

Reproduced with permission. Published November 20, 2018. Copyright © 2018 The Bureau of National Affairs, Inc. 800-372-1033. For further use, please visit <http://www.bna.com/copyright-permission-request/>

INSIGHT: IoV Technologies as Patentable Subject Matter After *Alice*



BY DAVID CAVANAUGH AND JONATHAN ROBE

This is the second in a series of five articles written by WilmerHale discussing how the emergence of IoT technologies will impact the automotive industry. The first article, “The Developing Landscape of Internet of Things Standards for Cars,” published on November 5.

The Internet of Things (IoT)—that network of physical devices coupled to sensors that collect and upload data to share across the network—is an industry with a rapidly growing global market. The IoT market is expected to exceed \$1 trillion worldwide by 2020. See IDC, “IDC Forecasts Worldwide Spending on the Internet of Things to Reach \$772 Billion in 2018” (2017). One particular application of IoT is the Internet of Vehicles (IoV), the network that serves as the centralized connection between autonomous vehicles. The IoV holds much promise for future technological development revolutionizing the basic model of travel. In view of the current landscape of patent laws, it can be useful to consider how patent law can impact the development of the IoV technologies.

At its core, the patent system provides the incentive for innovation by providing limited protection for an idea in exchange for disclosing the idea to the public. The limited protection for inventions is for those which meet certain statutory requirements: patent eligibility, novelty and non-obviousness. The advancement of IoV technologies, which focus on computer-related and network technologies, can be affected by how the technology development is aligned with the patent system to reward innovation. This article focuses on one particular area of interest for IoV technologies – whether and how they meet the standard of patent eligibility.

Because IoV technologies almost always relate to computer-related and software implemented, these technologies are potentially more susceptible to the argument that one is simply using computer or software

to implement algorithms and accordingly don’t meet the standard for patent eligibility. The issues of subject matter eligibility requirements for patent protection was addressed the 2014 Supreme Court case *Alice Corp. v. CLS Bank International*, 573 U.S. 208. *Alice* addressed the limits to patentable subject matter for computer implemented algorithms. While many see *Alice* as limiting the scope of patent eligible innovations, IoV technologies can still meet the *Alice* test for patentability by demonstrating that the technologies are either not actually directed toward an abstract idea or add “significantly more” to the abstract idea.

The Internet of Vehicles (IoV) As currently envisioned, the IoT will have ubiquitous application. So much so, some have called it the promise of an emerging Fourth Industrial Revolution. See Umar Zakir Abdul Hamid, Hairi Zamzuri & Dilip Kumar Limbu, *Internet of Vehicle (IoV) Applications in Expediting the Implementation of Smart Highway of Autonomous Vehicle: A Survey*, in *Performability in Internet of Things* 141 (2018). The IoV has been a particular area of interest in the convergence for internet technologies given the high interest in successfully launched autonomous vehicles. Although much of the public’s focus has been on the technology underlying the self-driving aspect of autonomous vehicles, the concept of the IoV can be much broader, encompassing the interconnected ways in which vehicles are connected not only to each other but also to other network objects. In particular, the IoV offers a potential to transform the commonly used modes of transportation but also to increase travel safety and efficiency.

The promise of connection. By connecting vehicles to one another and their surrounding environments (including, for example, nearby pedestrians), the IoV could potentially revolutionize the manner in which the

transportation sector operates. Even beyond autonomous driving, an IoV connection between passenger vehicles and other individuals could facilitate developments in ride and car sharing, creating new norms for travel. In tandem with an increase of ride sharing, individual car ownership will almost certainly decrease, reducing the need for vehicle parking areas, particularly in large urban areas (where space is in high demand), thereby freeing up land for more productive industrial and technological development. Eventually, the IoV may finally facilitate the realization of a “smart highway,” in which fully autonomous vehicles of many different classes travel along restricted paths together with little or no operator intervention.

The promise of additional safety. Additionally, the interconnectivity offered by IoV could potentially deliver safer and more reliable vehicles by allowing for real-time data analysis, improved consumer experiences during travel, and centralized, concurrent control and planning for multiple vehicles. Although it always seems that the latest crash of an autonomous vehicle during a test drive catches the headlines, one premise of the IoV is that by sharing data across vehicles and with the surrounding environment, including widespread data collection in real time, through machine learning, vehicle performance can be greatly improved. Vehicular safety, for example, can be improved through the IoV because data can be leveraged to aid collision avoidance systems by improving localization of a given vehicle within its environment. Also, data can be leveraged through the IoV to reduce congestion at places and times where congestion typically occurs (and which itself increases the likelihood of human-caused vehicular crashes). Thus, the IoV has substantial potential for developments that can lead to vast improvements in the transportation sector.

