehicle, the vehicle needs a lower bandwidth to provide continuous streaming. It also reduces the connected vehicle owner's monthly data usage.

The initial service was first tested several years ago in India, known for its fragmented mobile network services (especially data). Back then, our team managed to get our miRoamer Android app to work across 2G networks at speeds as low as 16kbps. Since then, we've made significant progress in this field and are probably one of the leaders in this sort of technology.

There remain a number of challenges before the solution can be commercialised, such as content rights issues with the respective content owners and radio station operators, but

our engineers proved that not only can it be done, but it also works really well and solves a major problem.

Another challenge facing Internet radio in the car is driver distraction, which is one of the most important categories for automakers. They take safety very seriously, and spend months (if not years) ensuring that whatever appears in the dashboard meets their very strict requirements. With aggregated radio services like miRoamer, there are literally tens of thousands of Internet radio stations to select. Traversing deep Country/State/City menus is a huge no-no whilst you're driving, and so restrictions are often applied when the vehicle is in motion.

Hardware procurement timelines are also an issue for automakers. Typically, procurement of hardware can take many months (if not years), let alone the extensive driver testing and iteration cycles needed to certify the hardware as "production-ready". So, the chips and memory sitting behind your shinny new car's dashboard was probably specified and procured many years ago.

As a comparison, think of what your smartphone can do today compared to a few years ago. Technology changes quickly, but automakers simply cannot move that fast.

With outdated hardware and operating systems, many late-model vehicles simply cannot cope with the demands of streaming media (including Internet radio). Small buffer sizes, inadequate processing power, unsupported codecs; these all create problems with quality of service and useability.

Recently both Google and Apple announced their respective "Bring Your Own Device" (BYOD) solutions to the connected car. They are effectively defining the framework with which all apps need to adhere in order to be certified as vehicle-compliant. Some categories are no-brainers for the next generation connected cars: Infotainment, navigation, safety & emergency services, and insurance & vehicle monitoring. Social Media services are also gaining a presence, albeit with very limited functionality. Games are a no-no; I can't see how they would pass driver distraction!

The Connected Car Consortium (or CCC) have their own solution, called "MirrorLink", which is probably the most advanced and established of the ubiquitous BYOD ecosystems. The solution has been in the market for several years and CCC have now launched a new "Global Drive" certification process which allows approved apps to find their way into next generation vehicles and aftermarket products. CCC also have a solid customer list including automakers, aftermarket manufacturers, and mobile handset vendors.

It's worth noting that our miRoamer Radio and Music service Android app was the first application in the world to achieve "Global Drive" certification. So, we know what it takes to get the stamp of approval.

The debate will continue to rage whether BYOD or "embedded SIM" will be the future of the connected car. Regardless of which technology prevails, early-stage pioneers need to work together to solve a number of complex connected car challenges including: Who owns the data collected from the connected car and how can it be used? What privacy policies will be needed and how will these be managed across multiple jurisdictions? How secure is the connected car ecosystem from hackers? Who is responsible for security between connected car apps and the vehicles?Who defines the driver distraction framework? Who is legally liable for the connected car ecosystem, in terms of both individual components and as a whole?

It's clear the connected car space is still in its infancy, and we're all very excited to be involved in the early years to help shape the sector.

Regardless of where we end up, there's no doubt in my mind that Internet Radio will be a mandatory service offering in every single connected car ecosystem. ■■■

George Parthimos
CEO
miRoamer

Open-Source drives the Connected Car

Rudolf Streif
Principal Consultant
ibeeto, Inc.

"As automakers and their suppliers are adopting open-source, it is mandatory for them to understand and embrace the dynamics of open-source communities. Only so, the full potential of open-source can be realized."

Fast forward by 15 years, today the majority of web sites run on open-source software. The global communication infrastructure delivering billions of web pages, e-mails and other data across the globe is operated by Linux. Fortune 500 companies rely on the open operating system for their entire enterprise IT. Financial markets such as the New York Stock, Tokyo and London stock exchanges are executing hundreds of trades every second, using free and open-source software (FOSS). Android smartphones and tablets put Linux and open-source literally in the hands of millions.

What triggered this rapid adoption?

Open-source is more than "free technology" (and "free" in the context of open-source is commonly misunderstood). It is about how this technology is developed. When IBM started investing significant sums in Linux, the company did not invest in technology. At the time Linux was a fledgling operating system mostly used on PC hardware and IBM already had a mature UNIX platform for enterprise applications. However, the company saw great potential in the way how Linux was developed by a dynamic community of developers. Efficient communication structures and minimal overhead with a few procedures produced quality software at a rapid pace of innovation.

Open-source platforms within the automotive industry

GENIVI, the industry alliance driving the broad adoption of open-source for in-vehicle infotainment (IVI), reports that IVI systems in current cars contain upwards of 20 Million Lines of Code (MLOC) with a per-line cost of $3 to $10. That averages to about $130M to develop a new generation IVI system. Cost is certainly a factor but not the only one. Today's consumers have adopted smartphones as part of their connected live styles. They expect similar and more functionality and features from the IVI system of their cars. They also expect to be able to customize, update and upgrade the system as they are used to from their smartphones. On the other side regulatory bodies impose requirements and restrictions for safe use of the systems while operating the vehicle. Additionally, the typical life span of a car is over 10 years, more than 5 times as long as the mobile phone replacement cycle of 21.7 months (2010) in the United States. It comes to no surprise that OEMs and their suppliers are seeing opportunities in following the example of the communication and consumer electronics industries and a solution to their dilemma in adopting open-source strategies.

