

# Innovations and IP Protection in Transport: from Industrialization to Computerization

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The history of transport has involved boundless technological innovations, and just like many other industries, the innovation in the transport industry is quickly evolving at a rapid pace with industry leaders striving towards more efficient, smarter, safer and consumer friendly solutions. It is crucial for companies in this industry, and particularly start-ups, to be aware of the necessity and importance of protecting their innovative products and processes through securing intellectual property “IP” rights in order to ensure their staying power in the industry and boost their competitive advantage over an already crowded market.

This article explores innovations in the transport field and provides various examples of the IP protection strategies of current innovators and market leaders, and discusses how IP protection plays an essential role in providing a competitive edge to businesses.

The first important technological advancement in transportation occurred with the industrial revolution in the industrial age which began around 1760 and brought fundamental innovations replacing hand-tools with power-driven machines. Most innovations at that time were on the mechanical and automation side of things. Another important flow of innovations came with the information revolution at the information age which brought an important realignment in the direction technology has been evolving, with the shift from industrialization to computerization.

## Industrial Transportation Era

In 1769, Nicolas-Joseph Cugnot, a French military engineer, built a steam-powered tricycle for hauling artillery – leading to one of the initial inventions in the transport industry. The tricycle’s single front wheel performed both steering and driving functions, and it could travel at 2.25 miles per hour (with four passengers) for about 15 minutes. Years later, two men, Karl Friedrich Benz and Gottlieb Daimler, filed their patents on the same day — January 29, 1886. Karl Friedrich Benz’s three-wheeled vehicle included an internal combustion engine with an integrated chassis. Gottlieb Daimler along with Wilhelm Maybach invented a motorized carriage – a four-wheeled automobile with a gasoline engine. Later on, Henry Ford in 1942, patented an automobile made almost entirely of plastic, attached to a tubular welded frame.

## Modern Transportation Era

As time passed, countless inventions and discoveries arose as solutions to transportation limitations leading to reduced travel time and capability to transport larger loads. Innovation in transport has since progressed by leaps and bounds to the most recent interest of researchers, autonomous vehicles.

Google has been testing self-driving car technology since 2012 under the ‘Google X’ project and has driven over a million miles. Several other car manufacturing and technology companies actively developing the autonomous vehicle technology are – Apple, Baidu, Toyota, Robert Bosch, Nissan, General Motors, etc. News reports forecast that nearly 21 million driverless cars will be driven on roads globally by the year 2035. The UAE government in its pursuit of global competition has also committed to the implementation of autonomous vehicles in the coming years. Indeed for the UAE, the possible benefits of autonomous vehicles are enormous: the Dubai Future Accelerator estimates a 90 per cent reduction in UAE traffic

fatalities, 80 per cent reduction in tailpipe emissions and 90 per cent reduction in traffic congestion. Google has been granted a patent for the “autonomous car” under patent Number US8078349B1 to secure ownership and exclusivity of this innovation.

The transportation services industry has also taken notice of the innovations in autonomous vehicles, with companies like Lyft and Uber currently testing autonomous vehicles around the world to replace drivers. These companies began with an innovative concept to make use of the smart phones that consumers are constantly relying on for daily tasks. With applications like Uber, smartphone users can now make finding a taxi much more convenient. Users can estimate the fare, pay for the taxi through an already linked credit card, leave a tip and get a receipt, all at the touch of a button.

In efforts to diversify their assets and stay ahead of the curve in terms of innovation, Uber has also recently expanded to offering food delivery services. Though Uber started with black cars at the push of a button, it now deals with on-demand carpooling to food delivery and presently operates in 633 cities worldwide. At the heart of any company’s resilience and competitive edge, is its branding and innovation strategy and how strongly they protect their intellectual property assets.

### **Uber’s Intellectual Property**

Uber has received substantial protection for its logos, app icons and designs. This reduces the risks of competitors infringing on Uber designs and interfaces. Uber has trademarked logos of the various services it offers as well as several icon designs. Since user interfaces are not eligible for protection under the trademark law, Uber has obtained design patent protection for its user interfaces. This protection helps in eradicating customer confusions by preventing competitor companies from mimicking the Uber app interfaces.

