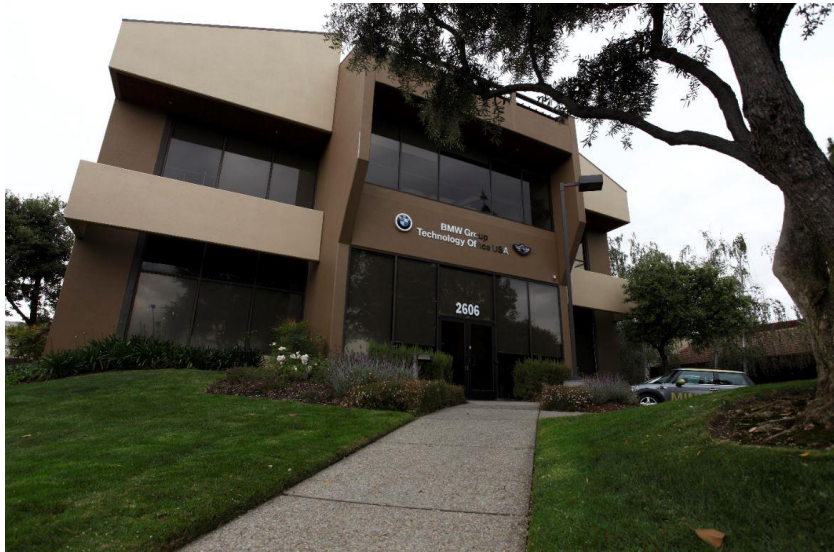


BMW NA 50th Anniversary | 50 Stories for 50 Years

Chapter 25: “The Silicon Valley Connection: BMW Opens a Technology Office in Palo Alto, CA”

Written by: Jackie Jouret



For more than a century, the Santa Clara Valley was known as “The Valley of Heart’s Delight” for the abundant fruit orchards that filled this alluvial plain at the southern end of San Francisco Bay. By the 1980s, nearly all of

the fruit trees were gone, replaced by the corporate headquarters and manufacturing facilities of the semiconductor industry that had given the area a new nickname: Silicon Valley. It’s where our digital world was first envisioned, where computers and networks evolved from highly specialized US Department of Defense projects into everyday tools for communication and entertainment.

As digital devices became ever more entwined with our lives—containing our calendars, our telephone and address books, and our music libraries, among other things—BMW of North America CEO Helmut Panke (1993-’95) recognized that they would find their way from our homes and offices to our cars. His colleagues in Munich agreed, and BMW opened its Technology Office in Palo Alto, California on November 18, 1998, in a ceremony at Stanford University.

“Before we opened the office, people would talk about how there was so much innovation coming from the West Coast. What is so special out there? Does it happen accidentally, or is there a reason for this? Do they do something differently than how we do it here in Germany? Let’s expose our people to this environment and see what happens,” said Dr. Joachim Stilla, who’d run the Technology Office from 2003 to 2005.

BMW’s newest think tank would be headed initially by 46-year-old Dr. Mario Theissen, who’d begun working in BMW’s engine department after completing his undergraduate degree in engineering in 1977. In 1991, two years after completing his doctorate, Theissen assumed a series of roles that put him at the cutting edge of BMW’s research and development: Head of Product Concepts, Head of Advanced Powertrain Development, and Managing Director of BMW Technik GmbH (the company’s first in-house think tank, established in 1985).

In 1998, Theissen was named Head of BMW’s Product and Technology Development Centers. From that position, he began to set up BMW Forschung und Technik GmbH, aka the BMW Technology Office, in downtown Palo Alto, California. This new outpost wasn’t far from the corporate headquarters of tech giants like Google and Apple, nor from world-class universities like Stanford and the University of California-Berkeley. The Tech Office was also within a few hours’ drive of BMW DesignworksUSA and BMW’s engineering center in Oxnard, California; together, the three offices became known within BMW as the “California Innovation Triangle.” While connected to the BMW mothership in Munich, they were able to take advantage of California’s innovation-focused culture, in which failure was an accepted result of experimentation.

“At Palo Alto, we have the freedom to try things out. This is one of the most flexible places in the BMW world,” said Stilla in 2005.

The Technology Office’s mission was, and remains, “to explore, evaluate, and transfer cutting-edge technologies primarily from non-automotive US

industries to our partners within the BMW Group.” That includes “continuous technology exploration; identification of upcoming trends; the study, evaluation, and application of technology; the building of prototypes to prove feasibility; the development of promising innovations into products; and technology transfer.”

