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CONNECTED CAR BUSINESS MODELS – DISRUPT OR BE DISRUPTED

Successful connected car business models will put the focus on the user, not the vehicle. Automotive OEMs urgently need good answers to the challenges involved.

As the connected car market evolves, all the businesses in the value chain will increasingly put the user, not the vehicle, at the center of their efforts. This user-oriented approach is what has made B2C technology companies like Apple so successful. And, as vehicles essentially become 'devices on wheels', automotive manufacturers need to start thinking like them.

After Apple launched the iPod in 2001, it quickly became clear that the value for the user actually lay in the service delivered by iTunes, rather than the device itself. Over time, the same principle will apply to the connected car: Users will start to value what they can do in and with the car, more than the car itself. However, reinventing automotive OEMs to become service providers, rather than manufacturers, presents challenges in three dimensions.

1. **Agility:** The life cycle of a modern car from its first conception to its recycling is around 15 years. Pre-launch development takes about five years, which also means that any new car bought today actually contains five-year old technology. Services have lifecycles that are measured in months and weeks.

2. **Complexity:** Vehicle production, especially in terms of electronic systems, has become increasingly complex, with every car containing hundreds of sensors and multiple systems for data collection, management and distribution. Delivering a broader range of digital services to customers implies the need for an even greater level of complexity.

3. **Diversity:** Although it's changing rapidly, automotive OEMs are still engineering and manufacturing firms at heart. They simply don't have the breadth and depth of competence, talent and infrastructure in-house to make a success of everything from infotainment systems to autonomous vehicle services, without external assistance.

In this context, it's clear that building a successful connected car business model will be dependent on establishing the right partnerships across the value chain – and especially in IT.

VMware, together with Dell Technologies is in a unique position to assist automotive OEMs in bringing their strategies to life through, for example, flexible, agile and customer-oriented application development, and the scalable infrastructure platform needed to build and support a broad range of new services. In addition, VMware delivers an IoT platform to broadly manage, monitor and secure all edge systems related to connected vehicle, as well as providing third party tools integration that enables vendors to adjust services and vehicle processes based on predictive analytics. Finally, VMware offers the uniquely dynamic computing infrastructure in the cloud, in the data center and in the vehicle to connect all the relevant systems together securely and reliably. This means VMware is well positioned to help automotive manufacturers succeed in the rapidly evolving connected car and autonomous vehicle era.

USERS COME FIRST

At the 2015 Frankfurt Motor Show, many commentators noted that automotive OEMs attending the event were positioning themselves as technology companies that happen to make cars, rather than as manufacturers adding technology to vehicles. While the reality may not yet live up to the hype, it is a watershed moment for the industry. It marks the acceleration of the journey towards a future in which vehicles will become mobile and automated extensions of users' living and working environments.

This vision may still take many years to penetrate the mass market, but the first steps have already been taken. Several manufacturers already have vehicles on sale that have park pilots, keep lanes and brake automatically to avoid an accident. And extensive self-driving vehicle tests covering hundreds of millions of kilometers have already been completed by most automotive OEMs and a wide range of tier 1 suppliers. Moreover, potential profitability of in-car online systems is beginning to rise as their popularity increases. This is backed up by a recent PWC survey which revealed that more than 85 percent of Chinese customers in the volume segment would be willing to switch to a different brand of car if it offered more connected features at a reasonable price.* All of which increases the pressure on brand owners to take their visions of connected and automated vehicles out of the motor show spotlight and testing programs, and into the showrooms.

To succeed, automotive OEMs will have to sharpen their focus on what the user wants to do, rather than what the device (i.e. the vehicle) traditionally allows. And personalization will be key. Today, vehicle customization is mostly about users adapting vehicles through options lists and after-market components. In the future, it will be about multi-user vehicles adapting to individuals by varying the software-based services that are delivered to them

in the car, from entertainment to information, mobility, security and beyond.
As far as today's new vehicle sales are concerned, connectivity options are just more boxes to be ticked on an order form. In the future, vendors will generate revenues through a continuous cross-selling and upselling process across multiple shared vehicles over the user's lifetime, regardless of who owns the car. It's the only way they will be able to retain ownership of the customer, and protect and grow their market share.

VMware together with Dell Technologies and partners delivers the IoT Management platform, back-end infrastructure, app development platforms, in-vehicle intelligence, and secure networking to enable the continuous collection, delivery and analysis of data required to support this new user- and service-oriented future.