GENIVI operating system baselines that are compliant to the specification are offered by operating system vendors. For components specifically needed by IVI systems, GENIVI hosts a series of open-source projects with the goal to enable collaboration and contribution. One of them is the **Remote Vehicle Interaction (RVI) Project.**

Remote Vehicle Interaction (RVI) Project

Core platforms and operating systems are only the foundation on which IVI systems and other devices such as telematics systems, advanced driver assistance systems (ADAS) and more are built on. Industry collaboration must go beyond creating operating systems and extend to other areas where a common platform can provide the necessary economies of scale and interoperability. One of these areas is telematics and the connected car. In the grand scheme of the Internet of Things (IoT) the connected car with its many sensors is the ultimate data device. It is a ubiquitous source of information ready to be tapped. The opportunities seem endless. A connected car platform that allows OEMs to easily enable value-added services themselves and through partners will benefit the ecosystem of their brands:

• 80% of the connected car functionality is shared across platforms – Core in-vehicle telematics and cloud backend functionality are common in architecture and similar in implementation. The remaining 20% are the services that define the user experience.

• A shared, open-source platform will benefit OEMs – A joint architecture and reference implementation allows OEMs to minimize cost, eliminated vendor dependencies and mitigates security risks allowing them to focus on applications and services that offer market differentiation.

• A shared, open-source platform will enable service providers – Market adoption is the key to success. To attract service providers the size of the ecosystem is of significance. A common architecture allows service providers to easily port their offerings to multiple OEMs, this giving them a diversified revenue stream from multiple vendors.

• A shared, open-source platform will reduce time to market – Development cycles in the automotive industry are more than twice as long as the lifespan of the average startup company. To create an innovative and fast moving market place that allows young companies to develop in-vehicle apps and their corresponding backend services on an OEM-approved platform within weeks or months and showcase the product to the OEMs.

Remote Vehicle Interaction (RVI) is an open-source project initiated by Jaguar Land Rover and hosted by AGL with the objective to develop vendor-neutral telematics framework that can easily be adopted and extended:

• Pluggable Architecture – The framework follows strict "design-to-the-interface" rules. The APIs are at the center. The reference implementation is an example albeit one that strives for production quality.

• Device, service and connection agnostic – Devices shall be able to access services on other visible devices regardless of device operating system and whether a connection is made directly or via Internet.

• Peer-to-peer based – Devices can access services via local networks without an Internet connection.

• Dynamic Provisioning – Nodes and services can be added to or removed from the system at runtime without relying on a centralized provisioning system.

• Granular Authentication & Authorization – All authentication and authorization is done on the service level against certified credentials.

• Service Discovery – Applications and services can discover and invoke other services.

• Low-overhead Invocation – Services can be remotely invoked over sparsely connected networks.

On a finishing note.

Open-source is more than technology. It is technology that is developed by a community interested in a particular cause. An open-source community consists of developers. These may be individuals such as consultants or private parties or they belong to commercial or academic organizations. As automakers and their suppliers are adopting open-source, it is mandatory for them to understand and embrace the dynamics of open-source communities. Only so, the full potential of open-source can be realized. Remote Vehicle Interaction (RVI) is an open-source project initiated by an automaker with the goal to not only build a framework for the connected car but to build a community that develops, enhances, maintains and deploys it in actual products creating an ecosystem that benefits the entire industry.

Driver Behaviour Telemetry

Where does it fit into a fleet risk management programme?

The use of driver behaviour telemetry systems in fleets is in its infancy, but those organisations that have embraced the technology, and are using the data proactively, have seen significant improvements in their collision and claim rates, so why are more fleets not adopting the technology?

The first thing to understand is that there is a big difference between a private motorist and someone driving a company provided vehicle – whether this is a truck, a van, a car or even a motorcycle. A private motorist knows that when they purchase insurance based on some form of telemetry system – whether this is pay how or where or when you drive, or a combination of these factors – they have a financial incentive to modify their driving behaviours. A fleet driver does not have these same incentives, and it is their manager who has a much bigger influence over how they drive. As such, the key to using driver behaviour telemetry data to reduce risks, in a fleet, is for managers to be regularly engaging with their drivers to discuss the trends in the exception data and understanding the underlying root causes of these exceptions.

Understanding the root causes is critical if the appropriate interventions are to be put in place. As an example, harsh braking events are one of the most common driver behaviour exception reports generated, but a manager does not know why the driver has to brake harshly – they could be driving too close, too fast, be distracted, be fatigued or be impaired. In addition to this, the underlying reason why the driver is exhibiting these traits may be related to the organisation's own operational procedures and/or management pressures. As an example, a driver may be driving too fast and too close as they have to meet an unrealistic delivery schedule, or they are under pressure to hit their sales targets at the end of a quarter.

Once a manager understands the underlying root cause(s) they can then put the appropriate interventions in place. These may well be changes to the operational practices and procedures, rather than an intervention, such as training, focused on the driver.