Uber changed its logo to the image on the right in 2016 to showcase the brand’s flexibility and evolution. Uber states that it is inspired by the basic building blocks of technology and the world.

Uber’s main strategy in protecting its intellectual property is through its utility patent protection. Uber currently owns utility patents related to business methods. These have come under severe scrutiny in patent litigation and within the United States Patent and Trademark Office. The earliest filing of an Uber patent in the US was in March 1996 and the most recent patent publication in the US was on July 11, 2017.

Initially, patents filed by Uber dealt with dynamically adjusting prices for services, determining a location related to on-demand services through use of portable computing devices, dynamically providing position information of a transit object to a computing device etc. Later on, Uber patents were filed based on splitting a fee for an on-demand service, optimizing selection of drivers for transport requests, providing notifications to devices based on real-time conditions related to an on-demand service and trip planning and implementation. However recent Uber patents are focused on autonomous vehicle with features like providing remote assistance to an autonomous vehicle, autonomous vehicle operated with guide assistance of human driven vehicles, autonomous vehicle with independent auxiliary control units, intelligent lens masking system etc..

A new security feature has been introduced by Uber in the UAE earlier this year (after a successful pilot test in the US) – to protect both drivers and passengers. A driver verification system will prompt drivers to verify themselves by uploading their “selfie” photograph, which is then compared to the driver’s profile photo to ensure a match. This feature will hence make rides safer and prevent fraudulent acts. Some other important innovations from Uber include: an affordable black-car service, offering ‘semi-luxury’ and ‘luxury’ on-demand vehicles, incentivizing Uber drivers through a star-rating system for responsible driving and for keeping their cars clean, a ‘Surge Pricing’ system which incentivizes more drivers to come on the road when times are busy, and the idea of a no-tipping car-service. In September 2016, Uber launched its first self-driving car services in Pittsburgh, using a fleet of Ford Fusion cars each equipped with 20 cameras, seven lasers, GPS, LIDAR (Light Detection and Ranging) and RADAR (Radio Detection And Ranging) equipment that enables the car to create a three-dimensional map utilizing landmarks and other

contextual information to keep track of its position. In December 2016, Uber also began using self-driving Volvo XC90 SUVs in its hometown of San Francisco.

### **Uber Efforts Beyond Transportation Advancements**

Uber is clearly making broad efforts to grow its IP portfolio in the future and hence protect their business. A number of its patented features have been recently implemented by Uber.

Uber launched a new patent purchase program, called UP3 to accelerate the process of purchasing patents with an open application window which was open from April 24, 2017 to May 23, 2017. The idea is to get Patent holders were to willingly propose a price to Uber for their patents along with the patent family details. The program allows sellers to submit portfolios of up to five patent families in one submission Uber then decides whether to accept or reject the offer (decisions communicated to the sellers by July 7, 2017), thus eliminating the long and complicated process of buying and selling intellectual property. From submission to close, Uber states that the whole process should take around four months, which dramatically reduces the typical pace at which these deals usually happen.

Launching of the UP3 program seems to be part of an overall strategy to increase Uber's IP holdings through acquisition and its own engineering efforts, in order to protect the company from legal actions.

### **Ride-Sharing in the UAE**

In January 2017, Uber signed an agreement with the Roads and Transport Authority of Dubai under which Uber will be entitled to deploy about 14,000 vehicles around the city. The Roads and Transport Authority (RTA) and Uber announced the trial of UberX in April 2017. UberX provides Dubai riders access to safe and affordable rides. This will lay the foundations to the development of advanced products like UberPool and UberElevate, paving the way for a fully integrated, multi-modal transport network that smart cities of the future are building.

Ever since Uber made an entry into the transport industry, numerous ride-sharing and taxi applications have emerged. Multiple new features are introduced by start-ups in the transport field as a step to override and compete with dominant transport companies in the field.

