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Business Trends is an international business magazine

Dear readers,

Autonomous driving could become a reality sooner than many of us expected, in part thanks to the efforts of some of the companies that feature in this issue of Business Trends. Esri, the global leader in spatial analytics technology, joined Microsoft's connected car showcase at the Consumer Electronics Show in Las Vegas at the start of this year. Frits van der Schaaf, Head Automotive at Esri, believes their GIS technology is vital in providing geographic context, revealing what is happening around the next bend, and providing analytics that predict risks associated with road segments during a certain time of the day. "It is a piece of the puzzle that helps increase roadway safety and avoid accidents."

When fully-autonomous vehicles go mainstream, industry analysts such as McKinsey believe they could free as much as 50 minutes a day for users, for them to spend working, relaxing, or accessing entertainment. This also opens new possibilities for Adient, the newly spun-off automotive seat manufacturer once part of Johnson Controls. Adient unveiled its concept design for luxury seats in autonomous vehicles during its recent presentation at the 2017 North American International Auto Show (NAIAS). Tom Gould, Adient's Director of Industrial Design, Research and Craftsmanship for North America and China, explains why he believes autonomous driving could be a real game changer for the automotive seating industry.

Insurance is another piece of the autonomous driving puzzle that needs to be addressed. French insurance company MAIF, as a leader in insuring shared economy programmes, could be at the forefront of developments in this space. The Company has joined forces with PSA Group to support TravelCar, a leading car sharing programme in Europe, to expand into the US. TravelCar already has more than 300,000 members, and is available in 10 countries. Thomas Ollivier, head of sharing economy and new trends at MAIF, comments: "By partnering with TravelCar, we are becoming part of a borderless, more collaborative society."

We hope these stories will inspire you as you continue to grow your own business.

Ellen Groen
Editor in Chief

How to apply GIS to connected cars

Geographic information systems (GIS) are creating a better future for us in many ways. The ability to visualise data, unlock hidden insights locked away in spreadsheets and reports, and carry out multi-dimensional analysis, is notably helping to make the connected car a reality. Esri, the global leader in spatial analytics technology, is at the forefront of this development. At the start of this year, the company joined Microsoft's connected car showcase alongside IAV, NXP, Cubic Telecom, and Swiss Re, at the Consumer Electronics Show in Las Vegas. Frits van der Schaaf, Head Automotive at Esri, believes their GIS technology is vital in providing geographic context, revealing what is happening around the next bend, and predicting risks associated with road segments during a certain time of the day. "It is a piece of the puzzle that helps increase roadway safety and avoid accidents."

UDOT Safety and Crash Analysis

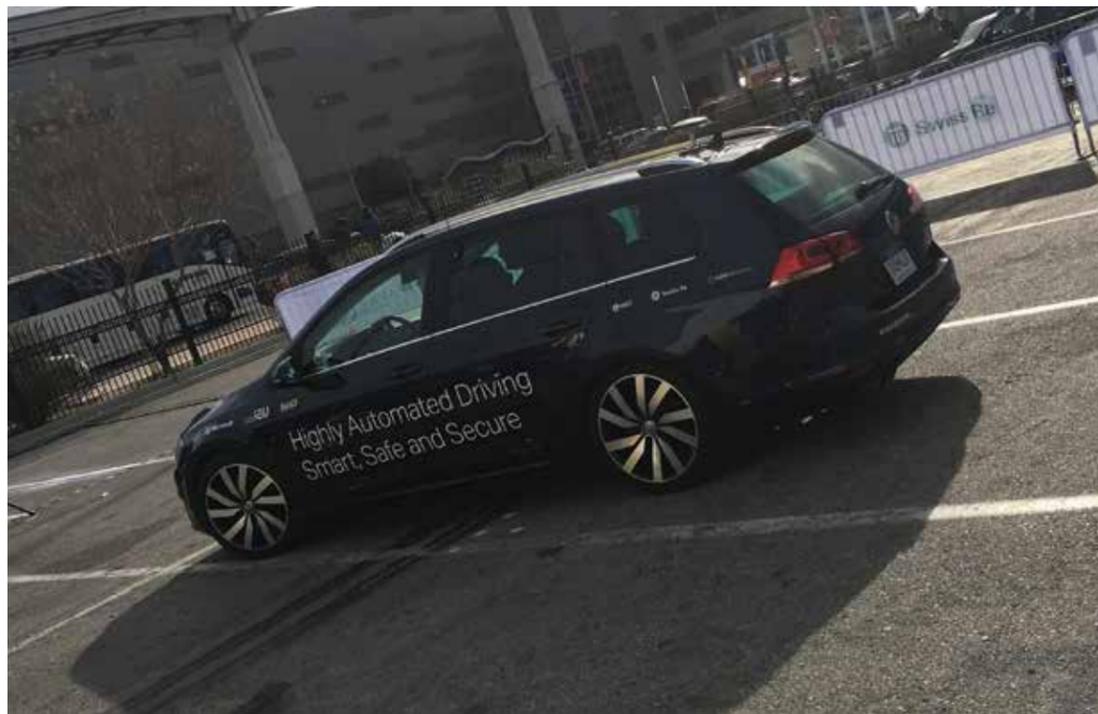*Photo courtesy of Utah Department of Transportation*