IoV Innovation and Patent Eligibility Particular inventive concepts central to IoV technologies, such as methods and protocols for facilitating communication between vehicles or the underlying technology for autonomous vehicles as a product itself, are likely to be areas in which companies will seek patent protection for concepts bearing on the IoV. However, in order to receive patent protection in the U.S. for IoV related technologies, the concepts for which protection is sought must be directed to patent-eligible subject matter under 35 U.S.C. § 101. Specifically, Section 101 limits patentable subject matter to a “process, machine, manufacture, or composition of matter,” excluding mere abstract ideas, laws of nature, or natural phenomena.

The Supreme Court in *Alice* addressed the standard for patent-eligible subject matter for “computer-implemented inventions” by setting forth a two-part test for distinguishing patent-eligible subject matter from mere abstract ideas. The *Alice* two-part test for patentable subject matter asks first whether the invention is directed to an abstract idea and, if so, then whether there is an inventive step that adds “significantly more” to the abstract idea. A concept that fails either or both of these two steps is not eligible for patent protection.

Decisions at both the U.S. Court of Appeals for the Federal Circuit and at the Patent Trial Appeal Board (PTAB) shed light on the application of the *Alice* two-step test for patent-eligible subject matter applicable to IoV technologies. For example, in *Enfish LLC v. Mi-*

crosoft Corp., 2016 BL 151342 (Fed. Cir. 2016), the Federal Circuit held that claims directed to a “self-referential property of a computer database were “directed to a specific improvement to the way computers operate” and therefore were patent-eligible. As another example, the Federal Circuit in *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 2016 BL 297537 (Fed. Cir. 2016), held that claims directed to a method for generating a three-dimensional representation of a character’s face depicting “various facial expressions made during speech” were patent-eligible. Similarly, in *DDR Holdings LLC v. Hotels.com LP*, 2014 BL 342453 (Fed. Cir. 2014), the Federal Circuit held that claims directed to a composite webpage combining “certain visual elements of a “host” website with content of a third-party merchant” were patent-eligible for reciting “significantly more” than an abstract idea because the claims were “necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks.” On the other hand, in *Digitech Image Tech., LLC v. Electronics for Imaging, Inc.*, 2014 BL 193384 (Fed. Cir. 2014), the Federal Circuit held claims to be patent-ineligible because the claims were directed merely to mathematical relationships for manipulating existing information to generate additional information. Thus, in *Digitech*, the claims were directed only to an abstract idea without adding significantly more.

Following the Federal Circuit, the PTAB has also issued decisions bearing on the *Alice* two-step test for patent-eligible subject matter, which shed light on how the PTAB might approach IoV technologies in light of 35 U.S.C. § 101. For example, in *Ex parte Kamimura*, Appeal 2015-007472 (Feb. 1, 2017), the PTAB determined that a “method of updating a database” is patent-eligible and not directed to an abstract idea because the method pertains to “improved methods for multiple computers to effect parallel edits to a common database,” an improvement to computer functionality.

Thus, an IoV invention that is “directed to a specific improvement to the way computers operate” may meet the *Alice* test for patentable subject matter, so it is important to demonstrate the technological solutions or improvements the IoV-related invention makes relative to existing technology. The IoV holds much exciting promise for continued technological progress within the transportation sector. By improving computer-related and network technologies, IoV technologies are potentially directed to patentable subject matter. Because IoV innovations can potentially be protected by patents, the patent system can foster and encourage the development of IoV technologies.

By focusing on specific technological solutions that are not directed toward an abstract idea or that do add “significantly more” to an abstract idea, IoV technologies can try to meet the *Alice* test for patentable subject matter. Thus, even within the current regime for patentable subject matter, IoV technologies can hold much promise for companies seeking patent protection in this space.

Stay tuned for the third installment in the WilmerHale series: “What to Expect in Licensing and Litigation as the Internet of Things Comes to the Automotive Industry.”

David Cavanaugh is a partner in the Washington D.C. office of WilmerHale, where he is Chair of the Post

Grant Patent Proceedings Group. Mr. Cavanaugh has broad legal experience in industry and private practice and provides clients with strategic, business-focused counseling in the procurement, management and exploitation of their intellectual property.

Jonathan Robe is an associate in the Washington D.C. office of WilmerHale and a member of the firm's Intellectual Property Department.