So what improvements are possible? One of Zurich's UK customers have used driver behaviour telemetry as part of their comprehensive work-related road risk management programme, and the combination of initiatives has seen, over the last 5 years, a 74% reduction in incidents with a corresponding 63% reduction in own damage and third party costs. This is in addition to the operational benefits that the telemetry system has delivered.

Given the proven benefits, in terms of collision and claim reductions achievable, why are more organisations not embracing driver behaviour telemetry systems for their fleets?

One of the common barriers, once a company understands that it is not just a case of fitting a 'black box', is that they understand that they have to do something with the data being generated,

and this can fall into the "too difficult to manage" category. Risk and Fleet Managers see how the system could be used to reduce collisions, but they don't think that their organisation is able to set up a process where the line managers regularly engage with their direct reports about their driving. Even where the telematics vendor supplies easy to use exception reports, the feeling is often that the line managers are too busy / do not have the necessary skills / don't have time to be trained to be able to talk to their drivers

The other thing to consider is what existing work-related road risk management policies and procedures a company has in place before deploying driver behaviour telemetry. If, on day one of the system being switched on, lots of speeding exception reports are generated, what is the company's policy on drivers for that speed? If there is none, this becomes very difficult to manage!

Even where organisations have the desire to implement a driver behaviour telemetry system, implementation can take years to achieve. This is because once other departmental managers discover that a telemetry system is being considered, they develop their own requirements from the system. As an example, there might be a 'mobile resource management' need from the operations manager. The more people who have a vested interest in the exact specification of the technology, the longer it takes to come to an agreement and conclude any trials.

Zurich's view on driver behaviour telemetry, from a fleet perspective, is that it is another useful tool in the risk management toolbox. Our customers need to have a robust work-related road risk management policy in place before driver behaviour telemetry is considered. The company must have created an environment in which drivers can drive safely – by making sure that the fleet / driving safety related policies and procedures are aligned with the operating practices and procedures – so that any risk management initiative that is deployed has a chance to be effective. If there is ever a conflict between what the organisation is asking a driver to do from an operational perspective against a safety perspective then it is likely that the operational needs will "win".

As line managers play such a critical role in making any risk management initiative effective, it is important that this group is trained to understand their roles and responsibilities related to the safety of their employees whilst driving – in many countries these responsibilities will be a legal obligation – and how to practically engage with their employees about their driving. This will range from how to conduct a post collision debrief, to understand the underlying management and/or driver root causes, to how to discuss exception reports generated by driver behaviour telemetry systems, and get down to the root causes of these behaviours.

One other area for customers to explore is how driver safety is incentivised in their organisation. For any company with a performance appraisal system in place, driver safety can appear in the driver and manager's 'scorecards', which can provide a small financial incentive for both drivers and managers to focus on this area.To incentivise managers further it is important to ensure that the Total Cost of Risk – the insured and uninsured elements of each collision – are understood throughout the business, and these costs are allocated by business unit and department. This will ensure that there is a financial incentive for the manager to manage the driving activity as fleet safety will directly impact on his or her Profit & Loss account.

There is a view that driver behaviour telemetry is the 'silver bullet' that will lead to reduced collisions and claims. It is clear that this is not the case, but when it is used as part of a wider work-related road risk management strategy, and the line managers are using the data proactively and talking to their drivers, then large, sustainable improvements are achievable. ■■■

Andy Price
Practice Leader – Europe, Motor Fleet
Zurich Risk Engineering

The predictive models for UBI data

All Roads Do NOT Lead to Rome...

One of the greatest difficulties in developing UBI products that are both profitable and exhibit high levels of pricing sophistication is the collection and meaningful interpretation of the right data. While the insurance industry has always been data-centric, the type of data insurers focus on to achieve higher levels of pricing sophistication has shifted from simple, independent historical and demographic data elements to dynamic, contingent driving performance data from sensors and other new sources.

These data elements include speeding, hard braking, time of day, cornering, and more recently, contextual data such as weather, road type, traffic, etc. Unlike their predecessors, these new data types are time series data and therefore require the use of time series analysis or a process to derive a more static parameter that represents the time series (much like a credit score) to be useful. More importantly, the raw data collected is often full of noise and false positives so it needs a substantial amount of cleaning and translation before it can be used.

The challenge that insurance companies face when they start out is that they do not know what specific data or portion of data is truly predictive in nature, and they must collect much more data for a period of years before they can get to the point of identifying exactly what is predictive (the more factors you use in your models, the more data you need to collect for longer periods of time). There are no standard definitions of exactly what constitutes a cornering or acceleration event. Insurance companies that have figured this out are not going to share as this is part of the fundamental secret sauce of usage based insurance and what creates a state of information asymmetry in the industry. Also, working with this new type of data is a lot like learning a new language; it's not the individual words that matter but the meaning or ideas that they convey when put together.

