Gearing up for an IoT-enabled automotive world

The in-vehicle infotainment market keeps garnering exciting headlines and for good reason. Electric vehicles, autonomous driving and smart cities are all receiving significant investment, and the revolution towards a more automated, connected future is moving up a gear.

ACCESS™ **AUTOMOTIVE EBOOK**

Gearing up for an IoT-enabled automotive world

The in-vehicle infotainment market keeps garnering exciting headlines and for good reason. Electric vehicles, autonomous driving and smart cities are all receiving significant investment, and the revolution towards a more automated, connected future is moving up a gear.

However, there is a lot of work to be done. A long and exciting journey with many technological stops along the way will take us from today's reality to this vision. Fully automated, self-driving systems are years from mass-market acceptance, with regulatory and technological barriers to be overcome before the industry can move towards consumer acceptance. In the short term, telematics, connectivity and applications will become central within vehicles. For OEMs and Tier 1s to offer drivers and passengers the level of service and the functionality they want, the industry needs solutions that enable them to deliver next generation information and entertainment services in the short term, and to seamlessly introduce more advanced services in the future.

Neutral: where we start

In the past, the purchase of a new car could also spell the end of the direct relationship between the manufacturer and the consumer. If the vehicle was to be 'dealer maintained', then there was an opportunity for brand engagement. However, this was still not a direct channel from the OEM to the consumer. If a third party maintained the vehicle, however, the opportunity for continued communication could be lost entirely.

The advent of connectivity in the car means that OEMs now have an opportunity to forge a closer bond with their customers.

Before we move up a gear and gaze into the future of the industry, let's stay in neutral to look at what commercially available connected cars are truly able to offer today. From advanced diagnostics, enhanced driving safety, voice recognition, automotive apps, regularly updated car firmware and rear-seat entertainment to Advanced Driver-Assistance Systems (ADAS), in-vehicle technology is already radically transforming the driving experience. With the addition of two-way connectivity, the industry can move to the next gear.

First gear: Capitalising on connectivity

Car sensors have enabled drivers to monitor the status of their car, from tyre pressures to engine oil quality, and to optimise service intervals. With the rise of in-vehicle connectivity, this local data and off board analytics are enabling the car to automatically communicate levels of wear and tear, providing dealers with accurate information to ensure that mechanics have a clearer view, and without waiting for the compulsory car inspection. A clear industry waiting for this step is insurance: accurate usage data will help the provision of tailored policies, providing the consumer with greater choice and insurance companies with the data they need to assess risks. Looking forwards, aggregated and analysed data can also help the industry to offer tailored advertising and media strategies, especially with the new wave of intelligent and Internet enabled head units. For example, a tyre company could advertise product promotions directly via the head unit as soon as the car informs the driver that its tyres need changing. OEMs and Tier 1s have already shown their desire to protect this data through agreements on privacy and data security principles that regulate how automakers collect, use and share information. One of the first positive results of this improved data aggregation is a drop in the price of telematics insurance –

According to Consumer Intelligence, 20% of the cheapest new business insurance quotes this year are telematics-based policies, a dramatic jump from the 9% of 2013.

Source: goo.gl/qqMtWk

according to Consumer Intelligence, 20% of the cheapest new business insurance quotes this year are telematics-based policies, a dramatic jump from the 9% of 2013.

The advent of connectivity has also transformed the consumer perception of the car itself. To resemble our connected devices more closely, touchscreen displays have made their appearance in a wide range of cars. Enhanced software, including apps, has been integral in providing drivers and passengers with valuable, real-time information services that are similar to how they access information through a smartphone or tablet. For OEMs, this has led to a new challenge when designing their In-Vehicle Infotainment (IVI) system: making the decision between maintaining control over the in-car experience through embedded services, or handing over the relationship to device manufacturers by going down the Bring Your Own Device (BYOD) route.

Second gear: Breaking the BYOD and embedded silos

The general consensus on In-vehicle infotainment (IVI) is that it is a fundamental part of the development of any new vehicle – so much so that a **BIS Automotive Report published earlier this year** forecasts that the global in-vehicle infotainment (IVI) market will reach $52.2 billion by 2022. Yet, the concept of IVI can be seen a number of ways. For OEMs, embedded systems have traditionally been the only valid option: building on the navigation system with additional features, they ensure a deep relationship between the OEM and the driver. While this approach enables OEMs to maintain the presence of their brand around the driver, embedded systems require significant investment and generally have received little maintenance beyond the ability to purchase map updates. They also need the designers to account for upcoming technology revolutions that are not easy to foresee, leading to some systems appearing out-dated compared to consumer devices - even at launch.

