



THE

# ROBOTICS LAW JOURNAL

Volume 2, No.2

September/October 2016

**FAA UPDATE**

Lisa Ellman from Hogan Lovells looks at the most recent ruling from the US aviation regulator

[Page 3](#)

**CIO RESEARCH**

Legal sector more advanced in its use of AI than peers in other sectors according to new research

[Page 6](#)

**ROBOT IP TRENDS**

A look at the number and type of patent applications in robotics by Innography reveals massive Chinese growth

[Page 7](#)

**IMPACT OF DRIVERLESS CARS**

A response from law firm Kennedys to the UK Government consultation on use of Automated Vehicle Technologies

[Page 11](#)



## Drones to replace insurance loss adjusters

Insurance is a sector able to make good use of UAVs. One startup from LA is utilising the technology to good effect, to create a new type of streaming service for the use of insurers.

**DropIn Drones**

DropIn launched in 2015 and is seeking to change the way insurance companies process claims with its innovative use of drones in appraisals – it provides live video streaming services to assist insurance companies in appraising claims.

“Insurance companies

are experiencing a phenomenon known as the ‘adjuster conundrum’,” explains DropIn’s Chief Revenue Officer, Jen Friel. “The caseload of claims hasn’t gone down, yet the current adjuster workforce is ageing out. They know they need to attract millennials, but to do so, they have to ‘get with the times’.” Technologies such as UAVs are only going to become

more common in an effort to counteract this conundrum.

In the most simple case, someone who has been in a car accident will contact their insurance adjuster who can interview the drivers and appraise the damage right on the spot viewing the damage through the driver’s smartphone. The full suite of live video services runs

from direct-to-claimant, direct-to-field or partner resource, and Droperator, their 60,000 strong on-demand workforce.

Overhead property appraisal or surveying a disaster area for damage appraisal is where the use

**The full suite of live video services runs from direct-to-claimant, direct-to-field or partner resource, and Droperator, their 60,000 strong on-demand workforce**

of UAVs comes in. Someone from a team of drone operators – a network of 1,100 licensed operators all over the US – will travel to the site to operate the drone, equipped with a camera or even smartphone camera, and then transmit the video and pictures back to the insurance company. Roof inspections are another important use for UAVs, given that it is an expensive part of the process for insurance companies to pay their adjusters to inspect roofs.

The principal challenge facing the company at the moment is one of engagement. Letting people know that they have the use of this technology and that it can quantifiably improve the service is one of the main hurdles to overcome in early adoption of a new technology. Friel is confident that the positive feedback they had received so far will encourage further use of drones in the insurance sector.

The continued use of drones in insurance will lead to improvements in claims management and a decrease in fraud, which, according to the Insurance Information Institute, amounts to 10% of property and casualty insurance losses each year, amounting to \$32 billion losses. Drones surveying a property can create an accurate 3D model of its condition after an incident, and should increase the speed of the compensation process, providing much greater customer satisfaction.

## Contents

New Highway code for Autonomous Cars [2](#), FAA update [3](#), Robot rights [5](#), CIO research on AI [6](#), Robot IP trends [7](#), Robotics growth strategy [9](#), Driverless cars and liability [11](#), IP issues in India [13](#), Luminance AI for law firms [14](#), Drone racing [15](#)

# New US highway code for autonomous cars



## A nationwide set of guidelines to make the introduction of driverless cars in the US a safe one.

President Barrack Obama addressed the Post Gazette in Pittsburgh, the site of Uber's trial of driverless cars, as he outlined the new policy. The new guidelines, issued by the US Transportation Department, replace a confusing mass of rules that often differ from state-to-state. As well as ensuring higher standards of safety, Obama says, "The quickest way to slam the brakes on innovation is for the public to lose confidence in the safety of new technologies."

Some of the measures include the use of a black box that records

what happens if they crash, similar to an airplane, as well as calls for the government to vet the code that controls the cars before they are given the all-clear to share the roads with humans. Data protection for customers is another issue highlighted, especially with fears over cyber security and technology.

The policy is, at the moment, intended to be one that is upheld voluntarily, but it is expected that all developers of autonomous cars will comply, as it is a step towards a national framework for the regulation of autonomous cars. A summit will be held in Pittsburgh in October to talk with car makers about how to speed up the use of autonomous vehicles.

# Drone warfare changes

In the first week of October, a booby-trapped drone exploded in Iraq, north of Mosul, killing two Peshmerga soldiers and wounding two French soldiers. It was intercepted in flight on 2nd October, exploding upon contact with the ground. It is still unclear if it was remotely detonated or carried a timed bomb.

The significance of this attack is that, in an area where sophisticated drone strikes have become commonplace, a drone that can be purchased off the shelf has now been converted into a weapon. These cheaper drones have already been used by militants for photography and surveillance services, or even to film propaganda videos, but they are now being used as a method of attack.

Due to their small payload, the potential of these drones is relatively low, but this attack has shown that they can kill. US troops in the region have now been warned to take cover when they see these small drones, which up to now had been seen as fairly harmless, but are now seen to be weapons in Islamic State's defence of Mosul.

Against a backdrop of security concerns about drones, such as the measures taken to prevent their misuse at the European Football Championships earlier this year, the proliferation of commercial drones could lead to further incidents of this nature, while the US and China are moving forward with rapid developments of ever more sophisticated armed drones.

## Global timeline: what to expect on drone regulation

<b>Late 2016</b>	<b>Bahamas</b>	Lighter regs for commercial drones under 2kg - from Civil Aviation Safety Authority
<b>2016</b>	<b>US</b>	RPAS framework - to implement March 2015 Riga accord
<b>2018</b>	<b>Global</b>	ICAO standards - international standards for use to develop national guidelines
<b>2016-20</b>	<b>US</b>	FAA - airborne sense & avoid systems - initial certification
<b>2016</b>	<b>Australia</b>	

## Global timeline: What has happened so far on drone regulation

<b>October</b>	<b>EU</b>	MEPs voted to revise and develop rules for the safe use of drones
<b>August 29, 2016</b>	<b>US</b>	FAA issues new rule 107 governing drone flight in US
<b>May, 2016</b>	<b>US</b>	FAA clarifies educational carve-out for drone usage.
<b>2015</b>		
<b>December, 2015</b>	<b>Global</b>	Geo-fencing starts on products from market-leading manufacturer DJI - easing the way for enforcement of restrictions on flying near airports, prisons and other areas.
<b>December 21, 2015</b>	<b>Ireland</b>	Irish Aviation Authority requires that 'all drones over 1kg must be registered' with them by this date
<b>December, 2015</b>	<b>US</b>	Department of Transportation hopes to launch its drone register for UAV-users, to meet rising public concern about near misses
<b>November</b>	<b>US</b>	Chicago City Council passed drone regs which are a 'draconian ordinance all but banning drones in most cases', according to Professor Greg McNeal of Pepperdine University Law School
<b>November</b>	<b>US</b>	2,500th exemption licence (s333) given for drone flying
<b>November</b>	<b>US</b>	Registration by pilot (rather than individual drone) recommended by task force advising the Federal Aviation Administration
<b>October</b>	<b>Ireland</b>	Irish Aviation Authority published first draft of proposed Small Unmanned Aircraft (Drones) and Rocket Order
<b>July</b>	<b>South Africa</b>	CAA regs take effect: drone flying became legal
<b>June</b>	<b>EU</b>	Privacy rule recommendations from Article 29 Working Party

## Part 107 takes flight



**As of 29 August 2016, the Federal Aviation Administration (FAA), has published a new rule governing the flight of drones in the US. Lisa Ellman**

**Ellman, Partner, and her team in Hogan Lovell's Washington office, look at the implications for the drone industry.**

Until the end of August, companies looking to fly unmanned aircraft systems ("UAS" or "drones") for commercial purposes to enhance their business operations in the United States – whether for inspections, security or aerial photography, among other purposes – had to apply for a special license from the Federal Aviation Administration ("FAA"). That "Section 333" approval process was burdensome and costly, and constrained true expansion within the UAS industry.

That changed on August 29. We have reached a milestone, as the final rule for the operation and certification of

small UAS (Part 107) has officially gone into effect – for the first time, broadly authorizing commercial UAS operations with small drones in the United States.

The new rule permits the commercial operation of UAS weighing less than 55 pounds, and includes the following key requirements and operational limitations:

- The operator must have a remote pilot certificate, pass a TSA background check, and be at least 16 years old;
- Operations must remain within visual line-of-sight (VLOS);
- No operations are allowed over non-participants;
- Flights must occur during daytime or civil twilight (30 mins before and after official sunrise/sunset), with the appropriate lighting;
- Maximum airspeed is 100 mph;
- Maximum altitude is 400 feet above ground level or, if remaining within a 400-foot radius of a structure, within 400 feet of the immediate uppermost point of the structure; and
- Operations are permitted in Class G (uncontrolled)

**"Part 107 going into effect was a significant step forward for the commercial drone industry in the United States, and represents excellent progress"**

airspace without air traffic control (ATC) approval, and in Class B, C, D, and E with ATC approval.