Transport and ride-sharing start-ups have recently introduced children friendly features to ensure child safety in their vehicles and security enhancing features including Facial Recognition technology to verify drivers' identity. Companies also have built their own mapping systems for making it easier for drivers and customers to locate various destinations and each other. However, it seems innovation is not enough for a company to maintain a relevant stand in the industry. In a competitive market environment as today's, IP protection of innovative features is crucial for companies to emerge and maintain a competitive edge

### **Emerging Transportation Technologies**

As noted earlier, autonomous or driverless vehicles are the most recent groundbreaking innovations in the transportation industry.

NEXT is an advanced smart transportation system based on groups of modular self-driving vehicles. Each module can join and detach with other modules on standard city roads. When joined, they create an open, bus-like area among modules, allowing passengers to stand and walk from one module to another.

Modules can be called by users using a Next App in order to reach a selected destination. NEXT's smart routing system autonomously drives vehicles and is capable of joining modules together, including service modules (bar, shop, toilet, restaurants) which directly reach and join a required module, without stopping. Designed in Italy, this project enables joining one or more modules where doors between the modules fold and create a walkable open space. Optimum occupancy rate, reduced energy consumption and traffic footprint are amongst NEXT's relevant features.

Some other major transportation network companies include Lyft (based in San Francisco and launched in 2012) and Grab (based in Southeast Asia and founded in 2012).

Lyft offers four types of rides – Lyft Line, which matches passengers with other riders if going in the same direction, Lyft – the basic and most popular offering that matches passengers with nearby drivers, Lyft Plus – offers passengers with a six-seater car and Lyft Premier – which matches passengers with a luxury car. Lyft and Uber, both major competitors, are among the most highly valued start-ups in the world. Some innovations that Lyft has offered to the ridesharing market include the idea of a friendly ridesharing company, a system called Prime Time (similar to Uber's Surge Pricing), which ensures that Lyft's prices do not rise above a particular range, and a service which includes built-in discounts for when times are slow. Lyft's patents deal specifically with improving rider experiences. Lyft's patented features include a driver jukebox system for receiving a rider music preference from a rider's device, a system for dispatching a driver, driver screening including mentoring to determine if a driver is approved to drive and ride chaining – a system for coordinating ride sharing between a set of drivers and a set of riders.

Grab or GrabTaxi, known as MyTeksi in Malaysia, offers ride-hailing services in Malaysia and its neighbouring Southeast Asian nations- Singapore, Indonesia, Philippines, Vietnam and Thailand. Grab operates in more than 50 cities across 6 nations in Southeast Asia. Private car services (GrabCar), motorcycle taxis (GrabBike), social carpooling (GrabHitch) and last mile delivery (GrabExpress) were later on added by Grab. A unique feature about GrabCar includes displaying a fixed price for a ride, after setting the pickup and drop-off routes. Hence, the fare remains unchanged even if the driver happens to take a longer route or in the event of traffic. GrabTaxi patents deal with vehicle booking system (2015) and method for multiple-round driver selection (2016).

NEXT is subject to patent protections which would increase the value of the business and provide a competitive edge to the business and restrict competition from misappropriating or exploiting NEXT innovative technologies without authorization.

### **Importance of Intellectual Property**

As can be seen by the various examples discussed in this article, the innovation in the transport industry is quickly evolving and driving towards more efficient, smarter, safer and consumer friendly solutions. As with any industry, companies in this field, and particularly start-ups have to be aware of the crucial importance of protecting their innovative products and processes through securing IP rights in order to secure a market monopoly in the use of these innovations and boost the commercial value of their businesses. The possession of IP rights is crucial for making economic decisions in today's business world. Considering the occurrence of a company merger or acquisition, sale or even an investment, Intellectual Property assets have the power to considerably increase the value of an enterprise. According to a WIPO (World Intellectual Property Organization) IP is the essential element in obtaining venture funding (a form of financing provided to early-stage, emerging firms that are deemed to have high growth potential or which have demonstrated substantial growth). Having a diverse and robust IP portfolio is important and provides substantial support for companies to thrive, have longevity, innovate, stay competitive in the global market and to endure as leaders in their particular industry.