The car of the future is not a car

Electrification, automation and digitalization are about to change pretty much everything about how we get from A to B. But is this good news for people and the planet?
Imagine your city with only a seventh of the vehicles it has today. Parks replace parking lots. The young, sightless, elderly and disabled have access to individual mobility. Nobody dies in traffic accidents anymore due to human error. The vehicle you travel to work in does not look like a car at all; it’s more like a comfortable private lounge.

As Johann Jungwirth shares this future vision for automated and digitized mobility at the Digital Future Conference in Berlin in May 2016, the audience is all ears. But when he says that his company wants to be a leader in sustainable mobility by 2025, muffled laughter can be heard. Why? Because Jungwirth works for Volkswagen, and this is just months after Dieselgate. With VW’s reputation at an all-time low, it’s a stretch for some to imagine the company’s quick rebound as a sustainable leader.

"We will democratize mobility and increase social mobility"

Johann Jungwirth

The skeptical laughter also reflects something else: the connection between sustainability and the trends reshaping the auto industry is not always clear. While it might be a smart business strategy to offer fully automated, electric cars and a wide range of digital services, how do society and the environment profit? In the case of electrification, the transition away from combustion engines will have clear benefits for urban air quality, noise reduction, and lowering CO₂ emissions – particularly if the electricity used to recharge batteries comes from renewable sources.

For Johann Jungwirth, Volkswagen’s Chief Digital Officer, the sustainability impacts of digitalization and autonomous driving are also clear. By eliminating the root cause of over 90 percent of traffic accidents – human error – autonomous driving could dramatically reduce the 1.25 million lives lost on the world’s roads each year. After all, Jungwirth says the car of the future may not even have steering wheels or pedals. Without drivers, designers can also rethink standard features like driver-side doors and large windows. It will be more pod than car.

“Self-driving vehicles will also make a huge contribution to sustainability in the sense that we offer individual mobility to everyone,” says Jungwirth. “I am thinking here about the blind, the sick, children – people who have no or just very limited access to individual mobility today. We will democratize mobility and increase social mobility.”

For Volkswagen to play a leading role in this sustainable future, Jungwirth believes there is no time to lose. For the last seven years, he has worked in California’s Silicon Valley – most recently at Apple – where he had an insider’s view of the powerful new players and trends that are rapidly shaping the future of mobility. Since returning to his native Germany in November 2015, Jungwirth now finds himself on the front lines, not only of the reinvention of the car, but also the reinvention of Volkswagen.

Volkswagen announced in June 2016 that autonomous, digitalized, and electrified mobility will be cornerstones of its Strategy 2025. According to Jungwirth, this strategy should hasten the transformation of Volkswagen from a traditional carmaker to a mobility provider that also offers software and services. With its first automated cars expected to be available in three to five years, Volkswagen also plans to develop or acquire a range of mobility services. The group’s recent invest-
ments in on-demand mobility company Gett and mobile payment company sunhill technologies are early milestones on this path. “We are a hardware company that has focused on safety, reliability, quality, design, and great brands,” says Jungwirth. “Now let’s take software and services to the same level to become an integrated hardware, software and services company. This is extremely important for a successful digital transformation and long-term success.”

A peek in the kitchen

This will be no small feat. To get there, Volkswagen needs to quickly attract talent and expertise in key areas, such as user experience and software development, and embrace the working cultures that digital companies use to speed up innovation, such as flatter hierarchies and more collaboration across different parts of the company. These changes are already underway at the Future Center Europe in Potsdam, Germany, where exterior and interior designers, as well as user experience designers and engineers are designing and developing new concepts around the digitalization, automation, and electrification of mobility.

“We are breaking down the old boundaries between departments,” says Peter Wouda, as he gazes out his office window overlooking Potsdam’s picturesque Tiefer Lake. Wouda has designed cars for the Volkswagen Group for twenty years, and now leads exterior and interior design at the Future Center Europe. Today, the teams working at the center are more interdisciplinary, uniting talent from different areas of expertise. “It’s not so important who in the team is the exterior designer, interior designer, engineer, or user experience designer,” says Wouda. “What is important is that the team works together to achieve the best possible result for the customer.”

Along with Wouda, Ulrike Müller leads the Future Center Europe. As the head of user experience design, Müller says her work is now more focused on solving custom-

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**E-MOBILITY AT A GLANCE**

**Four Levels of Electrification**

**01. Mild hybrid**
A mild hybrid electric vehicle (mHEV) does not actually drive in full electric mode. It shuts off the combustion engine and disengages it from the drivetrain in coasting phases. Also, it recovers energy by regenerative breaking for its electrical system or a "mini boost".

**02. Full hybrid**
When people use the term "hybrid", they usually mean a full-hybrid electric vehicle (HEV). These can be driven with either of the two different drives – electric or internal combustion – or with a combination of both. The full hybrid can drive a few kilometers in pure electric mode.

**03. Plug-in hybrid**
The plug-in hybrid electric vehicle (PHEV) is a full-hybrid that can be charged by plugging it into an external power source. Their batteries have larger capacities, allowing for them to be driven in all-electric mode for longer. The purely electric driving range covers up to 100 kilometers.