We have reviewed many of the conditions and limitations imposed by the rule in greater detail elsewhere. The FAA has recently released additional guidance on studying for the certificate test, applying for waivers, and how to operate in controlled airspace. Over the last few months, we have received numerous questions from our clients about what this new small UAS rule means for them and their businesses. To commemorate the implementation of this historic final rule, we have come up with our own "Top 10 Q&A List" relating to UAS use and the Aerospace, Defense and Government Services (ADG) community:

**1 My company wants to use drones. What do I have to do to receive a Remote Pilot Certificate, and how difficult will it be to obtain one?**

If you do not already have a manned aircraft pilot's license, you will need to take an aeronautical knowledge exam. The test has 60 multiple choice questions and you need to score a 70% or better to pass. You can register to take the exam at one of the FAA's 700+ Testing Centers by calling CATS (Computer Assisted Testing Service) at 1-800-947-4228. You will also need to submit an application electronically using the FAA's IACRA system and pass a TSA background check.

**2 Can I fly near airports /heliports?**

Under Part 107 you are prohibited from interfering with airport/heliport operations, and you need to yield the right-of-way to other aircraft, but there is no required set-back from airports and heliports as there was under the Section 333 Exemption/Blanket-COA framework. Keep in mind, however, that you will need ATC approval to operate in Class, B, C, D, and E airspace.

**3 Part 107 does not go far enough for my company - we need to be able to fly beyond visual-line-of-sight for security purposes or over people for inspections. How difficult will it be to get a Part 107 waiver and how long will it take?**

As an initial matter, Part 107 provides that waivers may only be granted from a few of the restrictions in the rule: daylight operations, visual line of sight, visual observer,

operation of multiple UAS by one Remote Pilot, yielding the right of way, operations over people, operations in certain airspace, and operating limitations for small UAS. Hogan Lovells assisted CNN in obtaining the first Part 107 waiver which permitted operations over non-participating persons. In terms of timing, the only guidance we have from the FAA is that waiver applications should be submitted at least 90 days before the intended flight operation. The key to the waiver process is making the safety case that you can fly with an equivalent level of safety to operations conducted under Part 107. Ultimately, it will likely vary depending on the complexity of what you are asking to do and the strength of the supporting information and data you provide to the FAA.

### 4 What in particular will be required for a waiver authorizing UAS operations beyond visual-line-of-sight of the Remote Pilot?

The ability to fly beyond visual line of sight (for inspections or security purposes, for example) is critical to making drone technology efficient and cost-effective. Part 107 requires UAS to be operated within VLOS of the Remote Pilot because the Remote Pilot needs to be able to see-and-avoid other aircraft and obstacles. If you need operations beyond VLOS, you will need to demonstrate to the FAA that the UAS is equipped with technology that can safely satisfy the see-and-avoid requirement of Part 107.

### 5 What are the restrictions on flying over people?

You cannot fly directly over unsheltered people that are not "directly participating in the operation of the UAS." People directly participating in the operation of the UAS include the Remote Pilot, Visual Observer(s) (if used), and any other personnel necessary for the safe operation of the UAS. You can request a waiver under Part 107 to operate over unsheltered people who are not involved in the operation of the UAS, but you will need to demonstrate to the FAA that you can do so safely.

**"We need additional rules that broadly authorize safe flights above people, beyond visual line of sight and at night. Otherwise, critical UAS operations that often must occur in these conditions, such as disaster response, pipeline inspection, news gathering or time-sensitive agriculture operations, will be stalled"**

### 6 Do I need to get permission to fly over someone else's private property?

Part 107 does not include a requirement to obtain permission to fly over someone else's private property. That being said, it is important to remember that there is a patchwork of state and local laws relating to, among other things, trespass, nuisance, and privacy that might impact where you can fly. There are voluntary UAS privacy best practices, which may be helpful in this regard.

### 7 How can I stop someone from operating unauthorized UAS operations over my property?

Many ADG companies have critical or sensitive infrastructure, and there are concerns about rogue drones being flown over their private property. While it might be tempting, interfering with a drone's flight is not the answer. The best thing to do is document the unauthorized flight and contact local law enforcement. Keep in mind that you might have to educate responding officers regarding the circumstances and the applicable legal standards. Make sure you understand what the regulatory requirements are for flying in the airspace around your property, and be prepared to discuss those requirements with any responding officer.

Critical infrastructure facilities may soon have another option for keeping unauthorized UAS away from their property. Congress just passed a new FAA Reauthorization Bill that includes a requirement for the FAA to establish a process to allow applicants to petition the FAA to prohibit or restrict the operation of UAS in close proximity to fixed site facilities, including critical infrastructure. Please let us know if you would like to know more about that process.

### 8 Can the FAA regulate indoor UAS flights?

No, the FAA's jurisdiction covers navigable airspace, which does not include airspace inside of an enclosed structure such that it would be impossible for the UAS to escape. For example, a fully enclosed outdoor-

netted cage would be sufficient if it would be impossible for the UAS to escape the cage.

### 9 Can I fly higher than 400 feet above ground level (AGL) to inspect facilities or towers?

Maybe. Part 107 generally restricts UAS from operating above 400 feet AGL, but there is an exception for UAS operated within a 400-foot radius of a structure. When operating within a 400-foot radius of a structure, you can fly up to the highest point on the structure plus an additional 400 feet higher. For example, if you were inspecting a 1,000-foot tower and remained within a 400-foot radius of the structure, you could technically fly up to 1,400 feet AGL. Keep in mind, however, that you still need to comply with all of the other Part 107 restrictions including airspace restrictions and the requirement that the UAS only be operated within VLOS.

### 10 Is my Section 333 Exemption good for anything anymore?

If you already have a Section 333 Exemption, you may continue to operate under it or you can elect to operate under Part 107. Whether it makes sense to continue operating under your Section 333 Exemption will depend on what you want to do. You will obviously want to operate under the regime that provides the most operational flexibility. For most operators, Part 107 will provide more flexibility than the conditions and limitations in the Exemption. We discuss the transition from the Section 333 regime to Part 107 in an earlier published blog.

Although Part 107 has been broadly welcomed by the expectant industry, there are still quite a few areas that need further explanation. According to Ellman, "Part 107 going into effect was a significant step forward for the commercial drone industry in the United States, and represents excellent progress. However, to truly unleash the potential for the industry, we need to move beyond the rule. We need additional rules that broadly authorize safe flights above people, beyond visual line of sight and at night. Otherwise, critical UAS operations that often must occur in these conditions, such as disaster response, pipeline inspection, news gathering or time-sensitive agriculture operations, will be stalled."

# European Parliament calls for a robotics framework

**At the end of May this year, the European Parliament issued a paper, calling on the Commission to update the regulatory framework surrounding the area of robotics, with a request to consider whether some forms of autonomous robots should be granted the status of "electric persons with specific rights and obligations".**

### European background

The issues of liability, intellectual property rights, and safety emerge as some of the leading factors in the call for the EU to lead the way. The need for the EU to attend to robotic systems sooner than later comes with the knowledge that other countries such as the US, South Korea, China, and Japan have already considered these regulatory issues and even taken some action. Along with the regulations suggested by the parliament, the establishment of a European agency for robotics is also put forward.

This paper is significant as it comes in the wake of a series of aviation authorities across the continent publicly calling on the EU for a strong framework regulating drones to be instituted across the whole continent. Both groups have noted that national frameworks are present, but that with cross-border complications, a framework that extends beyond would allow a greater degree of implementation as well as the resources to initiate actions such as public awareness campaigns. Engagement with the public is seen as essential in that regard.

The report opens by noting the sharp increase to 29% in robot sales in 2014 as compared to 17% per year between 2010 and 2014 as well as a forecast that by 2020 Europe might face a shortage of 825,000 ICT professionals. It remains to be seen how employment and industry in Europe will be affected by the increasing use of robots in the coming years, but the global trend is to be proactive with establishing legal frameworks and the EU has proven itself to be no exception. If this paper is put into action quickly, it could even lead the way.

### Liability

One of the most important issues to be resolved is liability, and how far it can be attributed to robotic systems. The European Parliament's report even goes so far as to consider regarding certain autonomous robots as being sophisticated enough to qualify as "electric persons" to help deal with this issue.

Having a common European definition of what constitutes a smart robot is needed to act as a baseline, taking into account a

robot's ability to:

- Acquire autonomy;
- Learn through experience and interaction;
- Adapt its behaviours and actions to its environment.

This would be coupled with registration of all "smart robots" that fit into the definition, for the purposes of traceability, and should be managed by an EU agency for robotics, which would then be able to assist in the cases of liability.

As robots take on greater responsibilities, performing those jobs deemed dirty or dangerous, safety of human counterparts is one of the prevailing concerns. The injured party would need to claim compensation, which would naturally have to fall on the manufacturers, rather than the robotic systems themselves.

To counter such incidents, the report recommends the establishment of a system of compulsory insurance, similar to the system for automobiles, with the obligation placed on the producer of the robot, backed up by a compensation fund for those instances where insurance has not been provided in an accident.