For device and smartphone manufacturers, the BYOD approach provides the much bigger benefit of enabling them to extend their brand reach to consumers inside the comfort of their car. This is a first for drivers, who traditionally would have left their smartphones out of reach while on the road, relying solely on local connectivity via Bluetooth. Passengers, however, have been turning to BYOD for highly personal rear-seat entertainment across all their screens, historically via personal DVD players and now via tablets.

In the battle for ownership of the driver and passenger, the device manufacturer side seems to be in pole position on the grid for now. The mobile era has created an appetite for new features to be added on an on-going basis, which means that there is a pressure to "unlock" the in-car infotainment environment, as well as a requirement for faster time to market for new features. As consumers introduce more devices inside the car – from smartphones and tablets through to handheld game consoles and e-readers – being able to offer a seamless experience on all these screens is becoming an important new challenge for OEMs and Tier 1s as they look to safeguard content on billions of different screens across the globe.

Yet, luckily for OEMs, there is a middle path: technological advances now enable drivers to access online media content within the vehicle via the IVI system, plus consumer owned "BYOD" devices. OEMs can use the mobile app ecosystems to develop branding beyond the vehicle, improving customer engagement and preserving the OEM brand. Valuable solutions can also serve as a central collection point for diverse vehicle data, providing a simplified method for OEMs to collect useful data from across the vehicle for both in-vehicle and offline analytics to enhance the customer experience and brand engagement.

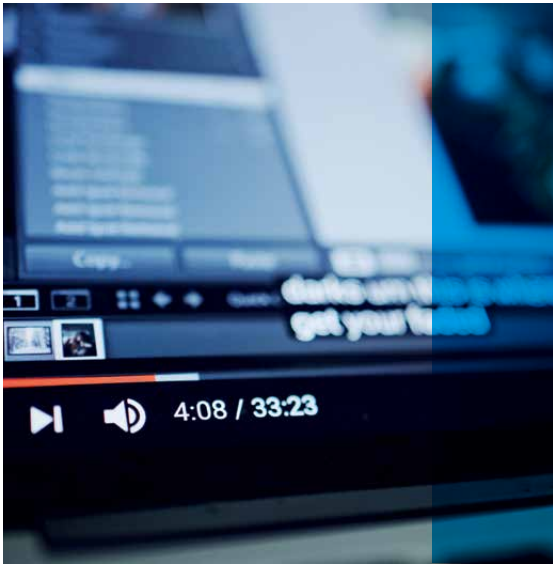
Media sharing in the car with ACCESS Twine™ for Car

Third gear: Adopting open standards

With faster time to market, reduced budgets to test out innovations and more screens entering the IVI mix, OEMs and Tier 1s need solutions that can easily adjust to new devices. As often, the answer can be found by looking at other industries that have overcome similar challenges. The web, connected entertainment and consumer electronics markets have successfully adapted to the plethora of devices accessible today, simply by adopting HTML5 as a core standard. Providing a unified environment for applications, HTML5 enables OEMs to reduce development time and costs, whilst increasing software reuse and ensuring a seamless experience across all applications and devices.

As an advocate for open standards, we are a member of the **GENIVI Alliance**, a not-for-profit that provides standards and an open connectivity platform that accelerates innovative solutions based on open software for In-Vehicle Infotainment (IVI) systems and connected vehicles. The primary goal of GENIVI is to reduce the challenges automakers and their suppliers face as they deliver the latest IVI functionality in their automobiles.

We have been working with other member organisations to develop an open in-vehicle infotainment and connectivity platform for the transportation industry. The 140-member strong organisation has pledged to deliver the underlying building blocks for secure and robust connectivity, accelerate innovation and development, based on open software for IVI systems and devices that will connect the vehicles of the future.



Fourth gear: Engaging the consumer

A key factor commonly overlooked is the need for the automotive industry to engage with, and educate, consumers on the benefits of a connected future. People are understandably wary about giving out data to car companies and others, so OEMs need to garner their trust.

Taking a lead from other industries that are further down the road with this, OEMs should follow a set of basic rules:

- **Always provide a benefit to sharing data: services should be valid for drivers (e.g. historical data, driving patterns, improved fuel consumption, reduced maintenance, etc.)**
- **Provide clear information on what kinds of data, why and how (anonymous Vs personalized; easy to understand terms and conditions; respect privacy and promote security; secure transport and storage of data; no misuse of data for purposes that the consumer is not aware of, etc.)**
- **Give the driver a choice about what data to share and what not to; what purpose the data is shared for**
- **Allow drivers to access their data: drivers should feel in control of their own data, and be given periodic reminders to revise their sharing choices.**

By adhering to these simple rules, OEMs and the wider automotive industry can build the trust needed to fully enable our connected future. With this level of trust, OEM brands should significantly benefit from a deeper relationship with their customers.