Additionally, with such large volumes of data being collected, it is now more likely that insurers will find more spurious correlations within that data that can lead them astray, especially when using existing technology methods to mine the data and build predictive models. The point is, although there are all kinds of advanced technologies that are now coming to market which propose to solve all of the big data problems, at the end of the day for UBI it comes down to putting in the time to research and develop the interpretation of the data followed by correlations with the right data based on trial and error. Just like learning that new language, it takes time to be able to think and interpret in new ways and to learn all of the grammatical nuances. Based on history and actual experience, this takes about 8 to 10 years to get it right. Knowing that there is a long and expensive knowledge curve that comes with mastering UBI, is helpful in terms of planning, and if everyone in the industry was just starting out, we could all progress at a moderate pace toward our end goal of creating a profitable and effective UBI product. Unfortunately, the fact is that a few insurers have already put in the time and effort and have developed first versions of UBI scoring models that are at least a little better than credit scoring models, and they are now aggressively moving toward their second versions. So the question for risk management institutions like insurers is, "Are you going to gamble with pursuing your own efforts to create a competitive UBI product while the first movers will be that much further ahead by the time you finish your first product?" Some probably assume that they will be able to catch up just like they did when credit scoring was introduced. What they fail to understand is that this situation is very different from the credit scoring situation. This time the data is not in a standard, mature and widely available form like credit was so it will take much longer to match the capability of an insurer that has UBI scoring already. In the end, many insurers will be forced to outsource their UBI product or purchase packaged solutions that have predictive models incorporated within them.

In my 30 years in the insurance and financial services industry, I can't remember a time when the information asymmetry was so great and the divide

between the have's and the have not's was so large, so the odds are not in favor of those who are not in the know.

The "Right" Data

The amount of data is only one issue – using it effectively is another. The fact is most insurance carriers don't know exactly what data builds the best UBI predictive models, and focusing on the wrong data can create misrepresentations of driving behavior and lead to false positives. Unfortunately, you won't know that you have the wrong data until some years later when you find out that the predictive model you built for your UBI product is not providing the lift that you expected it to provide.

Let's look at hard braking, for example. Many insurers are now capturing hard braking events to assess a person's driving performance. But what exactly constitutes a hard brake? There is no universal definition of what a hard brake is, and specific incidents of hard braking are not equally predictive in nature. A number of vendors provide an arbitrary definition of hard braking in their products, but have they done the statistical analysis to know that the definition is predictive? A vehicle that hits a pot hole or speed bump, for example, can be interpreted as a hard braking event in many of the solutions in the market today. This results in a false positive that will reduce the effectiveness of the UBI predictive models that you develop from that data. The only way to get past this is to do the statistical analysis to find and validate the predictive characteristics of a hard braking event and then collecting only those events that meet those criteria. Arbitrarily defining hard braking events results in sub-optimal predictive models which produce little to no advantage over present day credit scoring models.

Much like the zodiac signs, UBI predictive model development replete with the types of problems exemplified by the hard braking example. The trouble is that an insurer will collect the wrong data, perform data mining and statistical analysis, will come up with some initial correlations, and will proclaim victory. These lesser correlations occur because of common correlations between the various data elements – all braking events are correlated to UBI predictive braking events, and UBI braking is correlated to losses. You will never discover this shortcoming unless you perform the full analysis of braking events to statistically define the characteristics of a UBI predictive hard braking event or you wait until your competitor has eaten your lunch.

The point is that collecting the right data is critical to developing an effective and profitable UBI product. In fact it is the most critical step after defining a UBI product strategy. Many insurers start with the selection of a telematics device and use the data that it produces to form UBI predictive models. In this situation, insurance companies let the device drive their UBI product strategy. Although this puts those insurers in a common state with other insurers that have chosen the same course, it will not serve as a defense against those insurers that have validated the right data first and have chosen a device which specifically provides that data. The worst part about it is that once an insurer discovers that its predictive models cannot compete with the likes of those that have the right data, they will have to start all over again because YOU CAN'T GO BACK AND COLLECT THE RIGHT DATA FROM THE PAST. The stakes are high and there is much to lose by not pursuing the creation of UBI predictive models that have at least the same predictive power as those of UBI first movers.

When it comes to UBI, all roads do not lead to Rome. When you don't know what you don't know, you can save yourself a lot of time, money, and frustration by enlisting the assistance of an experienced guide to help you get there.

Jeff Stempora
CEO
Advanced Insurance Products & Services

Future-proof your cars with mobile processors

Danny Shapiro
Sr. Director –Automotive
NVIDIA

In the automotive industry, what was recently considered science fiction will become reality in the next few years. Technology is no longer an obstacle to bringing automotive dreams, like the self-driving car, to life. And while it is clear that there is still an enormous amount of work to do as global authorities debate the ethics, legalities, and a myriad of other implications of self-driving cars, they are now on our streets undergoing testing and development. For consumers, this automotive technology revolution will make transportation safer, more convenient, and less stressful than ever before.

Building Blocks for the Smart Car

At the heart of the drive toward the future car are the same technologies and components that made the phone smart: mobile communications, sensors, and processing technologies. Consumers now have extremely powerful computers — with location sensors, cameras, touch screens, and wireless connectivity — in the palms of their hands, and they want the same experience inside of their cars. The challenge for automakers is not just the integration of these technologies, which has already begun, but how to do it correctly so that the car is able to keep up with the fast pace of consumer technology innovation.

