14 October 2015
Volume 3, Issue 1

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:

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- ADASIS
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- MOBiNET

Telematics Industry Insights by Michael L. Sena

What happens next with Here (Navteq)?

NOKIA WILL SELL *HERE* to three German car OEMs: Audi, BMW and Daimler. The deal was announced on 3 August and will close in the first quarter of 2016, subject to approvals by anti-trust authorities in the US and EU. Assuming that the purchase is approved, what happens afterword will affect the entire vehicle industry, including all car OEMs, their system and application software suppliers and the eventual users of the systems that depend on digital maps, both on- and off-board the vehicles. When the administrative work of changing ownership is done, representatives from the three companies will sit at a table with *Here's* management and draw up a plan of action. This work should begin at the beginning, and that is thirty years ago.

When you buy a company, you don't buy a stack of papers. A company consists of two parts: its mission and its culture. Its mission is the collective understanding among everyone working in and with the company (including board members and suppliers) of what the company does. Its culture is the collective understanding of how it does what it does. Where the company is located has quite a lot to do with company culture. BMW would not be the same company with its operations in Detroit rather than Munich, and Google or Apple would not be the same if they were based outside of Silicon Valley. They just wouldn't.

Here started in Silicon Valley—Sunnyvale, CA to be exact—in the early 1980s. Its name was *Karlin & Collins, Inc.*, and it was started to make a coin-operated route planning vending machine. I saw one of them when I first visited its offices in 1987, which by then had another name, *Navigation Technologies, Inc.*[1] Its new owner, T. Russell Shields, had changed its name. Rather than incorporating it into his own software development company, *SEI (Shields Enterprises, Inc)*, and moving it to Chicago, he left it in Sunnyvale and flooded it with his own people. He changed the mission, from building a route vending machine to building navigable maps, and began looking for investors who shared his vision. *Philips* in Eindhoven, NL was one of them, and together they built a new company called *European Geographics Technologies (EGT)* and based it in The Netherlands.

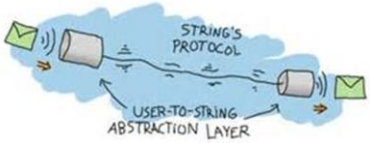
Continued on P.4

On page 3 is an account of the 22nd ITS World Congress held in October in Bordeaux. This is an event that started in 1994 in Paris, initially devoted mainly to electronics within the vehicle industry. The major support for it in the early years came from the tier one suppliers of navigation and traffic information systems as well as the Japanese car OEMs. Two companies were the cornerstones of the event. They were placed on either side of the main entrance to the exhibit halls, and competed to have the largest and most impressive displays of their wares. They vied for first place in the hearts and minds of the delegates, but also in their stomachs. They each had a hospitality suite that was open well after midnight, with food and drink available to all visitors, not just VIPs. It was in these venues where contacts were made, friendships established and business conducted. Late in the evenings, some of the staff from each company found their way to their competitor's suite to meet up with the friends they had made during the week-long ISO/TC 204 standards sessions. Some time around the 11th Congress, the companies gave up their anchor positions and the hospitality suites became a memory. In my opinion, the ITS industry in general and World Congress in particular, benefitted from Navteq and TeleAtlas battling to be King of the Hill. Bring back the rivalry.

One would do nicely, thanks.

This array of ticket machines greets the airline passenger in the arrivals hall at Stockholm Arlanda Airport. There are two for the express train into the city, two for an express bus option, and then three for other destinations. The parking ticket payment machines have their own locations separate from the collective transport options (lest they infect one another, perhaps).

One of these machines would suffice for all of these travel options if our ticketing technology had moved beyond two tin cans with a string connecting them.



Travel to another city—even in the same country!—and you have another set of machines connecting the user to other suppliers of rides on buses and trains. Is it any wonder that customers prefer the single app on their phone that they can use to hail and pay for a ride in a personal mobility vehicle and give kudos or criticism to the chauffeur?

We, the citizens of our metropolises, are paying for these redundant money-taking machines which add nothing to the efficiency or comfort of the actual ride. They don't even add to the employment rolls by having a real person tell you why he or she cannot sell you a ticket on someone else's bus or train.

It is time that our public transit authorities all around the world used the same box that sells tickets for anywhere on the planet on any bus or train that we want to ride. And they should all use the same mobile app as well so that anyone with a smart phone can avoid the machines.

