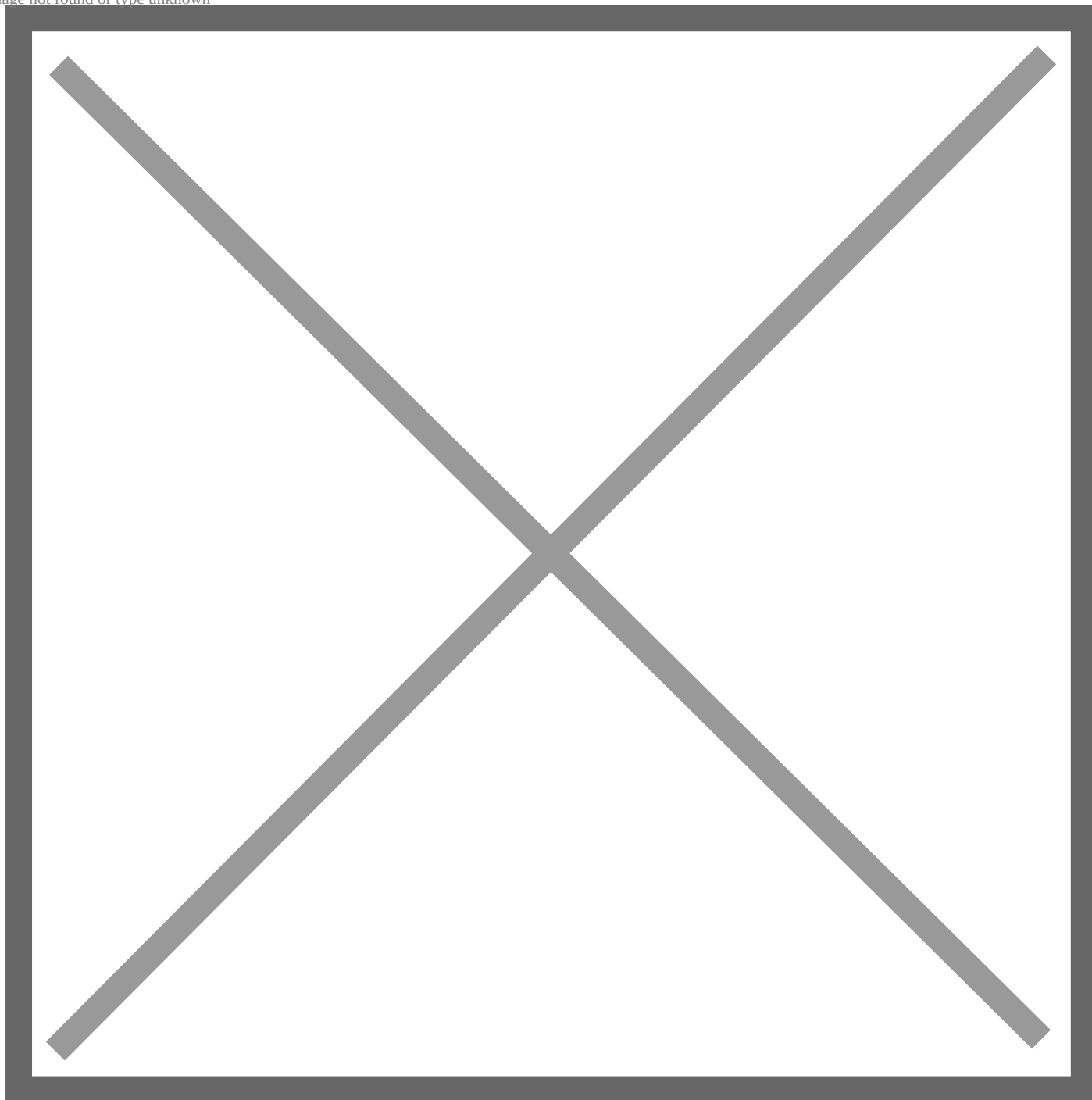


Power of Patents: Toyota Connected's Culture of Creating Meaningful Change

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The automotive industry is mature by most accounts. It's a well-oiled machine, having continuously served customers for more than 120 years. Yet, innovation is happening daily, possibly faster than ever.