The first area of the car that has experienced a technological makeover is the dashboard. In "first generation" infotainment systems that are now on the road, automakers focused on building a digital screen interface with connectivity and control capabilities for smartphones. While automakers have had mixed results in terms of the consumer success of these systems, it is clear that the digital experience is valued. The lesson learned is that the rapid pace of innovation in consumer technologies, from smartphones to tablets, raises the expectations of car buyers. While automakers have accelerated the pace of their product improvement, these cycles still average two to three years, making it very difficult to maintain up-to-date capabilities similar to what consumers experience in their homes or offices.

The answer for automakers lies in following what spurred the revolution in mobile device growth and innovation: building a highly-capable hardware platform with a flexible operating system that is able to adapt to future needs. This will require the adoption of advanced processing capabilities to deliver experiences such as fast touch screen response, rich photorealistic graphics, customizable and personalized information, plus room to grow as other capabilities come online during the ownership period.

In addition to the advanced processing in the vehicle for infotainment capabilities, mobile platform developers, like Apple with iOS and Google with Android, are looking to seamlessly integrate their smartphone experience into the car. Communication to the Cloud and to mobile devices will play a

valuable role in shaping the future car as consumers expect to be connected and online everywhere they go. In an effort to bring the best of the automotive and technology industries together for a solution, Audi, GM, Google, Honda, Hyundai, and NVIDIA have formed the Open Automotive Alliance (OAA), a global alliance of technology and auto industry leaders which will start bringing the Android platform to cars starting in late 2014. This alliance will foster the use of Android in automotive applications, building off the success of the operating system in smartphones and tablets, but creating an appropriate interface for the car. The development of intuitive and simple interfaces for interacting with a connected smartphone has been a challenge for automakers, so this collaborative effort is anticipated to be a breakthrough. This organization is expected to grow significantly in the near future.

But whether it is integrating Android into the car or Apple's CarPlay interface for the iPhone, the fact that more devices are connecting to the vehicle introduces the inherent risk of security breaches. Computer viruses and hacking remain a problem today for desktop computers, so what will it take to make the car immune? To combat any malicious software potentially affecting the safety or control systems of the car, many automakers are taking a sandboxed approach, keeping the infotainment systems separate from other parts of the vehicle. Furthermore, implementing hypervisor techniques enables multiple operating systems to run simultaneously on a single system, separating them in case one has an issue.

Another area that will hugely benefit automakers in their effort to keep pace with consumer electronics is a programmable, or updatable, infotainment system. Whether consumers notice it or not, their smartphones are getting better during the ownership period by receiving over-the-air (OTA) updates. As cars become increasingly connected, OTA software updates become possible, allowing automakers to improve existing in-vehicle features and offer new ones over the course of the vehicle's life. This, of course, is expected in the consumer electronics world, but until a few years ago was totally unheard of in the automotive sector. Pioneered by Tesla Motors, OTA software updates have enabled the company to add new features while Model S cars sit in their owners' garages at night, as well as improve some vehicle parameters that may have required a costly recall if similar action was required by a traditional automaker.

Going beyond the dashboard, the area requiring the most advancement in technology, especially to achieve the vision for the self-driving car, is sensor data processing and decision-making. As more sensors — cameras, radar, laser scanners, and ultrasonic sensors — are added to the car, an incredible amount of data is being amassed every second. To process this information, massively parallel, high-performance processors are required, but they must operate in an extremely energy efficient manner. The architecture that is used for the world's fastest computers, or supercomputers, which can handle thousands of computation points every second, is needed for these automotive applications while being scaled to an appropriate size and energy efficient package.

Without these three building blocks to the future in play — intuitive user interface, seamless updates, and high powered energy efficient performance — automakers might be stuck with trunks full of expensive desktop computers in their cars, and will never make it out of the world of research and into the mainstream.

Mobile Processors for Autonomous Driving

The seeds of full-scale autonomous driving can already be found in car models today. Various driver assistance features like pedestrian detection, lane departure warning, active parallel parking assistance, and speed limit sign recognition are incremental steps on the way to a full autonomous driving experience.

A key technology at the heart of autonomous driving is computer vision. That doesn't just mean having a lot of cameras on the car, it means having high performance and

Source : NVIDIA

energy efficient processors that can analyze the video coming from these cameras. Sophisticated algorithms need to process the incoming information, reported to be as much as 1 gigabyte per second, in real time. To address the increased computation needs of mobile devices (especially cars), NVIDIA recently introduced the Tegra K1 mobile processor. It packs 10 times the computing power of its predecessors and yet still operates in the same power envelope. That's essential to process all the sensor data that come into play in autonomous driving.

With a quad-core CPU and a 192-core graphics processing unit (GPU), Tegra K1 will enable camera-based, advanced driver assistance systems (ADAS) — such as pedestrian detection, blind-spot monitoring, lane-departure warning, and street sign recognition — and can also monitor driver alertness via a dashboard-mounted camera. Utilizing the same parallel processing architecture as used in high-performance computing solutions, the Tegra K1 is the first mobile supercomputing platform on the market.

ADAS solutions currently on the market are based mainly on proprietary processors. NVIDIA Tegra K1 moves beyond this limitation by providing an open, scalable platform. The Tegra K1 processor was designed to be fully programmable; therefore, complex computer systems built upon it can be enhanced via over-the-air software updates. In addition, this sophisticated system on a chip (SoC) can run other apps such as speech recognition, natural language processing, and object recognition algorithms interpreting in real time what is a sign, what is a car, pedestrian, dog, or ball bouncing into the road.