**04. All-electric**
The battery electric vehicle (BEV) represents the ultimate step for e-mobility, because an internal combustion engine is no longer needed. Improvements in battery technology and investments in charging infrastructure will make BEVs a viable option for longer journeys.
ers’ problems than responding to top-down demands from management. “We don’t ask for a commission; we ask for a problem,” says Müller. “Once I know the problem, I can come up with an idea to solve it, and then work to confirm that idea. That’s different thinking.”

This user-centric approach can unlock innovation, but Müller also believes it can lead to more transparency. Well-designed interfaces are an opportunity for brands to build trust with the customer by giving them more feedback and control – for example, over how their data is collected and used. Müller says giving customers the “right feeling” when using the product will become increasingly important as vehicles become more connected and automated.

**Planning for third place?**

The Future Center Europe is one of three Future Centers that Volkswagen is setting up globally. At the Future Center California, the focus will be on absorbing the influences from the Silicon Valley, while Future Center Asia in Beijing will conduct research and develop design concepts specific to the Asian markets that are key to Volkswagen’s success and growth. This is vital because there are significant regional differences, not only in language, culture, and taste, but also different attitudes towards new touchstones of sustainability like data protection. Particularly in China, Volkswagen’s single-largest national market, the breakneck speed at which digitalization and electrification are being embraced should be reflected in designs and services.

According to Simon Loasby, Design Director at Volkswagen Group China and head of the Future Center Asia, Chinese consumers are generally more open to data sharing and more accustomed to electric mobility than, for example, consumers in Germany.

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*Past design study: Scirocco model*
Loasby says China is arguably the most advanced market when it comes to combining data freedom and e-mobility worldwide, with the United States second and Europe third. “If we designed everything technically and aesthetically, the user experience, and the user interface from a European perspective,” says Loasby, “we’d be planning to be in third place.”

Christian Senger, head of the Volkswagen’s e-Mobility line, also sees China as an ideal market for electric vehicles due to government support, shorter average commutes, ubiquitous charging stations, and an urgent need to reduce urban pollution. “I predict that during the 2020s, combustion vehicles will seem old-fashioned,” says Senger. “That is happening faster in China than in the rest of the world.” But Senger also suggests the rest of the world might not be too far behind. Swift progress towards less expensive batteries with longer ranges, investment in charging infrastructure, and the development of an ecosystem of digital services should make e-mobility more attractive in other markets.

“We don’t ask for a commission; we ask for a problem”

Ulrike Müller

“At the end of the day, people don’t want just a car without emissions,” says Senger. “The e-vehicle of the future is actually a smartphone on wheels.” However one chooses to visualize the future of mobility, it represents an opportunity for Volkswagen to improve its “triple bottom line.” Going beyond incremental improvements in efficiency or waste reduction (the usual domain of ecological corporate sustainability initiatives), the convergence of digitalization, automation and electrification could make Volkswagen’s products and services radically more accessible, safe, and convenient for the millions of people who use them, and more sustainable for the planet they inhabit.
SHOWCASE

VW e-up! (2013)
Ideal for city driving and short commutes, Volkswagen’s first all-electric vehicle can recharge faster than a smartphone, and boasts a range of 150 kilometers per charge.

VW e-Golf (2014)
The all-electric version of the Golf can reach up to 190 km on a single charge without producing any local CO₂ emissions.

VW BUDD-e (2016)
The all-electric BUDD-e van concept is Volkswagen’s first application based on the platform of the Modular Electric Drive Kit (MEB).

One plug for all
In 2013, the European Commission voted to implement a single standard connector system throughout Europe for charging electric vehicles — Volkswagen played the most prominent role in promoting the Type 2 charging plug developed by Mennekes.

Modular Electrification Toolkit
The Volkswagen brand is developing an architecture especially for e-vehicles. It enables entirely new vehicle concepts as well as ranges in excess of 500 kilometers.

e-Mobility-Station
In 2015, Volkswagen and the city of Wolfsburg transformed a landmarked 1950’s petrol station into the “filling station of the future.” The site now features charging terminals for electric vehicles, an exhibition about e-mobility, as well as its own wind, solar and geothermal energy installations.

April 2016: New exhibition showcases e-mobility at Volkswagen
Visitors to the interactive exhibition about electromobility and digitalization at Volkswagen’s Gläserne Manufaktur (Transparent Factory) in Dresden can test out driving simulators, view e-mobility concept vehicles up close, and test-drive all-electric and plug-in vehicles.

June 2016: E-mobility made a cornerstone of Volkswagen’s Strategy 2025
As part of its “Together – Strategy 2025”, Volkswagen Group announced in June 2016 that it plans to launch 30 purely battery-powered electric vehicles within the next decade. It forecasts sales of between two and three million units by 2025, or around 20-25% of total unit sales expected at that time.

Charge&Fuel Card
Introduced in January 2015, this payment card (and accompanying app) from Volkswagen Leasing GmbH gives drivers of all-electric and plug-in-hybrid vehicles more convenient access to over 3,000 charging stations across Germany.

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