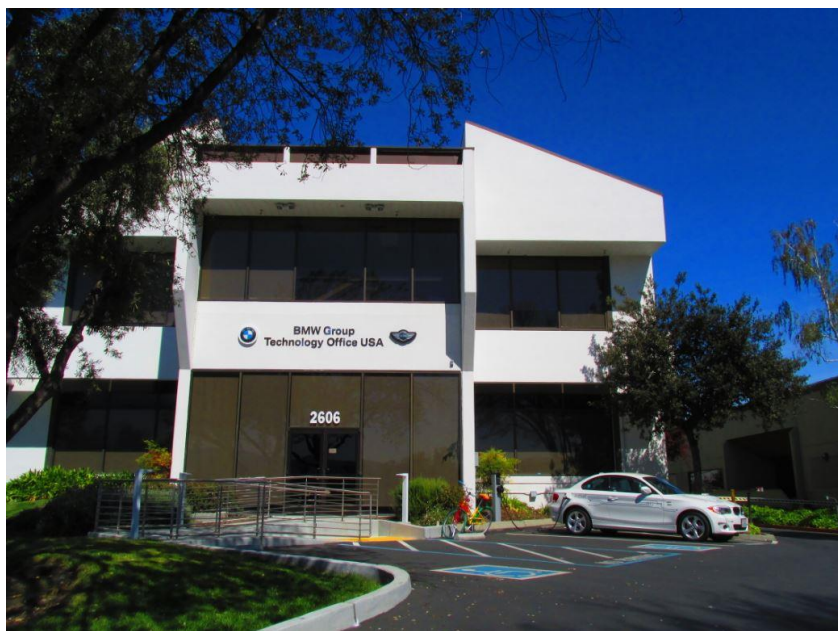
It didn’t take long for technology transfer to occur. In September 1999, less than a year after the Tech Office opened, BMW revealed its Z9 Concept at the Frankfurt Auto Show. Designed by Adrian van Hooydonk, the Z9 introduced not only the new BMW design language—which went into production with the E65 7 Series in November 2001—but also the revolutionary iDrive controller, which replaced a dashboard’s worth of knobs and buttons with a single knob on the center console. Using iDrive, a BMW driver could operate the audio system, climate, and navigation, all of which were displayed on a central screen.

“The basic idea [for iDrive, as the system became known] comes from two graduates of Stanford University, who originally developed the multifunctional control element in 1999 as a smaller version of control sticks for flight simulators,” declared a 2001 BMW press release, which revealed that the Tech Office had scouted the program that gave the controller its mechanical feel. “We didn’t invent iDrive, but we had a contribution,” Stilla said.

The E65 7 Series also marked the debut of Connected Drive, an in-car internet portal that could update the navigation system’s routes with real-time traffic information, and which could also be used to operate the mobile phone. Where short-range connectivity was concerned, the Tech Office was instrumental in bringing Bluetooth into BMW cockpits; this wireless interface arrived in 2002, and it’s ubiquitous today.

Those features were developed at the Tech Office using a vehicle dubbed the T-X5, which also served as a mobile testing lab for voice activation—another collaboration with researchers at Stanford—as well as the head-up display that projected navigation and vehicle information

onto the car's windshield. The latter technology was just making its way from military aircraft into production automobiles, with Chevrolet the first to adopt it. BMW wouldn't put a head-up display into its production cars until 2003, by which time the Tech Office had already adapted it to the helmets worn by BMW-Williams Formula One drivers, and the sunglasses worn by sailors on the America's Cup yacht of BMW-Oracle Racing. (Not coincidentally, Dr. Mario Theissen had left Palo Alto in 1999 to become BMW Motorsport Director, leading BMW's efforts with Williams in Formula One.)



The BMW Technology Office's early products weren't exclusively electronic. Palo Alto and the nearby towns are also home to a cluster of aerospace companies, including NASA's Ames Research Center, Lockheed Martin, Northrop Grumman, and RTX.

"Thanks to NASA branches and companies in the aircraft industry, there are also a wealth of material technology and production-related developments here," said Holger Jeebe, who led the Technology Office from 2000 to 2002. Collaborations with the aerospace industry helped BMW equip its M cars in particular with ceramic brakes, whose base material was first used by NASA as a heat shield, with lightweight but strong carbon fiber driveshafts, and with pedestrian-protecting hoods made of thin sheets of aluminum strengthened with a honeycombed core.

Perfecting the human-machine interface has always been integral to the Tech Office's mission, and in 2004 the Technology Office bridged the

connectivity gap between BMW and Apple's iPod music player. Drivers had long been able to connect the iPod by cable from the headphone out jack to the audio system's AUX port, with another cable and adapter providing power from the cigarette lighter, but that was both cumbersome and inelegant in a way that offended Apple Computer's iPod manager Stan Ng.

"He took a picture of all these white cables and said, 'I don't want this. I want to connect the iPod to the head unit and put the iPod in the glove box,'" said Patrick McKenna, then a manager within BMW's Marketing Department. "We put Stan together with our tech engineers, and they found the solution pretty quickly. It was called iPod Your BMW, and it basically fooled the head unit into thinking there was a six-disc changer in the glovebox, but it could only access six BMW-labeled playlists."

Closer integration followed, and soon an iPod could connect directly to the BMW's audio system via Apple's 30-pin cable, which allowed full access to the device's contents through the head unit. "iPod Your



BMW really opened the doors to a regular, continuous dialogue with Apple from that point forward," McKenna said.