### Intellectual property rights

The paper recognises that there are no legal provisions needed that specifically apply to robotics and that existing legal structures can be readily applied, but there may be other cases which will need more specific consideration. It wants the Commission to create a balanced approach towards IP rights as applied to hardware and software, with the protection of innovation seen as vital.

### Vehicles

Cross-border cooperation is considered essential to the successful delivery of autonomous vehicles' economic benefits, as well as increasing the safe use of UAVs. The fragmented nature of differing national regulations hinders the implementation of these factors and leads naturally to the call for a centralised European agency to implement continent-wide regulation.

### Care and medical robots

The importance of the roles fulfilled by such robots is underlined, paying attention the fact that the use of care robots has the potential to dehumanise caring practices through the simple lack of human contact.

Also underlined is the need for the highest levels of training to be applied to the use of medical robots. In addition to the need for a European agency and registration of robots, it is likely that a system of licensing



for the use of medical robots would also be implemented at a later stage, as their capacity to take on larger tasks (such as diagnosis) or tasks that deal with altering the human body (repair of organs etc.) grows.

### Rights

One of the more contentious points in the paper is the idea that robotic systems which are defined as "smart robots" should be granted certain rights which would give them a status of "electric persons". Is this too early a time to be considering something that has always been in the realm of science fiction? Is it even a good idea to be starting to think of robots as people?

The issue of what constitutes a person is obviously vital to the discussion. Taking Peter Singer's approach – where being human is not necessary to qualify someone as a person – is a logical step if we are to think of robots as people.

According to Harvard Law Professor Glenn Cohen, instead of being "all-or-nothing" personhood should instead be thought of as a bundle of sticks, with each stick representing different rights. Which sticks (i.e. rights) an entity was assigned might depend on what elements of personhood the entity possessed or could possess. With robots, there is a need to be specific about the capabilities of the robots, and how that relates to which rights they are granted.

The EU's report also states the need to have different regulations for different categories of robots, differentiating between RPAS (drones), self-driving cars, medical robots, and so on. A "one-size fits all" approach is likely to be unsuited to robotic systems, especially where there are strong concerns about safety that tend to arise not from misuse but from the points where humans and robots interact in a working environment.

# Law firms much faster to take up AI technology than other industry sectors

## Legal sector more advanced in use and understanding of artificial intelligence technologies, new research study reveals.

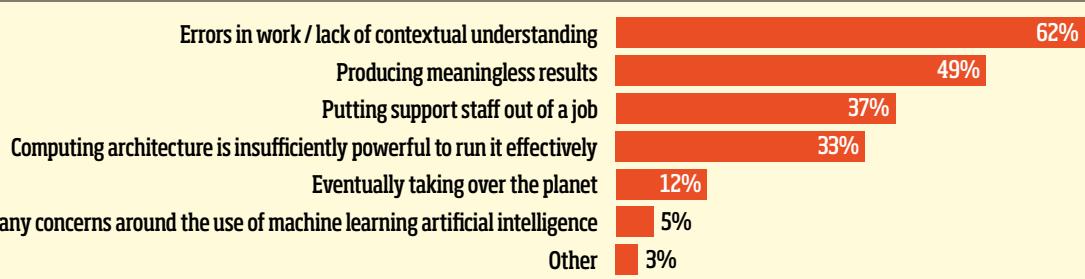
IT decision makers in the legal sector are more optimistic about the future of artificial intelligence (AI) technologies than their peers in other sectors, new research shows.

According to the study of 200 senior IT decision-makers across a wide array of industries, adoption of AI among IT departments in the legal field is far more widespread than in other industries. Half of IT staff in the legal sector currently use predictive coding (55%) or machine learning (48%) technologies compared to only a third of CIOs in non-legal sectors (30% and 38% respectively) that are using similar AI technologies.

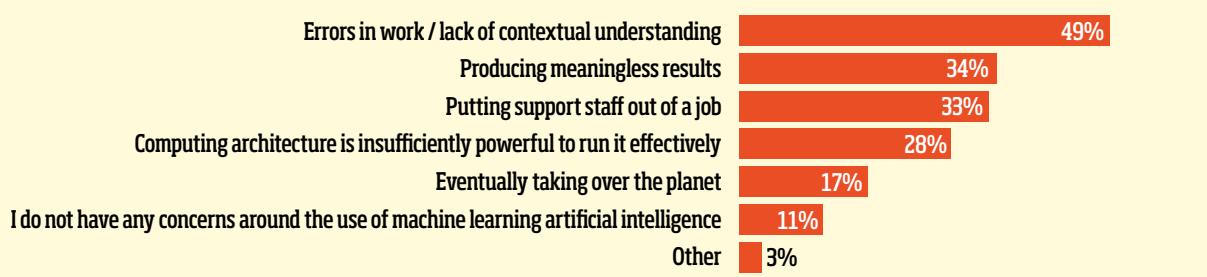
### CIO'S USE OF TECHNOLOGY



### BIGGEST CONCERN AROUND AI AND MACHINE LEARNING LEGAL



### BIGGEST CONCERN OVER AI AND MACHINE LEARNING NON-LEGAL



**IT staff in legal industries have a forward-thinking and well-reasoned attitude to artificial intelligence and automation technologies**

However, legal IT staff were also more conscious of possible problems caused by AI, with 62% citing concerns over errors in any work performed by artificial intelligence and automation systems. Similarly, 49% were worried about the results of work by AI systems in producing irrelevant results, compared to 34% of CIOs in non-legal industries.

“CIOs in the legal industry seem to have a more in-depth understanding of both the capabilities and limitations of predictive coding, machine learning and artificial intelligence systems compared to CIOs generally across all sectors,” concludes Tyler. “They are well ahead of their peers and are approaching AI in a systematic, pragmatic fashion.” Confirmation of this can be gathered from the recent news of law firms entering into contracts with a range of AI technology companies in the last few months – from RAVN Systems and Linklaters, to Neota Logic and Allen & Overy and very recently with Slaughter and May and Luminance.

The study was carried out in August 2016 and polled 100 IT decision-makers in the legal sector and 100 IT decision-makers in other sectors.

**They are well ahead of their peers and are approaching AI in a systematic, pragmatic fashion**

# Measuring innovation in robotics

Surprising trends behind the IP of autonomous robot technology

Autonomous robots are disrupting large industries and propelling the development of entirely new product lines – from self-driving cars, to farming and mining machines, to manufacturing and domestic robots. IDC (International Data Corporation) projects the robotics market will reach \$135 billion by 2019, with two-thirds of purchases coming from Asia.

According to research conducted by Innography, a CPA Global company, patent applications provide a unique insight into companies' R&D strategies and future product plans. The patent filing trends show that incumbents are moving quickly to create defendable innovations while new entrants are pushing their intellectual property into new use cases.

The huge growth of patent applications in China shows that country's enormous market potential and the robotic innovation that is being

driven by companies and universities in China. Companies should proactively monitor patent filings to track product innovations in China, be alert to emerging competitors, and try to understand the technology state-of-the-art in the world's second-largest economy.

Innography conducted a patent analysis of over 27,000 patents focusing primarily on sensing, processing and autonomy systems for any kind of autonomous robot. They looked at filing trends by jurisdiction, by industry sector and by company.

## Filing trends by jurisdiction

For most of the past decade, the US led the field with the most patent filings for robotic innovations (based on application publication year), followed by Germany and other European filings. Filings in China were almost nonexistent

**The huge growth of patent applications in China shows that country's enormous market potential and the robotic innovation that is being driven by companies and universities in China**

as late as 2011, but growth in applications surged exponentially and in 2014, China took over as the highest-filing jurisdiction. In 2015, Chinese patent filings represented an impressive 44 percent of published patents in robotics globally.

While the United States historically has been the top jurisdiction for patent filings in robotics, Chinese-based patent applications increased more than 20 percent per year over the last decade, with China passing the US in 2011 for most patent applications of any jurisdiction worldwide. Reasons for this include:

- Chinese companies and inventors are patenting more heavily.
- International companies – particularly US auto manufacturers – are scrambling to protect their robot-related inventions in China, due to lingering concerns about China's IP legal framework and their ability to enforce and protect IP in China.
- Chinese universities are pursuing a more aggressive patent filing strategy than their international counterparts.
- Patent litigation in the US is increasing.

Within "Other" jurisdictions, Japan led in filings since 2006 and has surged in recent years, surpassing Germany and other European countries in 2015. South Korea has also seen a steady increase over the last decade.

The university system is a key driver of patent filings in China. Of the top ten universities filing patents in robotics, the first nine are Chinese universities (the tenth is Taiwanese).

