27 June 2014
Volume 1, Issue 4

The Dispatcher

Special interest features covered in each issue:

- Autonomous and Self-driving Cars
- Big Data
- DSRC versus Wireless Communication
- Connected Vehicles – V2V and V2I
- Third party services for eCall

Individual Highlights:

In the next issue:

- Who should be delivering connected services to drivers.
- How do we test self-driving cars.
- Do Google and Apple have a better way to connect our cars.

Telematics *Industry* Insights by Michael L. Sena

Report from ITS Europe 2014 Helsinki

The theme of this year's ITS Europe Congress was *ITS (Intelligent Transport Systems) in our pocket—proven solutions driving user services*. The theme referred of course to the growing use of smartphone apps for mobility services. But gatherings of this sort require long-term planning, and topics that were hot a year ago have a way of cooling off. As a follow-on to the ITS World Congress in Tokyo in the autumn of last year, self-driving cars was hotter, especially after Google announced that they were building their own. Finland-based Nokia's subsidiary Navteq returned to the spotlight they shared with TeleAtlas in the early ITS years, but with a different name. I have a hard time calling the company 'here' after living with Navigation Technologies and Navteq for almost thirty years. Old habits die hard.

What was special about this ITS Europe congress? Substance. Dublin got things going in the right direction last year, and Helsinki continued the momentum. These

Conference Topics

•New mobility apps for consumers and businesses - making use of Open Data

•Smart transactions (ticketing, infrastructure usage, insurance, travel, parking, etc.)

•Multimodal network operation at city, region, national and international level

•Productivity for transport systems including logistics and public transport

•Towards zero emissions

•From connected to automated vehicles

Continued on P.2

The Future of Call Centers in the Connected Vehicle Services Eco-system

Motorist associations are the granddaddies of call centers. They have been around for almost as long as cars, and some, like the ANWB in The Netherlands, started even earlier as clubs for bicycle owners. When the idea of intelligent transport systems was gaining traction at the end of the 1980s, the American Automobile Association in the US and the Automobile Association (UK), ANWB and ADAC (Germany), were among the early supporters. AAA made a key investment in AAA which signaled to both car companies and navigation system suppliers that the company had staying power. The AA was on the board of European Geographic Technologies, the precursor to Navteq in Europe. ANWB was European OnStar's call center from its start in 1997 until it closed.

But they have disappeared from the ITS Congress scene. If they attend at all they are there as invisible delegates rather than as active participants. For the ITS Europe Congress in Helsinki I tried to bring them back. The Congress Programme Committee was surprised when they received my proposal for a Special Session with the title of this article. They surprised themselves when they approved it, in spite of misgivings about interest and participation. The two principal call center suppliers in Europe for telematics services,

Continued on P. 2.

Report from ITS Europe 2014 Helsinki (Continued from P.1)

Congresses, both the annual World Congress and the European version that takes place in the years that the World Congress is not in Europe, had become a showcase for European-funded projects. A session would be organized by the project leader, which in 50% of the cases is ERTICO (European Road Transport Informatics Coordination Organisation), and each of the invited speakers would give a PowerPoint presentation of something related to the project. There were too many EU Commission speakers who told the delegates what the Commission had planned to do, what decisions they had made and what would happen if the Member States did not accept their resolutions. The exhibits hall was filled with stands put together by the various country ITS committees advertising the coming years' Congresses.

This year and last, delegates could hear people who have something to say responding to questions from panel moderators who attempted to draw out information that was worth hearing. An executive session that I moderated is a case in point. We discussed *Productivity of Transport and Logistics Systems*. Each of the five panel members had thoughtful insights because they had been asked to prepare beforehand. In summary, they felt that for a fruitful discussion on transport productivity that is truly holistic, we need to gather together a group of experts who are involved in each of the areas affecting transport, or which is affected by it: land use planning (not the authorities, but the professionals who do the actual work); vehicle design; infrastructure construction; local authorities who oversee plan development; real estate developers; business owners who employ the people who are using the transport network to get to work, and who produce and order the goods that require transport and logistics.

"Effective transport planning has to start in the countries and begin with improvements that are implemented locally. If we try to create Europe-wide solutions they will fail. What we do need is more coordination of standards so that countries don't continue to implement incompatible solutions."
Michael Nielsen, General Delegate to the EU, IRU

Helsinki is a city that has done a great job with its public transport system, including adding the one information system at each stop that everyone wants: when the train will arrive. The trams seem to run anywhere you might want to go, from the harbor out to the conference center. It is a city that reflects the country's rich cultural and geo-political histories. In my opinion, one of the best reasons for attending an ITS Congress is to spend several days in a city to get to know it well enough to want to come back.