Automakers who are already engaged with NVIDIA and using the visual computing module (VCM) — a highly scalable computer system — for infotainment solutions can easily upgrade their in-vehicle systems with new processors due to the modular approach.

Layered on top of the Tegra processor is a suite of software libraries and algorithms that accelerate the process of creating computer vision applications for different driver assistance systems. Since these systems are software-based, automakers have the flexibility to update these algorithms over time, improving the overall performance and safety of the vehicle. Conversely, fixed function silicon and black boxes delivering solutions for each specific function is an expensive and ultimately dead-end route.

As the graphics on in-vehicle screens improve, personalization of this cluster is also possible. Advanced rendering capabilities on a mobile supercomputer enable in-vehicle displays to rival the visuals created by Hollywood visual effects houses and professional designers. The result is photorealistic content that looks just like real materials, such as leather, wood, carbon fiber, or brushed metal.

At the 2014 Consumer Electronics Show (CES), Audi announced a virtual digital cockpit, powered by an NVIDIA VCM. Inside the next-generation Audi TT, the virtual cockpit display can be adapted to a driver's needs, displaying the most relevant information at any time, including speedometer, tachometer, maps, menus, and music selections, helping reduce complexity and provide more customization options to its drivers. NVIDIA has a long-standing relationship with many automakers, including Audi, Volkswagen, BMW, and Tesla. Audi was the first to deliver Google Earth and Google Street View navigation using NVIDIA technology. And during Audi's CES keynote, after one of their vehicles drove itself onto the stage, the company announced that Tegra K1 will power its piloted-driving and self-parking features currently in development.

Moving Forward with Future-Proof Cars

Given the tremendous increase in computing technology, both from hardware and software perspectives, new challenges have emerged for the automaker. Traditional supply chain models do not work when considering the need for computing platforms and complex software stacks comprised of multiple operating systems, photorealistic rendering, computer vision toolkits, and hypervisors. Only when an automaker has broken the traditional supplier model and instead created a technology partnership can the complex computing systems be developed in a cost-effective and timely manner. Integrating a supercomputer in the car is necessary to achieve the full vision for the future car, especially autonomous driving?

A modular approach coupled with programmability enables these systems to rapidly evolve.

It is no secret that car makers put safety at the heart of their strategy. Moving forward, they need a technology strategy that is equally rigorous. And before long, with the right selection of supercomputing technology, we will have self-driving cars on our streets. ■■■

ETSI publishes ITS standards for roadside communications and V2X

ETSI has published two European Standards for Intelligent Transport Systems (ITS): the specification of Cooperative Awareness Basic Service – EN 302 637-2, and the specification of Decentralized Environmental Notification Basic Service - EN 302 637-3. The former enables the exchange of information between road users and roadside infrastructure, providing each other's position, dynamics and attributes. The latter defines the basic service that supports road hazard warning which contains information related to a road hazard or an abnormal traffic condition, including its type and position.

Typically for an ITS application, a message is disseminated to ITS stations that are located within a geographic area through direct vehicle-to-vehicle or vehicle-to-infrastructure communications, in order to alert road users of a detected and potentially dangerous event. At the receiving side, the message is processed and the application may present the information to the driver if it is assessed to be relevant. The driver is then able to take appropriate action to react to the situation accordingly.

Honda launches 'Honda Developer Studio' in Silicon Valley to for App Developers

Source: Honda

Honda has unveiled Honda Developer Studio, an online portal and open innovation workspace in Silicon Valley. The Developer Studio is a product of Honda Silicon Valley Lab (HSVL) to help accelerate Honda's global information technology research and development efforts, and forge new strategic partnerships with technology companies. Starting in December, the program will enable 3rd party app developers to test their Android Auto apps in a prototype vehicle environment and collaborate directly with Honda R&D teams. The company will also offer exclusive access to test vehicles so that developers could experience real-time results and vehicle feedback as they progress.

App developers interested in working with Honda should visit the Honda Developer Studio portal online (developer.hondasvl.com), where they will be able to begin a dialogue with Honda engineers and schedule time to meet the team at a newly built workspace in Mountain View.

'UK Autodrive' to lead testing of driverless cars in FOUR cities with £10M funding

Source: Innovate UK

Innovate UK- the UK government's technology strategy board has formed 'UK Autodrive', a consortium of local authorities, the UK's leading technology and automotive businesses and academic institutions to spearhead testing of autonomous vehicles in UK. With £10 million of funding from Innovate UK, soon driverless cars will be seen on the roads of Milton Keynes and Coventry. For this purpose, a semi-autonomous Range Rover research vehicle will be used.

The partners in the 'UK Autodrive' consortium are Milton Keynes Council, Coventry Council, Jaguar Land Rover, Ford Motor Company, Tata Motors European Technical Centre, RDM Group, MIRA, Thales (UK), Oxbotica, AXA, the Transport Systems Catapult, the University of Oxford, University of Cambridge, and the Open University.

The following 4 cities will run formal trials that will last between 18 and 36 months from January 2015.