## Filings By Industry

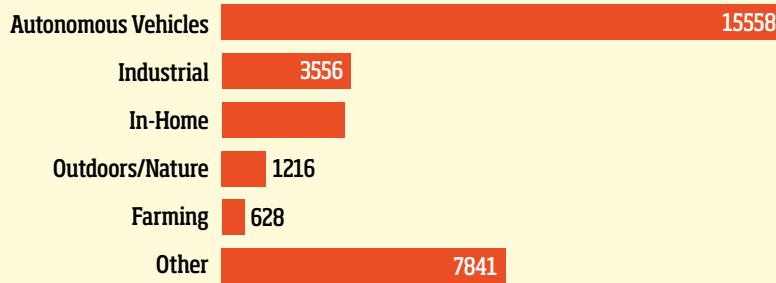
Every industry's patent filings have grown over the last decade, except for Heavy Equipment. The Automotive industry has led all categories in patent filings, followed by Electronics, which are used in every robotics scenario. Software & eServices has had the most dramatic increase, while Electronics also increased substantially.

## Top company filers

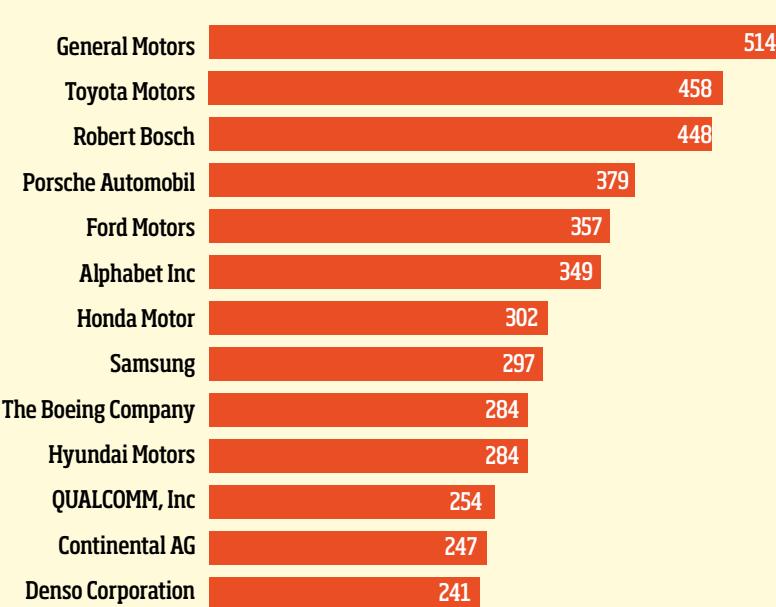
Consistent with the top use case of autonomous vehicles, the top five filers are all related to the automotive industry:

As the top non-auto industry company in the list, Alphabet (parent of Google) has invested heavily in self-driving cars and also owns robotic patents from its

## PATENTS FILED BY INDUSTRY SECTOR



## PATENTS FILED BY COMPANY NAME



Boston Dynamics subsidiary, as well as hardware-related patents it purchased from Outland Research.

Top filer General Motors represents only two percent of the patents in the set, indicating a high number of patent filers in robotics worldwide. With so many companies expanding into these technology areas, the lack of any dominant patent filers implies that there will likely be many intellectual property collisions in the future.

The published patents of the top six organizations shows a dramatic upward trend over the last decade, and continuing into 2016. While General Motors was the top filer for several years starting in 2012, Alphabet leapt ahead in 2015 and has continued to extend its lead in 2016.

## Autonomous vehicle filings

The autonomous vehicle space shows a fairly steady increase in filing activity until 2013, when US and "Other" jurisdictions (primarily Japan) declined. On the other hand, filing trends in China moved sharply upwards, with that country becoming the top jurisdiction in 2014.

The patent filings in Autonomous Vehicles encompass many different technologies and use cases, from steering to image processing to wireless communications. Car companies have been extremely proactive in investing in autonomous vehicle research, with patent applications, partnerships and acquisitions driving the development of new products.

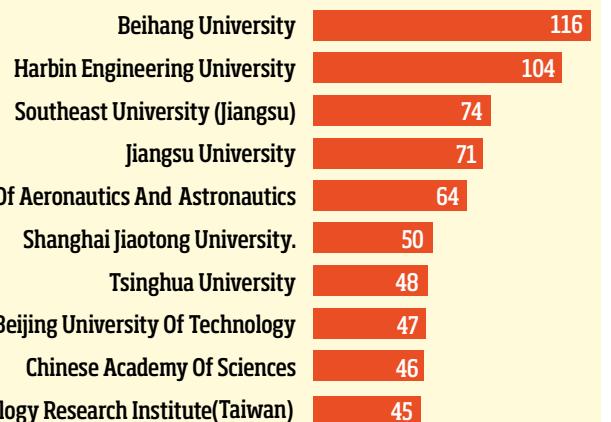
Ford, for example, filed a patent for an automotive drone deployment system that covers flying drones scouting ahead for self-driving cars but related industries will also be disrupted by the shift to autonomous robots.

● **The automobile insurance industry** will have to rethink autonomous vehicle liability and what products to offer. Intellectual Ventures

was granted a patent that enables drivers to choose the right insurance protection in real-time based on which mode of autonomous driving they have selected.

- **The parking industry** will also be affected, with the need to create higher density (self driving cars can park much closer together and end-to-end) and communication systems that direct cars where to park, among other innovations: Hyundai filed a patent for a device that provides proximity information back to parking lot control systems. Chinese company Wuxi Puzhi Lianke Hightech Co. goes even further with a patent for mobile robot trolleys that automatically park cars.
- **The delivery industry** will also be upended, even if it takes many years for flying drones to deliver packages. The most expensive element of package delivery is the "last mile" to the business or residence. Having a robot drive the van and deliver the package could dramatically disrupt the industry's economics. Fatdoor, Inc.'s patent application covers an autonomous vehicle that traverses a local neighborhood and delivers packages.
- **The entertainment industry** will also be impacted by drone-based camera shots and drone-assisted performances. For example, Disney has several patents that create aerial displays using drones with attached projectors and screens.
- Finally, entirely new industries and product categories will be created, such as:
  - **Survey drones** that provide detailed aerial imagery of crops and construction projects.
  - **Domestic robots** such as Roomba's autonomous vacuum, which has numerous models and nearly 1,000 active patents and applications.

## PATENT FILINGS BY UNIVERSITIES



## Ingestible foldable robots

MIT researchers have created a foldable robot that can do small scale local surgery, deliver medicine or remove foreign objects. The accordion-shaped robot is folded up and encased in ice, and then swallowed by a patient inside of whom the ice melts and the robot unfolds.

From there, the robot can be directed to travel to a specific spot in the intestine via magnetic guidance, and perform its assigned tasks. One of its most important tasks is expected to be to capturing and expelling button batteries swallowed by children. Once its task is completed, the robot body and the control magnet can be expelled normally.

The device is in the prototype stage and expected to start animal and then human studies on the path to FDA approval in the United States.

**The university system is a key driver of patent filings in China. Of the top ten universities filing patents in robotics, the first nine are Chinese universities (the tenth is Taiwanese)**

## US litigation overview and trends

Patent litigation in robotics is increasing at a high rate. The large number of cases filed recently in the Eastern District of Texas indicates that patent assertion entities (PAEs) are likely becoming more active. The prevalence of cases filed in the Northern District of California are due almost exclusively to a private entity named SoftVault Systems, which also appears to be a PAE.

Looking at the litigation plaintiffs and defendants, two trends emerge. First, and nearly without fail, the top plaintiffs are small entities and the defendants are larger entities. In other words, small inventors and PAEs are consistently suing larger corporations over infringement. Second, some of these small PAEs are frequent litigants against multiple defendants. Given that this is a "hot" technology space that has been under development for many years, the presence of PAEs is not surprising.

The litigation shows a relatively large number of losses to plaintiffs. More than forty-six percent of cases were dismissed by court order or voluntarily by plaintiffs, indicating that nearly half of the cases were probable losses, in whole or in part, by plaintiffs.

## Conclusion

Autonomous robots are disrupting multiple industries and creating wholly new product categories and markets. Cross-over technologies are forcing incumbents to incorporate many new technologies and to find new partners and suppliers in order to capture market share in the new world order.

### AUTHORS

Chris Huffines,  
Senior Client Success  
Consultant, Innography  
John Martin, CEO,  
Innography

# Law firm strategies for growth

The UK legal sector has never been more dynamic than it is today. Good people and a good client base are the starting point for any successful law firm, but the choices that must be made to secure and build on those fundamentals have become more complex. A recent survey by Fox Williams and Byfield Consultancy, "From Recruitment to Robots" highlights the growth strategies that law firms are using and the investments that they are planning to make to secure their future in the legal market place.



Although previous research showed law firms looking to mergers and consolidation of the market for growth, mergers have not completed in the numbers envisaged. In this research, canvassing 76 of the top 200 UK law firms, 86% of respondents identified merging as having the greatest risk of reducing profitability when compared to other growth strategies. Of the 55 respondents which have not merged (72%), only one quarter are seeking a merger (26%), whilst over two thirds (67%) are not looking to merge in the next two years.

### More technology fewer people

Conversely, 83% chose increased investment in technology as having the best prospects for increasing a firm's profitability, followed by recruiting a team (71%). Firms appreciate that the future does not lie merely in increasing size for its own sake but in gaining a competitive edge by selectively recruiting and using technology to drive service up and costs down.