The Future of Call Centers (continued from p.1)

ARC Europe and AGA (Allianz Global Assistance), were among the four companies I asked to participate in a panel discussion on the topic. Neither accepted since they did not have the intention of attending the Congress. It is unfortunate for the delegates who attended the session because they were deprived of hearing the views of these two organisations on a subject which is extremely topical, but it is more unfortunate for them because the two other panel members provided valuable insights from their considerable experience. Semen Fokin from Cesar Satellite in Russia had no doubts that full service call centers had a definite place in the telematics delivery chain. They are delivering more services today because drivers are frightened to continue a journey if a warning light appears, which happens more frequently today than before cars were loaded with electronics.

Markku Reinkainen from SOS International, providers of Volvo On Call services in Sweden, confirmed that they receive many more calls for things that customers several years ago could fix themselves. The more

Continued on p. 6

Automotive Eco-systems: Where does the buck stop?

In the beginning, car makers made cars. Some of them, like Ford, went so far as to make the steel and the rubber that went into their cars. Then, one day, a car maker decided that the true value of being a car maker was not making the cars but assembling them, and so was born the tier system with suppliers and sub-suppliers building components that, when brought together in the assembly plant, resulted in a car. As time passed, the car assemblers learned that the secret to selling their cars was having a product that was actually different from all the other cars being built from the same components and sourced from the same suppliers as their own. The evolution from cars built up of mechanical parts to ones that were built up of computer-controlled sub-assemblies connected together with computer networks made it possible to disaggregate the components into hardware and software. The car assemblers, who have become original equipment manufacturers (OEMs) have now created hardware and software eco-systems in which they, the OEMs, are only one player. And today, the people who drive the cars that these eco-systems create wonder whom to hold responsible if the wires that are used to drive the drive-by-wire cars get crossed and the car doesn't work as advertised.

Telematics is a good case in point. When the first systems were delivered to the market seventeen or so years ago, there was one call center, one mobile network operator and one hardware device. If the customer pushed the button and a phone didn't ring in the call center, fault tracing was relatively straightforward. There was no Internet connectivity back then.

Today, a telematics device can be used for accessing basic safety and security services as well as serving as the gateway for infotainment services and vehicle relation management. There can be multiple mobile network operators connected to the same modem. The device can be accessing multiple servers, each specialized in parts of the telematics, infotainment and vehicle management service infrastructure. Data privacy and security become more complex as the numbers of applications increase, so the systems become more complex. Simplifying the processes for the customers and retailers necessitates higher levels of integration to reduce duplication of effort, which in turn increases the need to integrate the systems. With greater integration comes higher levels of risk. The risk is that a fault in one area will cause a total breakdown of the entire network.

And that is where we are today. Ask any OEM.

Cloud Computing: Silver Lining or Gathering Storm

I grew up when the mention of a *cloud* and a *car* in the same breath referred to the black smoke pouring out of the tailpipe because the car was burning oil. 'Needs a valve job' someone would say. When my wife and I were buying a piece of land outside of Boston to build our first house, the lawyer for the bank phoned to tell us we might have a problem with our loan because there was a 'cloud' over the property. He was referring to a lien, but my wife took him literally. "I just came from there," she said, "and it's blue sky to the heavens." The cloud magically disappeared and we got our loan.

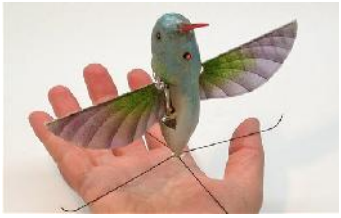
Cloud Computing in general means that either the programs being used or the data that is generated—or both—are accessed and stored on OPCs (*other people's computers*) and not our own. We have come full circle from central computers, where all computing was done in the vicinity of the mainframe; to client-server computing, where the server was in one place and the terminals were in another; to distributed computing, where we all had our own computers (including those 48K, no-hard-disk Apple II Pluses); and now to having Internet PCs where everything is centralized, except this time it's accessed via the Internet (aka, *The Cloud*).

It's odd that Steve Jobs did not feel it necessary in 2007 to use a surrogate, like iCloud, to explain that the iPhone was Internet capable. He introduced his new phone as '*a wide-screen iPod with touch screen controls and a full-function smart phone with Internet connectivity*'. Maybe it was because for him the iPod had established the ultimate remote computing model, the App Store, containing unlimited offerings of programs and content. Off-device storage was a detail. Off-device computing was a detail. Do it where it works best and don't make a big deal about it.

It's time to stop talking about remote computing and data storage in childish terms. People who have a life outside of computers know that clouds can tell you whether it will rain or the sun will shine. Turning them into storage boxes in the sky is downright demeaning.

