Ways to make driving easier, safer born at BMW idea factory

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Those iPod and iPhone adapters that are now standard equipment in nearly every modern car were born out of a "what if" idea by BMW engineers in Silicon Valley in 2003.

Then in 2007 they teamed with another Silicon Valley giant - Google - to send information from drivers' computers to their cars' navigation systems, eliminating the need for drivers to program their cars with driving directions they had already looked up at home or in the office.

The experience of drivers - whether in the cockpit during an emergency, or at home letting a computer decide the best time to recharge an electrical vehicle - remains the focus of engineers at the automobile think tank officially known as the BMW Group Technology Office USA.

Today, every major car manufacturer has followed BMW in setting up their own research-and-development offices in the heart of Silicon Valley to soak up ideas and partner with big and small tech companies to develop innovations that will make driving safer or just more fun.

In March, Ford Motor became the latest carmaker to open its Silicon Valley research office - in Palo Alto. But Dirk Rossberg, a German who runs the BMW Group Technology Office USA, is quick to point out that BMW started it all.

"Daimler is here. Honda is here, Toyota is here, Nissan, Peugeot, GM,

Ford - all the companies," he said. "But we were the first."

Rossberg and his staff are stingy about revealing details about the really cool stuff they're working on. They wouldn't even allow this newspaper a glimpse of the open-space workroom that takes up the entire second story of their 13,000-square-foot idea factory, which is tightly controlled by locked doors.

But the few ideas they would share offer the promise to make driving safer, more convenient and, for electric vehicle owners, cheaper.

For instance they continue to rewrite algorithms to fine-tune existing vehicle-sensing technology that could let drivers know when a pedestrian is crossing in front - or notify the driver when a vehicle ahead suddenly brakes hard.

"The driver is always in control, of course," Rossberg said. "But the car will tell you that something's going on ahead and might even start braking."

And engineers are looking at ways to funnel all of the data collected on every Internet user so their vehicles will make suggestions on where to stop or even shop.

"Say you're driving from Los Angeles to San Francisco and your car knows that you normally take a coffee break every three hours,"

Rossberg said. "You just passed a nice coffee place that's five stars on Yelp and there won't be another coffee stop for 50 miles. So it will recommend stopping here. Or your car knows that you've been looking on the Internet for television sets but your credit card says you haven't bought one yet. So it may point out a store with the cheapest price. This is part of the future."

BMW's engineers in Mountain View also continue to retool existing speech recognition and "gesture recognition" software and hardware that will let drivers fiddle with their audio, phone and navigational gadgets more efficiently and, hopefully, safer.

And they're looking at electrical vehicles from at least two different perspectives.

One team of engineers is writing code for a smart home system that can be programmed to charge an EV only when there's little energy demand on the home grid, such as the middle of the night when most lights and appliances are off.

Another group is looking at how to reuse old EV batteries once they've outlived the rest of the vehicle.

BMW's Mountain View engineers built a shed in the employee parking lot that houses dozens of old EV batteries that store energy from a solar panel array. The 30 kilowatts of stored energy reduce BMW's peak demand on the Peninsula power grid while saving hundreds of dollars every month on the building's energy bill, said Pete Dempster, one of BMW's sustainable mobility engineers.

The EV batteries in the shed also contain enough power during a blackout to run "emergency lights and critical devices for a couple of days," said Klaus Heller, BMW's senior advanced technology engineer in Mountain View.

Eventually, the BMW engineers hope to develop techniques and systems that will allow everyday EV drivers to lower their home energy bills while lessening their demands on the power grid, which will help everyone.

"We're not just looking at lower energy costs," Dempster said, "but other things that will benefit society."

BMW opened its original Palo Alto office in November 1998 with a handful of engineers and the rough idea that it needed to establish a beachhead in the birthplace of tech ideas.

After moving to a larger, two-story office building, garage and workshop in Mountain View in March 2011, the staff has since grown to 30 people who follow a freethinking, free-flowing work ethic that's more like a Silicon Valley startup than BMW's massive, 10,000-employee research-and-development operation back at headquarters in Germany, Rossberg said.

BMW's Silicon Valley-based engineers come and go at all hours of the day and night. The parking lot includes a barbecue and a basketball hoop for engineers to blow off stress or simply noodle on an idea.

"The culture in this office is unlike Munich," Rossberg said. "We have very flexible work schedules and very flexible thinking. If you figure out that a topic is not working, we shut it down and move on very fast. It's a huge advantage."

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THE BIRTHPLACE OF DRIVING IDEAS

Ways to make driving fun, safer and easier have been percolating out of the BMW Group Technology Office USA since its founding in 1998 in Palo Alto. They include:

iPod and iPhone adapters that are now standard equipment in modern cars

"Google send to Car" that allows drivers to instantly transmit information from their home or office computers to their cars' navigation systems

Using individuals' Internet data so their cars can make recommendations on where to stop for coffee or shop for TVs

"Gesture recognition" and speech recognition software designed to make the cockpit experience easier and safer

Designing "smart" home systems to charge electrical vehicles efficiently and cheaply