Although a large majority of respondents believe solicitors will continue to be primary providers of

**Investment in technology was identified by 83% as being one of the essential strategies for boosting a firm's profitability**

legal services in England and Wales, it is telling that a sizeable minority (28%) foresee a time when solicitors no longer hold a dominant position in the legal market place. Technology is seen as a double-edged sword, with 50% of respondents ranking it as a bigger threat to law firms than alternative legal providers and in-house legal teams.

There will be winners and losers, both at a firm and individual level. As technology and paralegals reduce the demand for trainees and junior lawyers, this may be creating a future shortage in senior lawyers. The prospects for aspiring solicitors are bleak, but potential winners include those with skills hitherto rarely employed by law firms in the mid-market, such as project managers, software developers and data analysts.

By contrast, it is technology which is keeping many law firm leaders both excited and apprehensive. Over four fifths (83%) of our respondents believe investment in technology to have the greatest potential to increase their firms' profitability. Understanding what the various technologies do and their

potential applications within law will be essential. One respondent to our survey believes that, "We may see a technological arms race between law firms where it will be important to invest in the right products."

In our survey, investment in technology, properly implemented, was identified by 83% as being one of the essential strategies for boosting a firm's profitability. And many managing partners are putting their hands in their pockets to back up their commitment. More than half (55%) said they have made a substantial (over £100,000) investment in technology within the past twelve months.

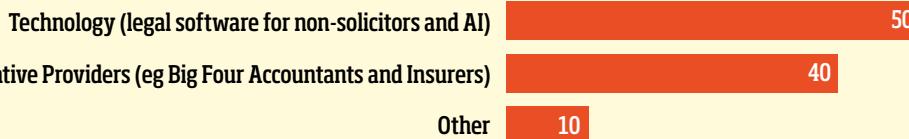
Today's law firm offices may bristle with the latest computer hardware and give every appearance of being cutting-edge modern working environments, but managing partners are still fixated by the same concerns as their 20th century predecessors – billing rates, utilisation and fee-earner ratios. As much as commerce has moved with the times, these established building blocks of a successful and profitable law firm have remained consistent. This looks set to change, as some law firms diversify away from traditional legal services into packaged products and non-legal sectors, whereas yet others invest in technologies with the potential to revolutionise law firm economics.

### New model law firm

The traditional law firm business model will not disappear overnight, but there are now other options which challenge the orthodoxy of how law firms make money. Some law firms have embraced technology as "early adopters" while others are watching their competitors to see what works and what fails. Some firms are developing bespoke in-house products, whereas others are choosing off-the-shelf. An example of a good bespoke product is PwC Legal's Entity Governance and Compliance Portal which provides clients with instant access to entity governance and compliance requirements in over seventy territories around the world: "We have embraced technology to a much greater extent than most law firms, employing a wide range of proprietary online tools, programmes and databases and – wherever possible – we are using technology to deliver our services to clients," says Shirley Brookes, UK managing partner of PwC Legal.

Firms cannot invest in every new technology that shows promise, but nor do they have the luxury of taking too long in choosing where to put their money. Nyembo Mwarabu, vice president, EMEA, Xerox Legal Business Services, recognises the

### THE BIGGEST THREAT TO LAW FIRMS



# Analysis: Law Firms

challenges: "Law firms generally have been more cautious about change than other industries. For example, while artificial intelligence (AI) has advanced in certain fields, such as marketing and advertising, legal teams have been slower to embrace analytics."

Mwarabu adds, "A perfect storm is brewing – explosive growth in volume and sources of data requiring legal review, increased regulatory scrutiny and unprecedented fines and legal settlements. Leading law firms are adopting new 'big data' analytics systems to stay relevant and competitive. Plus, as they see AI and machine learning take off in other areas, we'll see faster adoption than in the past, based on the paths these firms are taking."

## Pressing the right buttons

The risks of a botched technology implementation are well understood in the wider business world. It is questionable whether lawyers, even those who embrace change, have the skill set best suited to implementing new technologies and running businesses which are centred around them. Surprisingly, just 16 respondents identified a failed technology implementation as carrying a serious risk of reducing profitability.

Derek Southall, partner and head of innovation and digital at Gowling WLG notes, "The technology has shifted up a gear and it will be fascinating to see how people will exploit it. Law firms may find they need fewer people, but the technologies aren't cheap. If they get their decisions and the implementation right the technology could bring with it considerable profitability, but if they get it wrong the opposite could be the case." He adds, "The challenge for law firms is not that they don't want to change, it is understanding that they may not be able to do everything and making the right judgement calls when investing. They may have to decide which areas of business they will support and which they won't. It's a bit like asking someone which of their children they want to feed. It is much easier for a niche firm just focused purely on one area, for example, but if it's involved in multiple areas the decision making process will be much more difficult. Law firms will increasingly distinguish themselves by the decisions they make and even within specific practice areas it may become harder to compare law firm's offerings."

What is important is that law firms recruit new technology experts who fully understand the legal market. One senior IT and digital services manager at a top 100 law firm told us that he had spent the last 15 years working in accountancy practices bringing their IT platforms up to speed. "Law firms are always behind the accountants when it comes to technological innovation – now the same IT experts who got the accountants working with digitalised services are doing the same thing for the law firms. We have basically moved across professional service sectors and are being paid to reinvent the wheel."

## More investment, less profit

As law firms move towards using technology as a means of delivering their core services, rather than just supporting their lawyers in doing so, they will inevitably become more capital intensive businesses. At present, a senior law firm equity partner may have to contribute several hundred thousand pounds to his or her firm, but will expect to reap profits from that investment many times over. Such returns on business investment capital are rare in other industries.

The suitability of the traditional partnership model for making investments in technology is questionable. Although regulatory changes have in theory allowed for outside investments, perhaps even a stock market listing, to date (Gateley aside) no major UK law firm has taken advantage of those rules. A further push towards deregulation due in 2017 may remove the regulatory hurdles that are preventing firms from raising capital in this way. Without outside investment, firms may well struggle

to realise their ambitions without taking on large debts or requiring partners to contribute substantial capital.

For start-up firms and many on the high street, there is no realistic prospect of ever raising the capital needed to develop bespoke systems. These firms will continue to buy off-the-shelf technology to enhance their legal service to clients. Ed Turner, managing partner at Taylor Vinters, observes that the Cloud's limitless digital storage capacity has evened out the legal services playing field: "It costs a relatively tiny amount to start up a

## IT COSTS A RELATIVELY TINY AMOUNT TO START UP A LAW FIRM. YOU CAN SCALE IT VERY EASILY

law firm. You can scale it very easily. You can buy Xero for your accounting package, Dropbox for your document storage and away you go."

Derek Southall agrees, "The increase in cloud based machine learning as a service model (MLaaS) effectively allows pay as you go AI. Blockchain could also be game changing for the profession with smart contracts and more. A lot of investment is going into this area but many in the market are struggling with understanding the extent to which this will impact and where the sweet spots are."

Although digital legal services platforms offer a lower cost access to better technology, they risk firms losing their distinctiveness.

As banks have found, it is the tech companies, rather than the core banking businesses, which ultimately benefit from disintermediation. This is because there is a risk that savvy clients will simply go directly to the legal service platform and avoid hiring a lawyer at all.

Says James Roome, London senior partner at Akin Gump: "There may be fewer in-house lawyers who have to go outside for legal advice because the technical materials will be much more available online. There are advances being made in technology, such as increased customisation and user friendliness." Derek Southall agrees, saying of clients: "If they can then purchase the technology as well, it begs the question what work will law firms be given?"

## What's the legal alternative?

The bigger law firms have packaged some of the repeat transactional services which are delivered from cheaper offshore and on-shore centres. Many law firms have opened low-cost centres to handle all of their process-driven legal work.

So called "disruptor" legal businesses have entered the market and are competing with traditional law firms by offering clients a more streamlined and tech-enabled service. A good example is Axiom, with over 1,500 employees across three continents. It focuses on improving the way legal, compliance and contracts work is done.

Nevertheless, Roome predicts, "The winning firms will be those with a high advisory element and a reputation for having excellent people, rather than those who dominate volume transactional work. I suspect that large parts of bond issues, M&A and private equity transactions will become more commoditised than they are today."