Telematics Valley: Past and Future

TELEMATICS VALLEY CELEBRATED its 14th anniversary on 12 September, the day after 9/11. There were mixed emotions on that day in the WirelessCar offices in Göteborg, where the team that started this telematics interest organisation were employed. Jonas Carlsson was the young and able assistant to Thomas Gabinus, who was the organisation's first chairperson. Besides WirelessCar, Ericsson, Mecel, Saab, Volvo Cars and Volvo Global Trucks were the founding members. Twenty-six companies in total comprised the original membership. In one of his first interviews as chairperson, Thomas said: "Our most important objective is to establish the region as the global centre for telematics. When we realised that there were so many companies involved in telematics in the Gothenburg region, we decided to jointly explore how this could be used."

Today, there are thirty company members, including several from outside of the region and even outside of Sweden. There have been only three leaders for the association. After Thomas came Greg Geiselhart, who served as Executive Director from January 2002 to September 2006, and then Jan Unander, who has served as Executive Director from October 2006 to September 2015. Its mission, 'to support members in making more telematics-related business', has not changed since it was founded. It was and continues to be a networking organisation that holds regular lunch seminars and an annual two-day conference in Göteborg, gathering members and others involved in the business of telematics. It is financed through membership fees which vary according to the member's number of employees.

On September 10th, Jan Unander performed his last official duty as Executive Director, chairing a lunch seminar: How to get business value out of data. I asked Jan what he sees as the future of Telematics Valley, and this is what he said:

"What I hope Telematics Valley will focus on in the future are really two things: 1) Utilize the trust built up in Europe and offer Telematics Valley as a neutral arena where difficult issues can be addressed and solutions facilitated; and, 2) address the opportunities and challenges with wireless interconnection of modules and IT-systems that drive our society towards a future that we hardly can imagine today.

Telematics Valley can play an important role to identify the key challenges to address. Workshops, seminars and conferences are good tools to use to visualize and discuss the opportunities, and the neutral arena can bring the key players to the table to solve common structural issues. I do hope that Telematics Valley will keep on using the collective knowhow of the members, and the position it has achieved, to support the members to meet the business challenges in the future."

Uber hires the Car hackers: What is the fit?

I wrote about **Charlie Miller** and **Chris Valasek** in the last issue of **The Dispatcher**. They are the pair responsible for performing the feat of hacking the Jeep Cherokee and sending it off the road. I said I hoped they would be richly rewarded for their research, and that they would continue to work to find—and eventually help close—any and all security gaps in connected vehicles until there are none.

Well, it seems that they are being richly rewarded with new jobs at Uber, in the company's Pittsburgh-based Advanced Technologies Center. Why Uber? Why not GM or Fiat Chrysler or the NSA? What is the possible reason they would accept a job at a taxi service company, except for the money—or maybe the chance to move from St. Louis to Pittsburgh?

Whether we like it or not (and I am not yet sure that I do), we are going to have to take this company, Uber, seriously. We may not all agree that it is "doing the right stuff, but it is doing a lot of stuff right" (sic). Delivering better service to customers includes keeping prices low and improving safety. Uber's management and its board have concluded that autonomous cars will do both by eliminating the largest cost component and the highest accident risk factor: the driver.

In addition to Miller and Valasek, Uber has reportedly hired 40 researchers from Carnegie Mellon University's National Robotics Engineering Center, also located in Pittsburgh, into its ATC. Uber had located its center in Pittsburgh because of its proximity to CMU, and is in the process of establishing funding for the Robotics Center. At first it seemed like the fox had raided the chicken coop, but it looks now like all is copacetic.

ITS World Congress in Bordeaux

EVERY ITS WORLD CONGRESS has a theme. This year's theme was *Towards Intelligent Mobility: Better use of space*. Material provided by the organisers stated that intelligent mobility will change our lives (and presumably, how we use space). The organisers also brought in outer space, saying 'space can bring new benefits to ITS applications', referring to the satellite constellations for geo-localisation, earth observation and communication. I spent the entire week in Bordeaux at the Congress, and part of my mission was to determine how outer space and local space benefit from ITS. Before telling you what I learned I'll spend a few lines on the Congress as an event.

Bordeaux is a beautiful city in a region of France that is renowned for its wine and food. The city is also a marvel because of its almost complete lack of graffiti. This should be one of the criteria for future picks of ITS World Congress cities.

On the other side of the ledger, it is not the easiest city to reach if you must travel from beyond France. This may be one of the reasons it is so well preserved, but it makes business travel a bit more stressful. The single tram line to the Congress venue was totally inadequate during the morning rush and the city's taxi system was completely overworked. Uber probably won many converts during the week. The venue, with no facilities for meeting or relaxing outside of the exhibition hall, was not in the same league as those in Tokyo, Vienna or most of the earlier World Congresses. Nevertheless, on the whole, the plus side of the balance sheet won.