Top gear: The future and the Internet of Things

Capitalising on the advent of connected parts, in-vehicle displays and BYOD devices, Vehicle-to-Everything (V2X) is slated to be a huge trend in the automotive industry. This new need for the car parts and devices to communicate more effectively has been accelerated by the explosion in adoption of Internet of Things (IoT) devices. Consumers are already becoming accustomed to a massive array of connected devices that they can access from anywhere, and at any time. From sensors inside the home to security cameras, virtual assistants with voice control and connected fridges, we are adapting our homes to be connected ecosystems faster than anyone predicted. A continuation of consumer acceptance of these innovations will only benefit the automotive industry, resulting in a radical evolution in consumer demand for cars that can connect with other devices, and even our homes, faster and seamlessly.

Connectivity will be taken for granted, with a synergy between the necessary embedded systems within the vehicle and BYOD approaches, increasing consumer choice and reducing OEM costs for optional extras such as rear seat entertainment systems. Open standards will drive adoption, ensuring interoperability and providing OEMs with new opportunities.

While the notion of a fully automated, driverless car – looking more like a pod from Wall-E than the vehicles of today – is still years away, OEMs and Tier 1s are all now preparing for this upcoming revolution and starting to navigate the legal frameworks that will be needed to make it a reality. With BYOD and IoT expanding, OEMs will need solutions to help them control and manage users, devices and content, including content consumption rules, like parental control, in a centralised way. In 2018, we expect IoT and in-vehicle connected entertainment will continue to converge for a more unified infotainment experience for consumers.

Once the connected car turns into a media hub, the car infotainment unit will need to share control or revoke it from a connected device. This complicated workflow can be simplified by deploying

the right technological tools, such as ACCESS Twine™, our solution for secure content distribution for connected car infotainment. ACCESS Twine™ allows playback of content on the local device and/or on connected devices. Content aggregation and aggregated index search enable OEMs to offer similar services to the in-flight entertainment industry in a fully OEM-branded way. The solution also supports pushing content from one connected device to another and continuing from the exact same point. Working online and offline, the solution enables users to sync their encrypted and private content in the home and in the car. Finally, ACCESS Twine™ supports the collection of usage data for analysis, recommendations and personalised, targeted advertisements.

The automotive industry is evolving fast and, while we are looking towards the beginning of the driverless era, OEMs need to start preparing for this onslaught of content, connectivity and devices ahead of time. With the right tools, infotainment is the best area to start turning our cars into home entertainment systems on wheels, adding video content to the in-vehicle media mix, and we are here to help.

ACCESS Twine™ 360° Smart Media Platform

The ACCESS toolbox

Building on our know-how in embedded software powering over 1.5 billion devices today, including IVI systems, we provide embedded solutions that are integrated with automotive human-machine-interfaces (HMI), device management, dashboard and multimedia systems.

We offer car manufacturers and Tier 1s solutions that enable them to meet and surpass consumers' high expectations of the experiences delivered by in-vehicle infotainment systems. Our solutions are designed to be integrated by any OEM and Tier 1 and enable both embedded IVI and BYOD within infotainment systems.

ACCESS Twine™ Car: secure content distribution for connected car infotainment

Our solution enables OEMs to take advantage of connected vehicles and build new business models and relationships with their customers. IVI platforms developed with ACCESS Twine™ enable drivers to access online media content within the vehicle via the IVI system and consumer owned "BYOD" devices, whilst preserving the OEM brand. Additionally, the platform can serve as a central collection point for diverse vehicle data, providing a simplified method for OEMs to collect useful data from across the vehicle for both in-vehicle and offline.

NetFront™ Browser BE: HTML5 standards-based solution for the delivery of Human Machine Interfaces (HMI), services and applications

We provide the automotive market with the broadest range of commercially supported HTML5 platforms; enabling OEMs and suppliers to take advantage of full-featured HTML5 based browser solutions. NetFront Browser BE is a Chromium Blink-based platform for high performance, secure HTML5 content rendering, provided as a Software Development Kit for OEMs and Tier 1 to embed into their IVI platform.

For more information about our solutions deployed **by OEMs worldwide and Tier 1s** to **power in-car multimedia experiences and connected apps**, please **head to our website**.

ACCESS CO., LTD.
Akihabara Office
Daito Building, Kandaneribei-cho 3
Chiyoda-ku, Tokyo 101-0022, Japan
www.access-company.com

ACCESS Europe GmbH
Essener Strasse 5, TZU-IV
46047 Oberhausen, Germany
Phone +49 208 8271010
eu.access-company.com

Sales Contact

For further information on the technology please contact **automotive@access-company.com**