**I suspect that large parts of bond issues, M&A and private equity transactions will become more commoditised than they are today**

# Pathway to driverless cars

An examination of some of the main issues surrounding the use of Automated Vehicle Technologies (AVTs) by global insurance law firm Kennedys

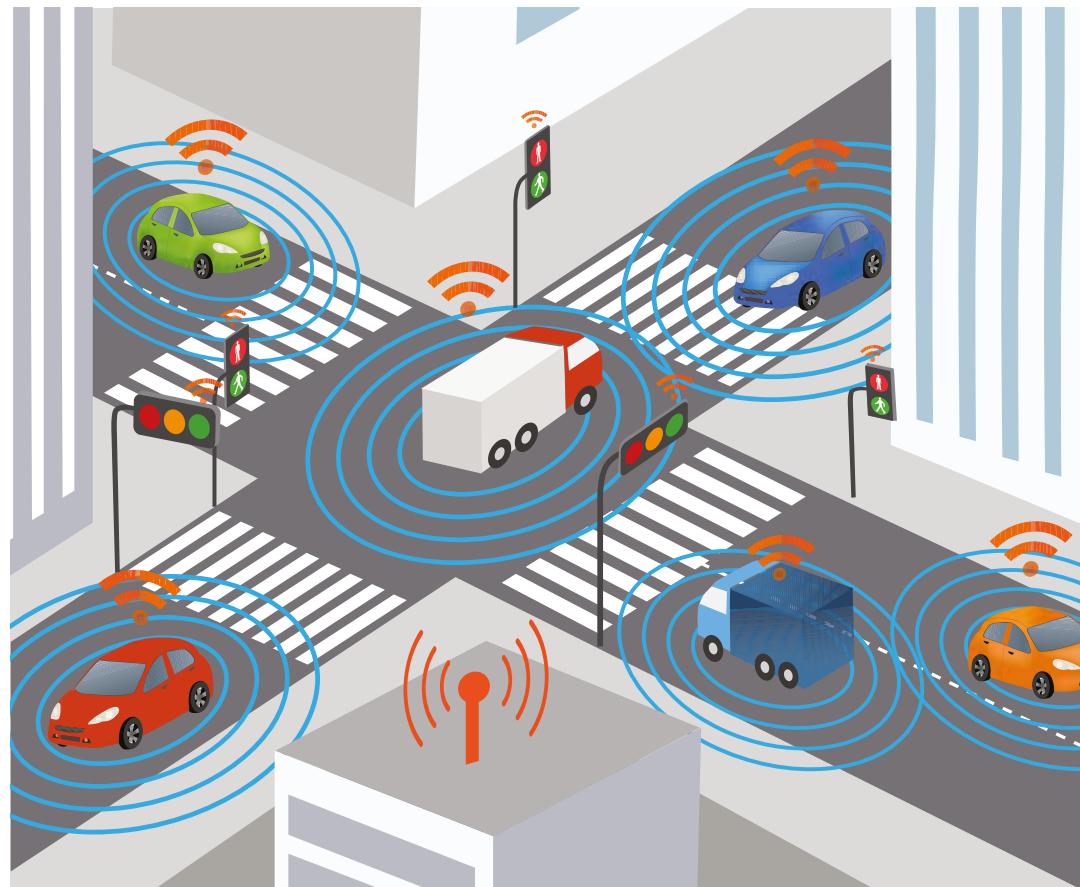
A major government consultation to help pave the way for automated cars to be used on British roads is being launched. Under the proposed measures, rules will be changed so automated vehicles can be insured for use on the roads.

## Regulatory reform

Important checks and balances must be developed alongside the pathway to driverless vehicles. Taking a sensible approach to regulatory reform is vital – too much, too soon could be damaging. The current UK legal and regulatory framework for vehicles and road safety is extensive. It has evolved over many years, reflecting developments in the UK automotive industry and safety requirements and the UK's obligations under EU legislation and UN regulation. The majority of the UK's domestic regulatory framework anticipates the existence of a "driver" who is in control of the vehicle at all times. Given the ultimate aim is to provide for technology that allows for transportation without any need for a driver, the framework must be adapted.

We support wholeheartedly the Government's intention to keep regulatory reform under constant review as the technology evolves. Providing for an ongoing and agile regulatory review means that, as far as is possible, long-term technological change is anticipated. This will ensure that future regulatory change is seamless and occurs only when necessary to reflect a major leap in technological advancement.

While we agree that the UK has the capability to adapt its legal and regulatory framework to accommodate the development of this technology, it is too early to redesign insurance law to take account of driverless vehicles.



Amending the Road Traffic Act 1988 to extend compulsory cover to product liability will, in our view, suffice for now.

In time, we have every confidence that highly or fully autonomous vehicles will be considered a different class of vehicle requiring additional compulsory cover. It is most likely that one go-to entity will provide all necessary cover – rather than a set of entities – and that such requirements can be encapsulated in a single piece of legislation.

## Legal practice reform

Looking at how driverless vehicles might impact defendant legal practice is an important strand to

developing this technology. Such an aim must go hand in hand with causing as little disruption to legal practice/justice system as possible, not least due to the risk of legal-cost generation – an aim which the current and previous Government has worked so hard to address.

The Government should also be alive to and explore now the discussion point as to whether claims involving autonomous vehicles are suitable to go through the online Claims Portal, which facilitates the process of low value personal injury claims covered by the Ministry of Justice's pre-action protocols.

As the Government is aware, there are costs benefits of

claims remaining in the Claims Portal. However, based on the experience to date, and despite best (and ongoing) efforts to achieve a proportionate and fair claims process, we anticipate that claimant solicitors will look to keep automated vehicle road traffic accident (RTA) claims out of the Claims Portal for cost purposes. Claimant firms will pursue claims on the basis that they do not contain solely a negligence issue vis-à-vis the defendant and there could be issues of product liability, allegations of potential defects with the vehicle which would (under the current rules) render these types of claims as complex and, therefore, not fit for the Claims Portal.

In our view, as a defendant firm, there is no reason why claims involving vehicles that make use of automated vehicle technology cannot remain within the Claims Portal. The defendant's default position would be that the Portal should continue to apply to all low value RTA claims (up to £25,000)

**Providing for an ongoing and agile regulatory review means that, as far as is possible, long-term technological change is anticipated. This will ensure that future regulatory change is seamless and occurs only when necessary to reflect a major leap in technological advancement**

unless the claimant suggests otherwise i.e. an allegation of defective product.

### Connecting roads with cars

A possible future scenario is that motorways, high level A-roads and city centres become fully connected. Within that connected environment, leased type fully-autonomous vehicles (with combined motor and product liability insurance in place) could be used with low insurance costs because of the resultant safety improvements. The lease cost of the vehicle would include the cost of the insurance. For those who live in a city and only use public transport to travel further afield, this option could be an attractive and low cost travel option.

Within such a scenario, individuals or organisations could also choose to use semi-autonomous vehicles, for example because of the need to travel in rural and unconnected areas. Such vehicles could continue to be insured as now, using compulsory motor insurance (based on existing risk ratings) and supplemented by manufacturer product liability policies (to the extent that driver assistance technology needs to be covered).

However, when such semi-autonomous vehicles entered a fully connected area (e.g. a city centre or motorway) vehicle users' insurance could switch to an integrated and connected policy for which there would be a charge (similar to the congestion zone or toll road charging). The connected zones would need to be well publicised.

### Insurance costs

Initially, underwriting risk for such vehicles will be difficult and take several years to form an accurate pricing model based on established levels of first and third party claims, frequency of claims and so forth. Underwriters will need to build up a body of data on which to assess accurately the risk, whilst bearing in mind that the full benefit of AVT vehicles

(in terms of accident reduction etc.) will not be seen until a significant number of vehicles on the road are deploying such systems.

As underwriters' experience of these products increases, the cost of insurance premiums for AVT vehicles is likely to become roughly equivalent to conventional vehicles. In the long term, as the larger proportion of vehicles on the road become AVT, it is most likely that the cost of insuring conventional vehicles will escalate considerably.

Conventional vehicles will not be able to communicate with the connected road systems or other vehicles.

When the road system is less mixed (between various levels of manual and AVT) and AVT dominates, conventional vehicles will almost certainly be considered the bigger risk to underwrite, on the sound assumption that AVT vehicles in that environment will be safer to drive and more reliable.

### A new highway code?

An entirely separate section in the Highway Code for semi-autonomous/driverless cars is required, rather than amending the current applicable Rules to provide a detailed explanation and avoid any confusion.

The current underlying message in Rule 150 is that the driver should not be distracted, should use in-vehicle systems responsibly and exercise proper control of the vehicle at all times. These principles should remain at the forefront of Rule 150.

However, Rule 150 will need to be extended to include an explanation of Advanced Driver Assistance Systems (ADAS), such as motorway assist or remote control parking. With remote control parking for example, the driver can be outside the vehicle using the remote control and will be relying on the driver assistance system. Rule 150 will need to be updated further as and when more advanced automated

systems are approved and become more widely available.

The text pertaining to Rule 160, which requires drivers to have both hands on the wheel, will need to be amended to cater for situations such as remote control parking where it will be impossible for the driver to have their hands on the steering wheel as they can be outside the vehicle.

Whilst we acknowledge there are potential benefits of cars travelling very closely together or platooning (improved fuel economy and improved traffic capacity), the "vehicle to vehicle" (V2V) communication system which allows vehicles to automatically maintain a safe headway is still in its infancy and is not widely used. If platooning is to be introduced into the Highway Code, it could be introduced as an extension of the Highway Code providing a separate rule for vehicles specifically fitted with V2V communication systems.

We share the concern that relaxing Rule 126 to reduce the recommended vehicle separation may lead to drivers of vehicles without a V2V system failing to leave enough stopping distances between them and the vehicle in front, thereby causing more accidents. We also need to be mindful of the fact that vehicles with V2V communication systems are being sold to customers who may not have a full understanding of their aptitudes and limits.