I really wish the Congress would concentrate on quality rather than quantity and try to ensure that there are audiences of sufficient size in each of the paper sessions. The Congress format has gone from having four categories of sessions (Plenary, Executive, Special and Technical) with an exhibition and demonstrations, to now having fifteen(!) categories of sessions plus the exhibition and an increased number of demonstrations. Approximately 700 papers were delivered in the 50 paper sessions. There is too much competition for attendees' time, and the sessions with so-called VIPs get all of the attention. Let's stop using that term.

Concerning how space was addressed, it was mostly outer space, with many sessions devoted to improved satellite positioning. However, as an improvement over earlier Congresses, there were a number of sessions that did have speakers who were talking about the issue I addressed in my little book on traffic congestion, ***Beating Traffic: Time to Get Unstuck***.[2] That is, the reason we have traffic congestion is that the As and Bs and Cs are in the wrong places. We don't fix the traffic congestion problem by continuing to sprawl and then punishing people with tolls and higher fuel taxes for being forced to use the best way to travel between these places (i.e. by car).

One of the main reasons I was at the Congress was as a representative of the MOBiNET project team. We had a section of the ERTICO stand (see photo) where team members met the public and demonstrated results achieved thus far. Having spent most of the week in the stand, I can report that there was a great deal of interest. We were also active in many of the sessions, presenting different aspects of the MOBiNET platform.

MOBiNET also co-sponsored a 'hackathon' in which teams of programmers competed for two €10,000 prizes or two funding prizes for three months of mentored assistance to further develop their ideas. This was a highly rewarding experience for all of the eight teams of programmers who participated, especially the three teams who won (one team won both funding and money) and the MOBiNET team members who participated. I will give readers of **The Dispatcher** an update on MOBiNET in the next issue.

Big Data took the prize this year for the most number of sessions. I have always had a problem with buzz words, like 'cloud computing'.[3] Big Data is not a buzz word; the term says what it is and it is what it says. Vehicles, especially light vehicles, can generate a lot of data of all sorts, including the time it takes to move a few hundred meters (real-time traffic flow), whether the anti-skid sensors have been engaged (slippery roads) and much, much more. In my opinion, when it comes to big data and cars and trucks, we are just approaching the starting line.

There will be an ITS Europe Congress in June in Glasgow, Scotland, UK. The 2016 ITS World Congress will be in one year on the other side of the world from Bordeaux in Melbourne, Australia. Make it memorable, mates.

The Etiquette of Collective Mobility

On a recent visit to the US, I tuned into my favourite program, All Things Considered on National Public Radio. The issue being discussed was the prevalence of groping by male transit riders on crowded New York subway cars and what the transit authority was planning to do about it. Women who were interviewed said that repeated incidents led to their taking alternative transport modes.

Railroad passenger cars that took travelers from Scranton, PA to Hoboken, New Jersey, up until 1967, like the car pictured above[4], made it clear that certain behavior (i.e. spitting) would not be tolerated. There were plenty of personnel on the train back then to make sure the riders abided by the rules.

*The photo above is from an S-*bahn *car in Germany. I needed to ask for help from a native German speaker for translating the phrase. It means "No one really wants that!" When I searched for translations on the Internet I found many posts with photos showing (young, male) riders with their feet up on the seat in front of them, earphones glued to their ears and empty cans and pizza boxes littering the floor around them. We are not going to get people to choose collective mobility if we cannot ensure that the rules of decency and respect for fellow passengers are adhered to.*

What happens next with Here (Navteq) (Continued from P.1)

Navtech, as it became known, and *EGT* eventually merged and gradually consolidated most of its management in Chicago. Its European operations continued to play an important role. NAVTECH ON BOARD became NAVTEQ ON BOARD as it became a public company in 2004 and changed its name to *NAVTEQ*. By this time, the company had become the dominant supplier of map data to the vehicle industry. Russ Shields was no longer CEO or Chairman. The mission remained the same, but not everyone shared it, and the culture was changing. It was bought by *Nokia* in 2008, made a subsidiary, had its name changed to something with *Nokia* in it after losing its struggle with a former *Nokia* acquisition, *Gate5*, and then finally became Here in 2012 with its headquarters in Berlin (former *Gate5* location).

During this thirty-year history, what is today *Here* had its locus moved from Sunnyvale to Berlin via Chicago and Helsinki. It is not the same company. During the *Nokia* years, it had both its mission redefined and its culture transformed. During the period Steve Jobs was wandering in the desert, at least the company got to stay put in Cupertino so that when Jobs did return, its culture was still intact. He was not at square one.