Founded in 1969 by Jack Dangermond and his wife, Esri today is a global leader in geo-information systems. The company holds more than 40% of the market for GIS worldwide; more than any other vendor. Esri's recent growth outside its traditional government stronghold is being driven largely by its ArcGIS service, which houses millions of maps available to any company that wants to overlay them with its own proprietary information. The industries that use ArcGIS have become more and more varied, in line with the growth in the commercial sector, with companies and organisations across all verticals publishing and/or using location-based data.

The automotive industry was one of the first to discover the added value of location-based data and Esri has indeed been active in the automotive sector for decades, says Mr. van der Schaaf. Formerly serving as business development director for Esri in the Netherlands, Mr. van der Schaaf moved to the US to take up his current position as Head Automotive in 2015. He is excited about the transformational potential of the connected car in general, and about the role Esri can play in the connected car ecosystem. While it's still early days for this industry, with the race to build the fully connected car well underway, it's perfectly clear that a diverse number of industries and government organisations will need to work together to make the connected car a reality.

Microsoft is one of the global technology giants that have decided to contribute to making this happen. While the company doesn't engage in building its own connected car, it has launched a new Azure-based cloud platform for car manufacturers that want to use the cloud to power their own connected-car services. At the Consumer Electronics Show (CES) in Vegas at the start of this year, the Microsoft Connected Vehicle Platform, which also includes Office 365, and Skype for Business, was first unveiled. CES is a global consumer electronics trade show that draws more than 165,000 people to Las Vegas every January.

Esri is one of the partners that joined Microsoft's connected car showcase at CES, alongside NXP Semiconductors, IAV, Cubic Telecom, and Swiss Re.
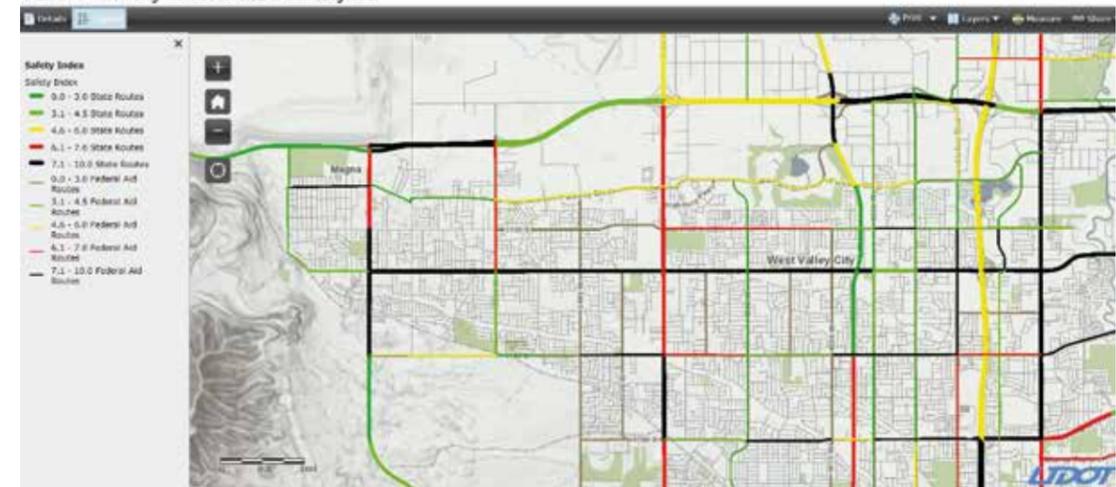
Together they showed their collective vision of connected cars, enabling CES attendees to test drive a concept highly automated vehicle. The concept connected car was powered by IAV's automated driving technology, which can connect with infrastructure, pedestrians and the Microsoft Azure Cloud to enable the vehicle to react automatically and safely in its surroundings. Esri's mapping and spatial analytics technology, which also uses Microsoft Cortana, provided geospatial context to increase safety on the road and improve the overall driver experience. Esri's enterprise GIS platform services in the Azure Cloud provide the geographic content and analytics to better understand driver behaviour, predict road conditions to improve traffic flow, and share connected car sensor data within the ecosystem. These features allow smart cities to react faster to new issues such as fixing unsafe potholes or removing hazardous objects from the road.