Cars are connected with sensors that better help engineers determine what customers actually use. They're electrified. The driver-assist functions can tackle some functions of highway driving with less cognitive load on the driver. It's all fundamentally changing how we use cars.

It's helping Toyota Connected North America (Toyota Connected) look at new ways to add value to the ownership experience.

"We are fortunate to have an executive team that constantly pushes us beyond what our competitors are doing and challenges the status quo," said Shravanthi Denthumdas, vice president of Engineering, Mobility Teams.

With those challenges to the status quo, Toyota Connected encourages a culture of patents, serving as an advantage to its many inventors. But more so, it is an advantage to bring value to customers.

A Patented Formula

A patent is a powerful tool. It protects an inventor's hard work and adds a sense of permanence. Several hundred thousand [patent applications](#) are filed in the U.S. every year, motivating people to come forward with novel ideas.

And, it adds a sense of pride. Toyota Connected, whose purpose is to use data to innovate, thrives on pushing technology ahead of the curve – whether just ahead of emerging trends or so far ahead that it hopes to shake up the automotive industry.

"At Toyota Connected, we are dreamers. We are doers. We are builders," said Denthumdas. "Our executive team is making every stride to make sure our engineers are going places where no one has gone before."

Part of that process is to create innovations as seamlessly as possible.

"It's our job to help our engineers so they can keep focused on Toyota Connected's mission," said Fred Mau, intellectual property counsel for Toyota Connected and Toyota Motor North America.

"They're creators. We proactively protect and promote their work," he said.

An Idea is Born

There are a number of ways ideas are created at Toyota Connected. Some stem from immediate need – the Driveline telematics service platform, for instance, that provided our business the ability to directly help customers rather than employing a number of third parties. Some ideas stem from our [SWARM Mobility Hackathon](#) and other global events, such as the Patent-a-Thon, which are designed to bring forth promising ideas.

Ultimately, if an idea aligns with business objectives, and there's a will, there will be a way to bring an idea to life.

"We have formal processes in place called Product Review Boards and Investment Councils, where the engineers can actually pitch their ideas directly to our executive team and get their buy-in and get funding and bring their ideas to the market," Denthumdas said. "In my mind this is a great process because it not only makes the engineer think from an engineering perspective for that idea but also forces them to think what all it takes to bring an idea to the market."

Once an idea has been given a green light, it's developed into a product. The patent process typically runs in parallel with product development to ensure the idea is protected prior to commercialization.

Covering Your Asset

Once an idea is far enough along, engineers meet with TC's intellectual property counsel to discuss the novelty and benefits of the idea. If the idea passes muster, an invention disclosure is prepared along with a detailed search of the prior art which includes global patents, publications and publicly available information to determine whether or not the idea is novel and ultimately patentable. During the process, intellectual property lawyers go back and forth with the inventors to uncover roadblocks and further refine the idea.

When the legal team is satisfied, they will work with the inventors to prepare a patent application that will be submitted to the U.S. Patent & Trademark Office (USPTO) for consideration. Based on the applicability of the invention to other global markets, the patent application may also be filed in countries outside the United States.

In the next 18 to 24 months after filing the patent application, the USPTO's patent examiners review the patent application and work with Toyota's IP counsel and engineers to fine-tune any details. All told, the overall two- to three-year process should yield a viable patent.

Since Toyota Connected's inception in 2016, Toyota Connected inventors have been listed on 185 filed U.S. patent applications, 68 of which have been issued as U.S. patents. From these initial filings, 55 patent applications have been filed outside of the U.S. Demonstrating the collaborative nature of Toyota Connected's patent activity, 132 of the 185 filings have included both Toyota Connected and Toyota Motor North America or Toyota Motor Corporation inventors.

"Overall, we encourage everyone to get involved in the patent process to do our part to help Toyota bring the best technology to our customers and remain a leader in global innovation," said Mau. "Patents were instrumental in the creation of Toyota, and they remain extremely important today in an increasingly competitive business environment."