What needs to happen next, Messrs. Audi, BMW and Daimler, is to dig down deeply into what is left of this company's mission and culture, decide what should be saved and what should be cut off, and start anew. I expect you have already had many conversations with Russ Shields, but if for some reason you have neglected to do so, do it now. Clean out the last remnants of Nokia. Erase the vestiges of other companies that were acquired by *Nokia* and merge them into a single entity. Then, change the name. My suggestion has been to change it back to *Navteq*, but there may be legal or other formal reasons why this is not possible. This is important because the mission and culture of *Here* are not (or should not be) the mission and culture of the company of which you, Messrs. Audi, BMW and Daimler, are now the proud owners.

Then you need to decide whether you are going to be part of the mission and culture, as should be the case with owners and board members of any good company, or whether you are going to act like *Nokia* acted when it acquired *Navteq*. We have navigation and ADAS today in large part because *Navteq* existed. *Navteq* invented a new way of creating digital maps for navigation that could eventually be used in advanced driver assistance systems. They understood that a single map of all the roads in the world was needed. Yes, the company did start to use techniques created by others, including *Google* (that were either bought or borrowed by *Google*), but these only helped to make its basic processes better. Its competitor, *Tele Atlas*, gradually began to adapt those parts of *Navteq's* working methods that it could, but it had a different mission and culture from the start, and *TomTom* altered it further.

If you, Messrs. Audi, BMW and Daimler, want your new company to succeed for the benefit of your companies, you will have allow it to succeed for the benefit of the entire industry. I personally do not think you should try to do that by selling shares to every car company or tier one supplier on the planet, or even a sub-set of them. Trying to get anything accomplished with a Hydra-formed board is a recipe for failure. Select a good CEO who shares the mission and will help to form a new culture. Decide where that culture would have the most nurturing environment. Where your own businesses are located is less important to this decision than what is best for the company. Remember, you are not in the digital map business. At least for now, you are in a business that uses what your new company will produce. Your job is to help this new company do its own job. That is how to obtain the highest benefit.

We move because we must; where are we going?

CARS AND TRUCKS ARE TOOLS. We buy, lease, rent or borrow (and thieves steal) vehicles in order to do a job. In most cases, that job is transport, carrying ourselves or goods from one place to another. For private transport, the jobs we do relate to the times in our lives (e.g. teen, adult, retired) and our situations (e.g. student, commuter, stay-at-home parent) when we are doing them.

The tools we need to accomplish our jobs have changed over time. Our own two feet were good enough to get to school before people moved them to places where they were no longer within walking distance, or governments put children on buses in order to encourage desegregation, or we gave parents vouchers so they could send their kids to any school they wanted to attend. The bus or a train did the job of getting commuters to work until most jobs were in the suburbs, not in city centers, and if you didn't have a car or could ride-share, you didn't work. Local grocery stores, butcher and bakery shops, hardware stores in our neighbourhoods sufficed for our daily needs, and milk was delivered to our doors until we needed to drive to malls.

In the second half of the 20th century, wars, crime, new highways, new ways of communicating and many other factors combined to move people and places of work from cities to suburbs. A suburb is any place in a metropolitan area outside the central city but not in a rural area. By 1951, more people in the US lived in suburbs rather than in central cities or rural areas, and by the early 1990s, the amount of office space in suburbs totalled 57%. This trend continued in the US and spread to Europe. Now, it seems, we have reached the limit of sprawl. The universe may continue to expand forever, but we cannot do the same on earth. The opposite of the cosmological Big Bang is the Big Crunch, and that is what is happening on earth. People and jobs are moving back to our cities from being out in the exurbs and, most of all, out of our countries.

Strange as it may seem, we are moving back to the urbanized environment we had in our major world cities before the era of suburbanization, but now without the rural population. This will have a significant impact on what, where and how we move, whether we opt for a personal mobility solution or a collective one.

What I believe is important for us to accept is that it is not we who are working in the business of developing mobility solutions who are affecting these changes. It is not, as a recent study published by a well-known management consulting company claimed, "the rise of electric vehicles, car connectivity, autonomous driving capabilities, industrial internet and new lightweight car construction materials that will shape the automotive industry."[5] It is not, as they further claim, suppliers who "prompt innovation". It is the forces that shape our lives at a macro level that determine why we move, where we live, shop and work. A major war, and a major world depression before it, caused the baby boom, not the invention of power steering. Fuel prices do not follow car segment introductions; they lead them.