As the iPod gave way to the iPhone—which wasn't merely a mobile phone but a hand-held computer that could be configured to provide

everything from email to calendars to music to navigation and beyond—the smartphone revolution was upon us. At the Tech Office, integrating the smartphone with the automobile became the crucial task at hand, according to Stefan Durach, who led the Tech Office from 2008 to 2011, taking over from Stilla’s immediate successor Dr. Bernardo Lopez.



“In the past, you would buy your BMW, and it would have a certain feature set that would remain stable over its lifetime. The features and the interaction with the car never changed, and it was the same with phones from Nokia or other

players,” Durach said. “When the iPhone hit the market, it was a completely different game. You just get a piece of hardware, and you customize it over time. You get new features, new products, new experiences. We wanted to participate in this, offering new features in the car, and we thought the phone might be a good bridge to get access to the music apps, and all the stuff they built at that point in time.”

Doing so would involve more than simple engineering. It also required Durach and the Tech Office to bridge two disparate cultures when it came to product development and production timeframes.

“The automotive industry, and BMW in Munich, is dominated by precise planning, because you have to prepare your manufacturing to assemble the cars for a seven-year lifecycle: to build up stock of parts, to build the mechanical tooling, etc. It takes time,” Durach said. “The tech industry side has a super, fast-turning way of developing product, and if you want to work in the auto industry and technology at the same time, you have to

define the right environment where you can experiment, try things out. If you want to integrate the latest and hottest features, you can take this decision only a couple of months before, not three years in advance.”

Initially, the problem was solved by using Apple’s standard interface, just as BMW had done with iPod Your BMW. Soon, that was replaced with CarPlay, a software solution that BMW was first to integrate into an automobile on the OEM level. This, in turn, allowed customers to stream music from companies like Pandora, or to use social media products from Facebook, from their BMW or MINI’s central screen. “If we had done that on the normal development cycle of a car, we would have had Friendster in the car instead of Facebook,” Durach said.

The Tech Office provided the crucial link between Silicon Valley’s smartphone technology and the automobile, Durach said. “The idea was, how do we enable the customer’s



personal digital ecosystem, which he uses daily, and make it usable in the automotive content frame? We weren’t going to build the next music app, but we wanted to integrate a great music service like Pandora into the car. We were the first to do that, and with the hottest service on the market.”

While smartphone integration provides the most visible evidence of the Tech Office’s influence on BMW’s automobiles, the division was also crucial to the development of technology related to battery-electric cars,

which began reaching customers as the MINI e and ActiveE prototypes in 2009 and 2011, respectively. The Technology Office developed an app that would let ActiveE drivers monitor their vehicle's charge status, locate charging stations nearby, and pre-condition the cabin for heating or cooling. Such specialized apps were largely unknown in 2012, but the ActiveE app has since been followed by a number of vehicle-monitoring apps, including today's all-encompassing My BMW app.

Despite the Technology Office's extensive collaborations with Silicon Valley firms, BMW didn't always adopt the latest innovations wholesale. Fully autonomous driving technology, for example, was deemed inappropriate to The Ultimate Driving Machine, so BMW chose to employ its radar and Lidar sensors as well as cameras to enhance safety through features like Lane Departure Warning and Active Cruise Control. Other aspects of autonomous driving technology were used to augment the car's GPS system to improve fuel economy or range. "We started this at Palo Alto and now our friends at Munich have taken over," said Dr. Stilla.



Not everything developed in Palo Alto was electronic. The Tech office also worked to bring new nanotechnology-infused upholstery to BMW, with fabrics that repelled dirt and offered exceptional durability.

"Nanotechnology deals with particles and surface structures where the layer thickness is so small that they're measured in 10 to the minus 10th," Stilla said, noting that the Tech Office was also investigating high-strength materials that reduce internal engine friction.

In 2011, having outgrown its small space in downtown Palo Alto, the Technology Office moved to Mountain View, to a much larger facility between those occupied by tech giants Intuit and Google. Regardless of its location, the Technology Office has been instrumental in making BMW a truly global company with respect not only to production, but also where design and technology are concerned. The Northern California outpost has been joined by a similar technology hubs elsewhere: in Munich; Seoul (established in 2024 to focus on display technology); Shanghai (where the company explores the human-machine interface, AI, and hardware-software integration since 2023); Tel Aviv (where BMW has connected to startups and research universities since 2019); Tokyo (which develops sensors, hydrogen technology, and the BMW Holo-Active Touch system); Greenville, South Carolina (where IT research is conducted at Clemson University); and Singapore (which explores blockchain for BMW).

The Technology Office has influenced nearly every aspect of today's BMW Group automobiles, and the cars have evolved in ways that might not have been possible without a BMW presence in Palo Alto or Mountain View. "There's so much innovation happening in Silicon Valley on a daily basis, but you really have to build a network of people you know on a personal basis with whom you can discuss topics long before they're getting to a product level," Durach said. "It's about being there, meeting these people and having a constant exchange with them at the breakfast meeting, the lunch meeting, or the evening event, where you can say, 'Okay, I have an idea,' or 'I would be interested in...' You can't have this kind of discussion remotely."

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