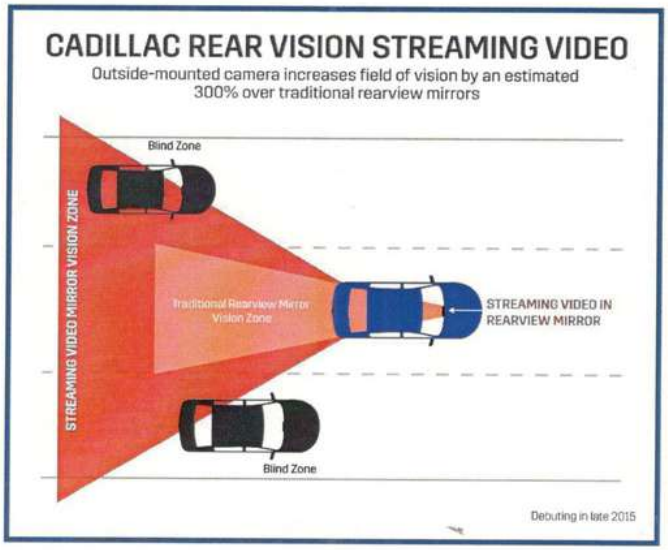
Volvo to present wearable safety technology connecting drivers and cyclists

Source: Volvo

Volvo Cars, protective gravity sports gear manufacturer POC and Ericsson will present an innovative safety technology connecting drivers and cyclists for the first time ever at International CES in Las Vegas (6-9 January 2015). The technology consists of a connected car and helmet prototype that will establish 2-way communication offering proximity alerts to Volvo car drivers and cyclists and thereby avoid accidents.

Using a popular smartphone app, the cyclist's position can be shared through the Volvo Cars cloud to the car, and vice versa. If an imminent collision is calculated, both road users will be warned – and enabled to take the necessary action to avoid a potential accident. The Volvo driver will be alerted to a cyclist nearby through a head-up display alert – even if he happens to be in a blind spot, e.g. behind a bend or another vehicle or hardly visible during night time. The cyclist will be warned via a helmet-mounted alert light.

Cadillac to introduce high-res video streaming of rearview mirror to enhance driver vision



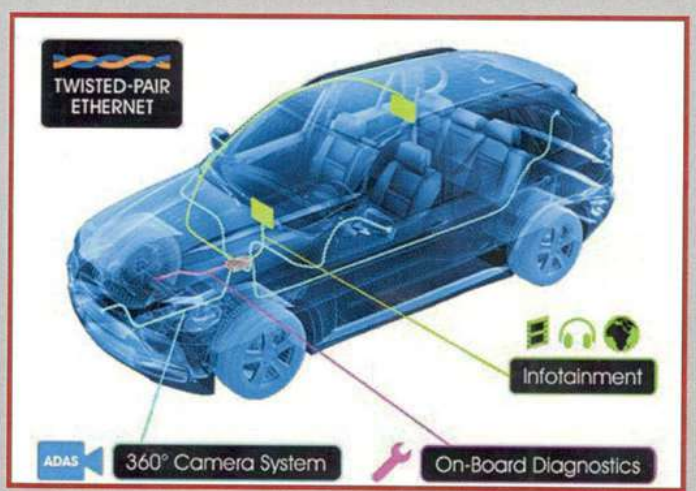
Souree: GM

Cadillac will add high-resolution streaming video to the function of a traditional rearview mirror, removing obstructions of passengers, headrests and the vehicle's roof and rear pillars. The streaming video mirror improves field of vision by an estimated 300%, or roughly four times greater than a standard rearview mirror. The technology will debut on the 2016 Cadillac CT6.

The camera's video feed reduces glare and allows a crisper image in low-light situations, versus a traditional glass electrochromatic, or auto-dimming, rearview mirror. The in-mirror display is an industry-leading 1280 by 240-pixel TFT-LCD display with 171 pixels per inch, combined with a HD camera designed specifically to enhance rear view lane width and maximize low-light situations. A water-shedding hydrophobic coating is applied to the camera to keep it clean to maintain visibility regardless of the driving conditions.

Drivers can also disable the mirror's video streaming function.

Open Alliance SIG to develop automotive grade Ethernet for Connected Cars



Source: OPEN Alliance

The OPEN Alliance (One-Pair EtherNet) Special Interest Group (SIG has announced the formation of several new technical committees (TCs) focused on refining automotive-grade Ethernet over Plastic Optical Fiber (POF).

Membership in the automotive OPEN Alliance SIG has grown 40x since its inception just three years ago, with representation from nearly 250 of the world's leading automakers, Tier-1s and technology companies working together to drive rapid adoption of automotive Ethernet. The OPEN Alliance SIG has played a key role in establishing automotive Ethernet as the connectivity technology of choice for the next generation of cars. Serving as the car's network backbone, automotive Ethernet technology enables the deployment of advanced safety and infotainment features beyond the luxury class, meeting growing consumer demand for a truly connected experience on-the-go.

Tech Mahindra to develop aftermarket connected car solutions

Tech Mahindra has entered into a strategic alliance with a German start-up The Enquiss GmbH & Co KG, to expand its reach in the connected devices segment for the automotive segment. As part of this agreement, the companies have jointly developed solutions using the latter's intellectual property and platform, to address the automotive segment. However this engagement of Tech Mahindra with the German company is not an acquisition.