Mr. van der Schaaf explains that Esri has worked on adapting proprietary technology to connected car applications for several years. "We had to scale up our server-based technology to evolve to a cloud-based platform, and Microsoft Azure was a perfect fit for us." In the diverse connected car ecosystem, Esri sees a role for itself purely as a navigation and related data provider, in other words in providing geographic context. Mr. van der Schaaf highlights Jaguar Land Rover, who use Esri technology to model and analyse a wide variety of datasets including weather, average rainfall, temperature, humidity and altitude, at each of its 172 customer locations. Each dataset provides a different perspective as it is then overlaid onto road network maps to increase the understanding of the driving conditions, optimise the design of vehicles in all terrains and finalise vital manufacturing design decisions. Mr. van der Schaaf emphasises that while all driver data are

Smart GIS Integrates Real-Time Data
Providing Dynamic Information About Everything

Web GIS

Sensors

IoT

Built Environment

Natural Environment

anonymised, it is of enormous value to Jaguar Land Rover to know precisely how cars react to different and changing conditions in specific geographies; to enable car dealers and service stations to be more proactive, for example. "As people can now shop around for a car on the internet, car dealers need to reinvent themselves and create added value."

Extending to connected cars, Esri technology above all else can help make our roads safer; this is a subject Mr. van der Schaaf feels particularly strongly about. He points out that The National Safety Council estimated that in 2015, approximately 38,300 people were killed on U.S. roads and 4.4 million sustained injuries. "These tragic statistics are compelling car makers to add connectivity to their safety designs. Their cars will connect to an ecosystem of cloud-based networks that share information to make drivers more aware of their environment and avoid accidents." He adds that equipped with sensors that create a 360 degree awareness field, a connected vehicle gathers road hazard data. A geographic information system (GIS) processes the real-time data and transforms it into useful information. Using live weather data and historical incident data, for instance, GIS can predict the risk of an accident occurring on a specific section of road

when it is raining or when fog will make the road hard to see.

Mr. van der Schaaf reckons that GIS will also play an important role in vehicle and infrastructure sensor systems that share real-time data with each other. While drivers are travelling down the road, their vehicles are "talking" with various roadside structures. A geofence around a school and elderly housing can alert a car's system to tell the driver to slow down inside the zone. Car sensors detect treacherous potholes and report the locations to other drivers and the city. Roadside sensor systems can capture real-time data about highway traffic conditions in the lane ahead and automatically relay it to the car's dashboard to forewarn the driver.

While the fully connected car is in early stages of development, we're already seeing connected technology in commercial use in smart city initiatives around the world. This again is where Esri is a leading player: on a global scale, the company helps companies and organisations to use location and extract insights from smart sensors and big data, in order to boost productivity, ensure sustainability, and help their community thrive. "San Francisco is one of the cities that is pushing strongly in this field," Mr. van der Schaaf points out. "With their SFpark project, SFpark changes meter rates based on parking demand to

maintain an average occupancy between 60 and 80 percent: when parking on a street is too full (or too empty), the hourly price goes up (or down) to free up (or fill up) spaces."

Mr. van der Schaaf sees further proof of the growing importance of geo-information in the fact that car manufacturers like to position themselves as mobility providers. Ford Motor Co., for example, has diversified into the car-sharing and electric bike businesses as part of CEO Mark Fields' effort to transform the automaker into a more holistic provider of transportation options. "There is increasing awareness among automotive companies that in the smart city, the car is basically just one sensor, albeit a mobile one," says Mr. van der Schaaf. "Cars, public transport, parking – there is no doubt that cities will become increasingly connected. And we believe that location-based analytics are crucial to making sense of the big data these smart cities produce."

Esri

Website: www.esri.com