The Personal Periscope Solution for Traffic Info

This is a little bird drone with a built-in miniature video camera can be sent up from a car to see for itself what the traffic situation is like up ahead and can send a video of what she sees back down to its owner in the car. This is the equivalent of a personal periscope



The idea of a personal periscope for driver of a motorized vehicle is one I have had quite some time. About twelve years ago I visited a friend and former client, Mike Jackson, who at the time was Director of the Space Division at QuinetiQ, which is privatized equivalent of US's DARPA. Mike had previously been managing director of Laser Scan when that company developed the premier digital mapping and cartographic film plotting system, and we had discussed on many occasions how to improve vehicle navigation with digital maps.

Mike showed me a self-flying plane that had been developed for surveillance purposes. It had a wing span of about ten meters, with the wings made of ultra-light solar panels. The body was large enough to hold a video camera. It could stay aloft for as long as the sun continued to shine plus a little bit more. It was pre-programmed to follow a specific route and it was completely autonomous, although it could also be steered from the ground.

"Why not use this to send back real time traffic data?" I said to Mike. "We could overlay actual traffic flow over a road network, rather than depending on vehicles sending probe data or road sensors or roadside video cameras." Mike thought that sounded like a good idea, but his time at QuinetiQ ended before we got the idea off the ground.

The idea stuck with me and a new one emerged. What if we could have a hatch in the roof of the vehicle and send up our own video camera that would be able to send images of the traffic up ahead? That's really all I need as a driver to make my own decisions about how to get from where I am to where I want to be.

I watched the drone developments and the miniaturization of remote controlled helicopters fitted with video cameras. Still too large for the purpose, I thought. Then the little bird in the photo to the left appeared in an article in Harvard Business Review, written by two former employees of DARPA who were now working for Google in their Motorola research division. They showed the bird drone as an example of what could be done by focused research, having groups staffed by experts on secondment from their 'day jobs' solve problems that might never be solved by individual inventors or company R&D labs. Self-driving cars got their real start with DARPA.

Anyone interested in taking up the personal periscope idea?

Google Shows its True Colours

"The project is about changing the world for people who are not well-served by transportation today."

Sergey Brin, Google co-founde

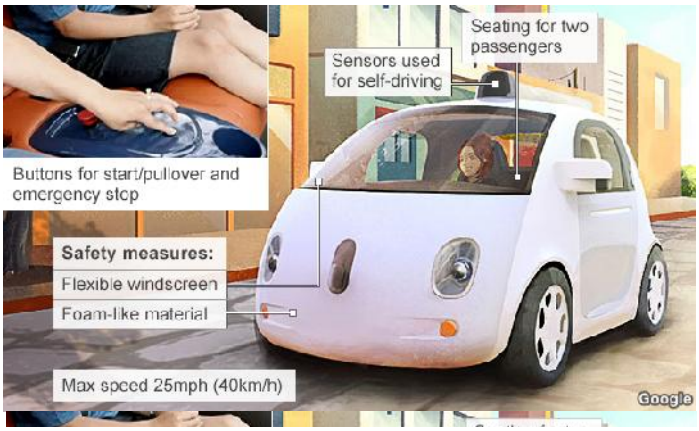
If there ever was any doubt that Google would begin building its own self-driving vehicles, those doubts were dispelled this month when a YouTube (Google owns them too!) video spread around the planet within minutes of its release and every news wire service picked it up for print and broadcast. The video showed the cute and cuddly little two-seater electric vehicle that Google had decided to build itself (initially 100 prototypes, they claim). After around five years of retrofitting Toyotas and Lexuses, they decided that it was time to lead the market in the direction it had decided it should go. Why continue trying to turn a frog into a prince at an estimated extra cost of around €60,000 pop when you could simply create the prince from scratch, they reasoned—or that is what I guess they were thinking because Google is about as transparent as a lead door. But maybe we have been underestimating the lads in the Googleplex. If the founder of an Internet payment system, Elon Musk, can build a car company that is challenging the majors and if Amazon can deliver books

Google Shows its True Colours (continued from p.4)

and groceries, build huge data processing centers, produce e-readers, groceries and now a sell its own phone, why can't Google make the transition to a niche car maker? Because for Amazon, everything it does is business which (eventually, at some point in the future, says founder/CEO Jeff Bezos) will turn a profit. Google makes huge profits from its one and only business, which is brokering advertising. All those commuters who have to keep their eyes on the road and hands on the wheel while driving, and who will be fined in most countries today if they tap away on their smart phones if they don't, aren't making money for Google. Any delays in reaching one's destination just takes more revenue off Google's balance sheet. Their dream (peering through the lead door) is that everyone is always connected so that any any moment in time a person can trigger a transaction.