There are other related concerns with regulations currently governing use of hand held devices, remote parking and use of information screens inside vehicles. Research has confirmed that drivers who divide their attention, because they are on their phone or otherwise distracted, are significantly increasing the risk of a crash. Further, drivers who have been distracted underestimate the

effects that distraction has on them in being able to quickly refocus on driving tasks, control their speed or spot hazards.

Given the early stages of this technology, it is imperative that drivers remain focused on the task of driving at all times whilst using ADAS and semi-autonomous systems. The suggested requirement for the driver/user to "touch wheel" at regular intervals, such as every three minutes, and the possibility of sudden hand-back of control to the driver should be a minimum requirement.

The technology to ensure active and focussed compliance with such requirements will be challenging. The technology to monitor when or if the driver is in active control will be essential for the regulatory and statutory framework.

As drivers relinquish more and more driving function to autonomous systems, the monitoring systems need to step up to match that and the protocols for handover and handback need to be ever clearer. Taking the experience of pilots using autonomous systems on aircraft, the more autonomous systems are in play and in control, the longer the period of handover/handback will take.

### More consultation

Input into the process by industry stakeholders is vital and must be ongoing. We, therefore, urge the Government to create an industry-wide group that would advise ministers and civil servants on how the technology is developing to inform their thinking on how regulation needs to change with it. One of the main objectives of such a group should be to reach a consensus on what type of vehicles are likely to arrive on the UK market over, say, the next 10 years. This would greatly assist the government with regulatory planning.

**An entirely separate section in the Highway Code for semi-autonomous/driverless cars is required, rather than amending the current applicable Rules to provide a detailed explanation and avoid any confusion**

The advancements in technology is shaping challenges for intellectual property protection in India and one of the most pressing issues is design protection for robots. The visual appearance of robots captivates customers to buy a particular robot and creates a brand value for a company. To effectively monetise the brand, a company needs to formulate a robust strategy for protection and enforcement of a robotic design.

The protection for a robotic design in India can be sought under the Copyright Act, 1957, the Designs Act, 2000, and the Trade Marks Act, 1999. However, the choice for protection under a particular statute can be a strategic choice based on the business need. In particular, the fine detail of each statute has to precisely understood prior to making a decision. For example, if the robotic design needs to be protected under the Copyright Act, 1957, then Section 15 of the Copyright Act, 1957, and Section 2(d) of the Designs Act, 2000, has to be carefully examined.

Section 15 of the Copyright Act, 1957, reads as follows:

15. Special provision regarding copyright in designs registered or capable of being registered under the Designs Act, 2000 (16 of 2000) - (1) Copyright shall not subsist under this Act in any design which is registered under the Designs Act, 2000 (16 of 2000).

(2) Copyright in any design, which is capable of being registered under the Designs Act, 2000 (16 of 2000), but which has not been so registered, shall cease as soon as any article to which the design has been applied has been reproduced more than fifty times by an industrial process by the owner of the copyright, or, with his licence, by any other person.

Section 2(d) of the Designs Act, 2000, reads as follows:

(d) "design" means only the features of shape, configuration, pattern, ornament or composition of lines or colours applied to any article whether in two dimensional or three dimensional or in both forms, by any industrial process or means, whether manual, mechanical or chemical, separate or combined, which in the finished article appeal to and are judged solely by the eye; but does not include any

**The choice for protection under a particular statute can be a strategic choice based on the business need**

mode or principle of construction or anything which is in substance a mere mechanical device, and does not include any trade mark as defined in clause (v) of sub-section (1) of section 2 of the Trade and Merchandise Marks Act, 1958 (43 of 1958) or property mark as defined in section 479 of the Indian Penal Code (45 of 1860) or any artistic work as defined in clause (c) of section 2 of the Copyright Act, 1957 (14 of 1957).

The plain reading of the provisions of Section 15(1) of the Copyright Act, 1957, specifically provides that simultaneous

registration of the design under the Copyright Act, 1957, and the Designs Act, 2000, does not subsist. Further, Section 15(2) of the Copyright Act, 1957, provides that if the design "is capable of being registered under the Designs Act, 2000 (16 of 2000), but

which has not been so registered, shall cease as soon as any article to which the design has been applied has been reproduced more than fifty times by an industrial process by the owner of the copyright, or, with his licence, by any other person." Since, in most cases the robotic design is capable of being registered under the Designs

**THE PROTECTION FOR A ROBOTIC DESIGN IN INDIA CAN BE SOUGHT UNDER THE COPYRIGHT ACT, 1957, THE DESIGNS ACT, 2000, AND THE TRADE MARKS ACT, 1999**

# Design protection strategy for robots in India

**Vinay Kumar Singh, an IP Attorney based in India, looks at some of the issues in the legislative framework surrounding design protection.**



Act, 2000, the copyright protection for the robotic design needs to be chosen when a limited edition of robots is to be manufactured. The added advantage for protection of the robotic design under the Copyright Act, 1957, resides in the terms of duration for protection of the robotic design and remedy in cases of infringement.

**Devising a strategy for the protection of robotic design well in advance will provide an edge in a market to a company over its competitors**

Additionally, while considering the protection of the robotic design under the Trade Marks Act, 1999, the provision of Section 2(d) of the Designs Act, 2000, prohibits simultaneous registration of the design under the Designs Act, 2000, and the Trade and Merchandise Marks Act, 1958 (Trade Marks Act, 1999).

However, a common law remedy for passing off is available to the plaintiff. Hence, a company can first register the robotic design under the Designs Act, 2000, and thereafter, on expiry of duration of protection under the Designs Act, 2000, an application may be made for registering the robotic design as a trade mark under the Trade Marks Act, 1999.

Therefore, devising a strategy for the protection of robotic design well in advance will provide an edge in a market to a company over its competitors.

*Note: This article does not constitute legal advice. The author has provided some of the options available for protection of design in India but there are various other ways which may be adopted for the protection and enforcement of design in India.*

# An AI trained by lawyers



**A new start-up called Luminance is being heralded as a new breakthrough in the development of AI, specifically designed for the legal sector. Focussing on assisting with the reading of huge amounts of data, it is quickly establishing a reputation as a game-changer.**

## Luminance in the legal world

One of the key areas in law that an AI can be put to use on is the repetitive, manual work of reviewing documents, particularly in the cases of acquisitions and mergers. Tackling the mountain of data – which is exponentially larger in the digital world – is a process prone to human error, simply because of the sheer size of data involved.

As Emily Foges, CEO of Luminance, puts it, “One of the least gratifying tasks a lawyer performs is reviewing documents, a process often left to junior associates. An average data room contains 34,000 pages, for example, making the task gargantuan and prone to error.”

Luminance was founded at the University of Cambridge and is run by people from Autonomy some of whom, like Robert Webb (ex-GC at British Airways), are steeped in law and legal process. Backed by technology investment fund Invoke Capital, it is very much part of the trend of law firms to employ all technological means possible to improve workflow and efficiency. “AI is fast

entering the mainstream. Luminance was launched one month ago, and the response has been phenomenal, with over 100 firms contacting Luminance asking for a demo,” says Foges.

## Smart algorithms

The advantage that Luminance holds over other legal AI systems is that it doesn’t rely on contextual or key word searches. “These require a lawyer to know what he or she is looking for,” says Foges, “whereas Luminance surfaces the ‘unknown unknowns’ – contracts in unexpected jurisdictions, missing pages, etc.”

Instead of being a rules-based system or one based on searching for keywords, the algorithms that power Luminance are designed to make it learn.

The rules or signature-based approach has inherent weaknesses in that it requires an exhaustive list of the rules required which require maintenance and upkeep; it will have difficulty picking up anomalies such as unfamiliar words or even misspelt words; and improving such a system involves improving the rules, again at a great cost of time and effort, not to mention that there is a limit to the complexity it can handle.

The keyword approach is not only time-consuming, it also relies on the human outside of the system to manually enter in the key terms, expecting them to know exactly what they are searching for. This approach is unable to assist in the search for an unusually phrased clause, or even if words or a whole page are simply missing.

**An average data room contains 34,000 pages, for example, making the task gargantuan and prone to error**

Luminance is built to learn, not only from the input of others, but by teaching itself. The machine-based approach means that the AI can be left to its own devices, becoming even smarter as it analyses more and more data. The algorithms detect patterns in the language to infer understanding of the meaning, bringing its intelligence much more in line with that of a human, but able to read huge numbers of documents in half the time.

Once it is set to work and analysing a large enough data set, it can even detect anomalies. It establishes the norm from reading the documents and can then see if any data points differ from it. And if a clause is considered by the human lawyer to be low risk or not worth flagging up, Luminance can be instructed to ignore those types of clauses to keep the workflow streamlined.

The main advantage that Luminance provides for this type of work is speed. As Foges says, “Lawyers who have used Luminance cite the speed, accuracy and workflow of the platform as benefits of the software.”