The Digital Age for Cars in a More Ubanised World

The car in its present form has had its day because it is not designed for personal urban transport. It takes too much care and feeding. More importantly, it is not designed for boys and girls who grew up being chauffeured and who are not going to take their drivers' licenses. They are not going to own cars; they are not going to share cars. They are going to be driven in cars, just like they have always been, by chauffeurs.

It is twenty years since the start of the Digital Age of Transport.[6] What we have seen since then is the stuff of science fiction, but in many ways we are still at the beginning of the revolution in transport. These changes are being brought about by factors outside of the transport sector itself, including changes in lifestyles, working methods, sourcing of goods and methods of computing—not the least being software-as-a-service and off-line storage of data.

Digital techniques, particularly smartphone mobile apps that solve every type of mobility problem from finding and paying for a parking space to ordering a chauffeured car to take you wherever you want to go, are beginning to have major effects on transport businesses, like traditional taxi and bus companies. These new businesses are not always playing by the same rules as the existing businesses, which have helped to form the existing laws or have had time to adapt to these laws.

We are at a crossroads. There are strong forces that want to keep the existing order, while companies like Apple, Google, Amazon, Uber and many others want to do for transport what they did for many other industries that they have disrupted. You can fight them or join them. You can't be them.

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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 for your organization, are what we do together.

What's in a name: A rose is a rose is a rose, isn't it?

TELEMATICS IS A SET OF ENABLING TECHNOLOGIES for two-way communications to and from a vehicle, connecting the vehicle to information sources and various types of services. '*Tele* (Greek for 'remote') *matic* (Latin for 'acting) is a perfect description for what it is and what it does.

Telematics must be viewed on three levels: physical, design and intention. What, how and why.

• On the physical level, the separate technologies comprising telematics (communications, positioning, sensors, software) need to be integrated into the vehicle platform and the service infrastructure.

• There are many ways that this integration can occur, and the design of the end-to-end system determines both the types of services that are possible and the business models that can be supported.

• Over and above these two levels is the intended purpose the vehicle OEM has for installing the system in its vehicles and implementing a service infrastructure. This intention, or motivation, determines the metrics used to gauge the success of this effort. If the intention is to increase gross profit by a certain percentage during a stated number of years, failure to achieve this objective would be sufficient reason for cancelling the effort.

The 'T-word' was banned from the vocabularies of many automotive companies after the disappointing first tries made by them around the New Millennium to deliver systems and services. Renault, VW, Fiat and Ford closed down their internal telematics groups. Ford then started a huge joint venture with Qualcomm and proceeded to burn a large sum of money on its failed *Wingcast* initiative. Almost fifteen years later, it has now become acceptable to discuss telematics using the euphemism 'Connected Car'. Perhaps this term is a more suitable name, now that 'remote acting' also includes Internet interfaces. Nevertheless, a rose is a rose is a rose, and a rose by any other name is still a rose. To paraphrase the unmoved mover's reply to Bertrand Russell, "It's telematics all the way down."

In a Darwinian sense, those vehicles that are best adapted to the business, political, social and environmental demands in the markets in which they are sold will survive the intense competition among car and truck companies today. But vehicles cannot evolve on their own. Their evolution depends on the many decisions made by management, company strategists, product planners and engineers. These decisions, in the best of cases, are informed by research into what may be wanted by a future driving public, and what may be technically possible. Customers look for value; they don't care what we call our systems or service packages. They just care that these services give them peace of mind, reduced cost of ownership, higher comfort, better entertainment or a heightened sense of satisfaction that they have made the right choice when they purchased the vehicle.

Footnotes:

1. To see what the first offices of Here/Navteq looked like, do a Bing search on Apple Titan SG5. It was twenty-five years since I was there, but Apple's e-car project location looks like the building where Karlin & Collins and then Navigation Technologies first operated.

2. You can download the book from my web site: www.michaellsena.com.

3. The Dispatcher; 27 June 2014: Volume 1, Issue 4.

4. This photo was taken during a recent trip to Scranton and a visit to Steamtown National Historic Site. In what is now a US National Park, steam engines were actually constructed around the turn of the last century. Today, it is possible to take a ride through the vast rail yard and hear a knowledgeable Park Ranger describe how it was up until rail services ended in Scranton in 1967. (www.nps.gov/stea/

5. The road to 2020 and beyond: What's driving the global automotive industry? McKinsey&Company. Advanced Industries (August 2013).

6. Why is 1995 the start of the Digitial Age of Transport? Think Internet, GPS, digital maps, navigation systems, DVD.