* http://www.strategyand.pwc.com/reports/connected-car-2016-study

B2B SERVICES – THE HIDDEN CONNECTED CAR OPPORTUNITY

Vehicle manufacturers have focused on B2C applications and services in their initial connected car and autonomous driving investments. It's where the volume and the headlines are. However, while it doesn't attract as much attention, selling connected car data to other businesses undoubtedly presents automotive OEMs with new opportunities. And, despite the inevitable data usage and consumer privacy issues, there is no shortage of companies eager to utilize vehicle and user data to generate new revenue streams.

Establishing trusted partnerships with different types of businesses will be essential. In some cases, this will be straightforward because the relationships already exist – rental companies, franchised vehicle dealerships and vehicle fleet owners are prime examples. Others will take longer to build and are likely to involve a significant amount of trial and error before a mutually beneficial formula for generating revenue is identified. The key opportunities include:

Franchised dealerships: Connected car data offers dealerships the opportunity to monitor vehicle components in order to detect potential or actual mechanical problems. Different levels of service could be offered to customers who prefer to address problems earlier, and those who want maximum return on their investment e.g. waiting until tread depth is almost illegal before replacing a tire. Offering regular over-the-air software updates for navigation and other in-car systems will also become increasingly attractive.

Independent repair & maintenance workshops: By broadening access to maintenance-relevant data to non-franchised workshops, OEMs could also start selling branded parts directly to smaller businesses that wouldn't usually deal directly with manufacturers.

Insurance companies: Insurance providers have already begun to offer dynamic, usage-based premiums. Increasingly, they will want direct access to vehicle data for risk- and premium-assessment purposes.

Advertising firms: Advertising companies could utilize app and service usage data and combine it with route information, to deliver location-based ads either to the car, or to roadside billboards, based on the profiles of individual drivers.

Retailers: For retailers, the ability to connect purchasing behavior with specific driving routes or destinations would enable them to deliver e-coupons to vehicles whenever they are in the vicinity of a specific store.

Vehicle fleet owners: Owners of vehicle fleets such as large enterprises or haulage firms will value the opportunity to monitor vehicle condition and driving patterns. It could also help them track performance against, for example, delivery time, fuel efficiency or emissions targets.

Car park companies: Car park facility owners could use vehicle data to let drivers know in real time about vacant spaces that match their current journey profile.

VMware has the secure networking and cloud computing technologies to enable the collection, transmission and analysis of the data that will power all of these business opportunities. Moreover, VMware uses its pioneering containerization and segmentation technologies to enable automotive OEMs to treat different types of data in different ways, so as to maximize its value while still protecting user privacy and ensuring regulatory compliance.

CONNECTED CAR BUSINESS BRIEF SERIES

The VMware Connected Car Business Brief Series explains how VMware helps automotive OEMs build a highly scalable and secure infrastructure for the connected car and driverless vehicle era. The brochures cover the following topics:

01 **Vision:** Powering new automotive business models through the secure and efficient sharing of data and intelligence between vehicles, users and vendors via the cloud.

02 **Security:** Innovative segmentation-based approaches to security in data centers, vehicle head units and wireless networks that minimize business risk and protect drivers.

03 **Software over-the-air:** Secure collection, analysis, management and delivery of real-time data transmitted over-the-air between drivers, vehicle head units and vendors.

04 **Data collection & analysis:** Maximum value from connected car data supported by the software-defined data center, secure public cloud infrastructure, cloud-based data management and intelligent in-vehicle device agents.

05 **New business models:** Driving new revenue streams through data recycling, shaping the in-vehicle user experience on demand, driverless transport services, and more.

Defining the Connected Car Revolution	**01**

02	**03**	**04**	**05**
Protecting the future of connected cars	Managing the 'device on wheels'	Winning the race to the data-driven future	Generating connected car revenue streams

Your Contact

Matthias Schorer
Lead Business Development Manager – IoT, EMEA

Since 2017 Matthias Schorer leads the Business Development for IoT in EMEA. Before he was Head of Strategy Consulting and responsible for the VMware Accelerate Advisory Services Team in Central and Eastern Europe. He has extensive expertise in IT architecture, legacy system migration, cloud computing and virtualization across multiple industries, with a focus on the automotive sector and connected car innovations.

mschorer@vmware.com
Tel. +49 89 / 3706 17108

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vmware®

VMware Global, Inc.
Zweigniederlassung Deutschland

Freisinger Str. 3
85716 Unterschleißheim

www.vmware.com/de