The car is propelled by an electric motor. It will seat two people and whisk around at a top speed of 25mph (40km/h) to "help ensure safety". It has no controls except for a start/stop button. Drivers just sit there and enjoy the ride. It uses a combination of laser and radar sensors along with camera data to drive autonomously, and it will use (Google, of course) map data, specially developed by the company for the self-driving car.

Why hasn't any current car maker done this? Why hasn't a Bosch or Conti or Panasonic produced the equivalent? I'll bet the patent trolls are having a field day.



Is the Connected Car Getting Too Complex for Both Makers and Users

Telematics is like the opera: even though there appears to be a lot going on in front of the scene, there is a heck of a lot more going on behind it. Besides supporting our national opera, my wife and I attend the viewings in our local theatre of 'Live at the Met', where we watch what goes on before the curtain rises and in between the acts of operas performed at New York's Metropolitan Opera. It gives a whole new meaning to complexity.

That is how I have been feeling recently as I work with telematics implementation projects on different sides of the globe. When we started with it some fifteen years ago, it was relatively simple. The driver pushed a button and a text message was sent from the car using SMS or a text message embedded in a phone call. Position was delivered with GPS. A voice call was opened up and a call center operator took care of the rest. Today, the modems in the cars are quad-band GSM, multi-band UMTS and e-Ultra for LTE. They include GPS, GLONASS, and Galileo and soon Compass positioning devices. OEMs are trying to burden the in-vehicle modem with multiple tasks, doubling as both a safety and security communications device and an infotainment one—at the same time.

Switching a modem between one subscriber identity module (SIM) and another requires complex logic and also takes valuable seconds to execute. The modem has to know when it should make the move from one to the other and when to

Continued on P.6

While government regulators and researchers worry about driver distraction, I worry about car companies being driven to distraction by the engineering complexity they are building into their connected vehicles. A day of reckoning is coming when the companies will need to ask if it is really worth the time and money to build so much connectivity into the vehicles.

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Clarification

From 17 March 2014 issue; More Paint (Page 5).

The United States signed the 1949 Geneva Convention on Road Traffic, which has similar regulations as the 1968 Vienna Convention.

Connected Car Getting Too Complex (continued from P.5)

switch back. There are three ways to avoid the difficulties associated with a dual-purpose modem: put another modem in the vehicle to handle the non-safety and security tasks; use Bluetooth tethering; or, use a hybrid SIM that can address two data points of contact (i.e. APNs for Access Point Name). The first option obviously adds cost, but it is the surest way to avoid the complexities of sharing a single modem, and is more dependable than Bluetooth tethering. Especially in the US, the mobile networks restrict tethering to certain phones or to OS versions. At this point, not all MNOs offer a hybrid SIM. Until there is a way to allow multiple MNOs to offer services over the infotainment portion of the SIM on the second APN, it will be a difficult to explain that they are limited to a single provider, especially when it is not the same as the one they use for their other mobile services. Do Google or Apple have a better answer? We will look at this in the next issue.

The Future of Call Centers (continued from p.2)

services offered, the more services customers want to have. Won't car-to-car communication enable drivers to assist each other rather than having to contact a third party who is not on the scene? Markku and Semen agreed that technology will help in the pre-event phase, before an accident happens, but when there is a serious problem a human operator is needed. Psychological support is needed as well, to calm the accident victim or to assure the driver that they will receive the assistance they need in order for them to complete their journey. Is there any chance that the PSAPs will expand beyond emergency call once the Pan-European eCall is in place? SOS Alarm in Sweden is already expanding beyond responding to 112 calls.

Like many former state services, SOS Alarm has been partially privatized, so they have competition for their core services. But Markku did not see this as a threat for call centers as such.

Aren't mobile apps allowing individuals to gain access to information more quickly and inexpensively than making a call to a human operator? Mobile apps do some things very well, sometimes better than a human operator, but each app does not do many things well. Using multiple apps when a single phone call could resolve the problem is a waste of time.

What will be most important in the future is to have very highly trained call center operators who can deliver a full range of services, not simply dispatch roadside assistance or connect to the public PSAPs. As the car electronics get more complex, so will the problems that the call center operators will need to solve. There will be a need for constant training and regular reality checks on what types of services the call centers should offer to the OEMs and their customer.

I resolved after this panel discussion to find a way to engage all of the call centers in a similar event. It may be virtual or it may take the form of interviews with each of them posing the same questions I asked of Markku and Semen, and then sharing the results with you in these pages. We shall see. The delegates who attended the session certainly got their money's worth.

About Michael L. Sena Consulting AB

Michael Sena works hard for his clients to bring clarity to an often opaque world of vehicle telematics. He has not just studied the technologies and analyzed the services. He has developed and implemented them. He has shaped visions and followed through to delivering them. This newsletter touches on the principal themes of the industry, highlighting what is happening. Explaining and understanding the how and why, and developing your own strategies, are what we do together.