The company has released an Automotive Aftermarket Suite which would transform existing cars to smart and connected devices. The Automotive Aftermarket Suite is one of the first platform solutions in the Aftermarket space. Tech Mahindra plans to provide this solution as a managed service to OEM's, Importers, and Dealer Networks.

Tech Mahindra plans to launch this Platform solution in Europe and US Markets initially and would gradually expand to other geographies.

Nissan's 'Leaf EV' owners recorded one billion KMs on the CarWings telematics

Source: Nissan

Nissan announced that the owners of its LEAF (Leading, Environmentally friendly, Affordable, Family) electrical vehicle has collectively recorded one billion kilometers on the CarWings telematics system worldwide. According to all the recorded data, Leaf users have saved over 180 million kilograms of CO2 emissions being released into the atmosphere in the process.

Nissan's achievement comes almost four years since the Leaf was launched as one of the first mass-market, pure-electric vehicles. It is now the best-selling electric vehicle in history, with over 147,000 Leaf vehicles sold globally to date, 31,000 of which have been sold in Europe. Thanks to the innovative CarWings telemetry used in the Leaf, Nissan has been able to keep an accurate log of the total distance covered by every Leaf registered with CarWings since the car's launch. Nissan has been recording the kilometers on an online counter and actively involving owners in the count with a series of celebratory videos.

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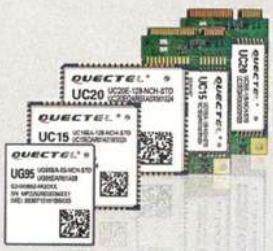

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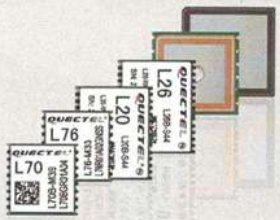

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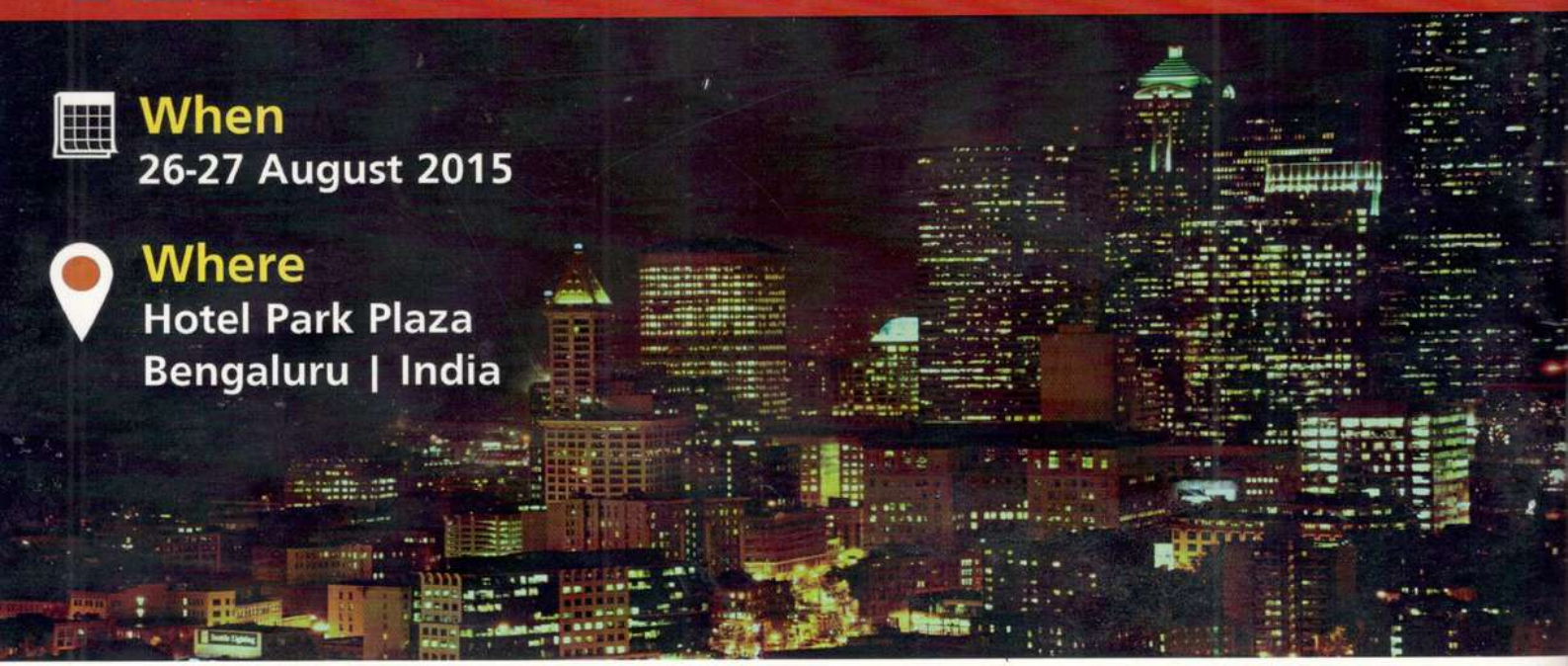

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