## Impact

Primarily, the focus of any legal AI system, Luminance included, is to allow the human lawyer to focus their time and effort on those tasks that are too intellectually demanding for a computer’s capabilities. As law is considered a cognitive sector, implementation of AI is seen as being a factor that can complement lawyers, rather than replace them.

“In time, it may be that fewer lawyers are needed to review information, but we do not yet see a situation in which we dispense with humans entirely and rely on machines for legal judgements,” says Foges.

Lawyers that are less dependent on their superiors for supervision and advice are more effective lawyers. Developing AI to be more sophisticated is a transformative step in changing the landscape, seen as being something more than simply improving on old systems in the way Electronically Stored Information (ESI) did. Changing the way that it works holds more significance.

Even though it was done on a computer, the method of processing the information involved in an acquisition still resembled the way it has been done for hundreds of years. Luminance, and other AI systems, are determined to change the process itself rather than just speeding it up.

And in the future? Emily Foges says, “As the algorithms improve, and lawyers and their clients become more comfortable with systems like Luminance, we foresee a move into compliance, and General Counsel everywhere adopting these technologies for speed and accuracy.”



## Drone racing takes off at Eurosport

Eurosport, the European sports broadcaster, is in talks with potential partners to broadcast drone racing, making it the latest network looking to televise the growing sport in which contestants try to navigate small, remote-controlled aircraft at high speeds through aerial obstacle courses.

For television networks and advertisers, drone racing represents an opportunity to combine racing with the digital-age appeal of what has become known as eSports, in which video game players compete while millions of viewers watch online, usually for free.

Eurosport would join Disney Corp's ESPN, British broadcaster Sky Plc, and Germany's ProSiebenSat.1, all of which have recently signed on to broadcast races by the 15-month-old Drone Racing League. Sky also agreed to invest \$1 million in the league.

On top of that, the league has partnered with MGM Television, run by Mark Burnett, to develop a reality series about the pilots.

"We think it's an area worth us paying attention to and to test on audiences," Peter Hutton, chief executive of Eurosport, said in an interview.

Eurosport, a pan-European sports media group that Discovery bought last year, has 228 million subscribers in 93 countries in Europe, Asia and Australia.

While the network typically focuses on traditional sports like tennis and soccer, drone racing has "potential

for sporting credibility," Hutton said, declining to elaborate on discussions with drone leagues.

### Drone leagues

It is by no means certain the novel sport will be a money-maker for TV networks. ESPN, for example, has not paid for the rights to broadcast drone races, according to sources familiar with the matter. Instead, the network is sharing ad revenue with the leagues, the sources said.

Such agreements align the interest of the network with the leagues, said Nicholas Horbaczewski, CEO and founder of the Drone Racing League, based in New York City.

The Drone Racing League, the only professional league in the emerging sport, is putting the finishing touches to TV distribution deals in other markets worth millions of dollars, according to a confidential source.

Sky invested in Drone Racing League alongside a number of other investors including RSE Ventures, the New York-based venture capital firm of Miami Dolphins owner Stephen Ross; and Lerer Hippeau Ventures, owned by

I think what took 10 years for eSports to get to will only take two to three for drone racing

media gurus Eric Hippeau and Kenneth Lerer.

The league said it has raised over \$12 million since its creation in 2015.

One factor that could limit the sport's appeal is that most drone racing on TV has been shown on a tape delay, to allow for editing to capture the most compelling visuals. The races, where small drones fly around courses in empty warehouses, stadiums and other venues, can be hard to follow for viewers watching live.

Since an attraction for most sports programming is that the contests are broadcast as they happen, it remains to be seen whether large numbers of fans will want to watch races after they have already finished.

"Delays don't really fly anymore," said Daniel Glantz, global head of sponsorship at insurer American International Group Inc, which sponsored the amateur Drone Sports Association's National Championships in August, though it did not run ads during the event.

The sport's biggest supporters say it is only a matter of time until the networks and leagues – there are now a handful of drone racing leagues in the United States, Europe and Asia - figure out how to broadcast the races live.

On the other hand, Drone Racing League's Horbaczewski said presenting races in a more produced format is the best way to attract new fans, and that live races are not vital. "There are a lot of sports that don't go live off the bat," he said. "Look at professional poker."

A number of other media groups are waiting for the sport to evolve to see which leagues or organizations prove to be the best partner before agreeing to broadcast races.

So far, the TV audience for drone races has been small. Only 223,000 people watched the U.S. Drone Racing Nationals broadcast on Sept. 18 on ESPN, according to Nielsen, which tracks viewer data.

That is tiny compared to the 13 million viewers on average that watch Monday night NFL games last season, but is in line with the 264,000 viewers on average who tuned into an episode of Turner Sports' first season of its ELeague televised video gaming competition last summer.

"I think what took 10 years for eSports to get to will only take two to three for drone racing," said Keith Strier, a digital strategy head at Ernst & Young, which sponsored the 2016 National Drone Racing Championships and is considering sponsoring a drone team or organization. "eSports has paved the way."

# NEXT ISSUE

## NOVEMBER FEATURES INCLUDE:

**Partnership on AI:** Google, IBM, Facebook, Microsoft, Deepmind and Amazon join forces to benefit mankind

**Cybersecurity:** Tom Connelly reports from the conference at Hull University

**AI:** Stephen Hawking on AI and the digital future at the opening of the Leverhulme Centre for the Future of Intelligence at Cambridge

**Self-driving cars:** California proposals to set new, mandatory rules for testing self-driving cars in the state

Analysis and insight for the industry - lawyers, regulators, manufacturers and users



THE  
ROBOTICS LAW JOURNAL

# SUBSCRIPTION INFORMATION

The Robotics and Artificial Intelligence sector is experiencing global exponential growth in sectors as diverse as retail, banking, transport, energy, telecoms, media, sport, and agriculture, to name a few. Laws and regulations of robotics will continuously change in order to keep up with technological developments, protection of civil liberties, privacy and security, the impact on employment, and the production, manipulation and distribution of these machines.

The Robotics Law Journal provides lawyers and others working in the industry with a clear understanding of the increasing opportunities that are now presenting themselves to manufacturers and users of robotics and AI - and all the regulation that this needs and entails.

## YOUR ANNUAL SUBSCRIPTION TO THE ROBOTICS LAW JOURNAL WILL BRING YOU:

The Robotics Law Journal delivered to you bi-monthly in a digital format via email

The Robotics Law Journal posted to you bi-monthly in a paper/hardcopy (optional)

Full access to the Robotics Law Journal online service which will include:

- Latest issues and archived issues
- All premium editorial content
- Regulation update
- News alerts bringing you the latest breaking news
- Timeline of key industry regulatory and other milestones

For more information on how to subscribe please contact  
[subscriptions@globalcitymedia.com](mailto:subscriptions@globalcitymedia.com)  
or call +44 (0) 20 7193 5801

If you would like to become a country correspondent for The Robotics Law Journal please contact Claudia Tan [claudiatan@globalcitymedia.com](mailto:claudiatan@globalcitymedia.com)

**www.robotslawjournal.com** **Editor:** Des Cahill, [descahill@globalcitymedia.com](mailto:descahill@globalcitymedia.com). **Assistant Editor:** Tom Connelly, [tomconnelly@globalcitymedia.com](mailto:tomconnelly@globalcitymedia.com).

**Reporter:** Victoria Basham, [victoriabasham@globalcitymedia.com](mailto:victoriabasham@globalcitymedia.com). **Events Director:** Maria Sunderland, [mariasunderland@globalcitymedia.com](mailto:mariasunderland@globalcitymedia.com).

**Head of Asia:** Claudia Tan, [claudiatan@globalcitymedia.com](mailto:claudiatan@globalcitymedia.com). **Head of Digital:** Elaganathapillai Sivakanthan, [siva@globalcitymedia.com](mailto:siva@globalcitymedia.com).

**Marketing & Social Media Exec:** Sonia Fernández-Ponce, [soniafernandezponce@globalcitymedia.com](mailto:soniafernandezponce@globalcitymedia.com). **Design:** Paul Carpenter, Stimulus Design. [paul@stimul.us](mailto:paul@stimul.us).

**Publisher:** Mary Heaney, [maryheaney@globalcitymedia.com](mailto:maryheaney@globalcitymedia.com). **Chief Operating Officer:** Ben Martin, [benmartin@globalcitymedia.com](mailto:benmartin@globalcitymedia.com).

**Subscriptions:** T: +44 (0) 20 7193 5801 [subscriptions@globalcitymedia.com](mailto:subscriptions@globalcitymedia.com). While all reasonable care has been taken in the preparation of this publication, no liability is accepted by the publisher nor by any of the authors of the content of the publication for any loss or damage caused to any person relying on any statement or omission in the publication. All rights reserved, no part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electrical, mechanical, digital, photocopying, recording or otherwise without the prior written permission of the publisher.

**Published by:** GCM Publishing, Global City Media Ltd, 86-90 Paul Street, London, EC2A 4NE, United Kingdom. T: +44 (0) 020 7193 5801  
© 2016 Global City Media Ltd. All rights reserved. ISSN 2397-6608

