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Seven Ways to Prepare Your Legal Department for the Fourth Industrial Revolution

Technology, Privacy, and eCommerce

The Fourth Industrial Revolution (4IR) is here! It is a digital revolution, disrupting daily business and life in virtually every industry, on a global scale. Never before have legal strategies had a more powerful and profound opportunity to make or break a company’s ability to compete.

The move from analog to digital is vast, featuring the Internet of Things (IoT), artificial intelligence, robotics, autonomous vehicles, blockchain, and 3D printing. It's also fast: The speed at which new technologies are coming to market and transforming business is dizzying. Amid this digital transformation, new products and services are moving to market far before the regulatory landscape has taken form or courts have weighed in. To keep pace, law departments must build legal, regulatory, policy, and business strategies that plan for the velocity of innovation and disruption and anticipate a world of unknowns and uncertainties.

To succeed, leading-edge law functions are thinking above and beyond conventional risk, liability, and mitigation dimensions. They are mastering the technologies their science and engineering colleagues are pioneering. They are exploring, in new ways, how to enable businesses to take smart risks that bring technology's breakthrough products and services to market with speed, agility, and safety. In this technology-driven legal white space, lawyers are discarding old practices and creating new legal tactics for accelerating business growth. These new tactics begin at technological inception and evolve as new market insights take hold after products and services are launched.

Take 3D printing — also called additive manufacturing — a leading 4IR technology that is set to transform how and where goods are designed, made (printed), distributed, and sold. 3D printing is a manufacturing technology that starts with a digital design file on a computer, which can be sent to a 3D printer anywhere in the world. The 3D printer interprets the file layer by layer, and then deposits thin layers of the selected material over and over until the desired three-dimensional object embodying such design is formed.

3D printing is disruptive. It enables unique designs not possible with traditional manufacturing and allows designers to create new categories of products.

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It also democratizes and decentralizes manufacturing by moving it closer to the consumer — shortening supply chains and bringing manufacturing to any location. 3D printing is far from alone: Every digital technology threatens incumbent practices, stretches the boundaries of legal precedent, and poses knotty new legal questions. Who is responsible for a vehicle collision caused by a driverless car — and does responsibility shift if the driverless car was transporting a human passenger capable of taking the wheel? Who is responsible for damage caused by a connected consumer product being hacked? Who owns the intellectual property in digital health commodities? What terms and conditions best apply to robotic innovations?

Like all revolutions, this one will have leaders. And the leaders will be found among those who think differently and manage to see beyond their customary vision. Transformation creates challenges and opportunities, winners and losers. Winning innovators can be spurred by winners in law — that is, by legal functions that confront and embrace digital challenges, creatively, passionately, and relentlessly.

As lawyers who practice in matters of digital transformation, here are seven best practices that are pivotal to a successful planning and rollout when advising business clients on transformative technology.

1. Learn the technology and business model

HP's in-house legal team realizes that technology, products, and business models change rapidly and that being a trusted advisor means keeping up with the technology and how it is commercialized. For example, before HP's 3D launch, HP's 3D printing division counsel, Jennifer Prioleau, spent a month at HP's 3D printing headquarters in Barcelona, Spain to immerse herself in the business and to learn additive manufacturing directly from the company's R&D engineers. To her, it wasn't enough to read about 3D printing: She needed to see it, experience it, and understand the science behind it. Other HP attorneys are likewise working to master 3D technology as well as distribution networks and AI. HP's Global Legal Affairs team seeks to hire not only those with some technology background but, just as importantly, lawyers possessing a growth mindset, intellectual curiosity about innovation and business, and a proactive problem-solving mindset.

Even at HP, where technology is both creation story and core DNA, in-house counsel must take an active role in engaging with the business to understand the technology, products, and markets that are driving future prosperity — especially given the frenetic pace of change and disruption.

Those legal functions that will best succeed across the digital landscape will remain in step with the business, at all times devising legal means to help the business stay ahead of the competitive and regulatory curve. Not only will the legal function need to understand where the business ultimately wants to go; it needs to take muscular, affirmative steps to help it get there. With 3D printing, as with any disruptive innovation, doing one's job means understanding the business — and understanding the business requires a deep understanding of the technology.

2. Look outward: Solve your customer's problems

Entities advancing disruptive technologies, whether they be consumers, governments, designers, or innovators, ultimately have customers to serve. When HP first launched its 3D printing business, the business approached legal to ensure there were no legal or regulatory barriers to its 3D business model. HP Legal stepped up and readily determined that there were no 3D print-specific laws or regulations impacting HP. HP Legal could have stopped there — but it did not. The team realized that the 3D business model works only if HP customers become comfortable selling the resulting 3D printed parts and the downstream buyers become comfortable buying them. That required a step beyond conventional legal analysis.

So, how does HP do that? It does advance work for the customer, rigorously analyzing how legal regimes treat the customer's 3D printed parts. That way, when HP approaches its original equipment manufacturer customers to sell 3D printers, it can report that it has already baked in compliance measures and has sized up laws, regulations, and policies moving in the customers' direction. By putting itself squarely in the shoes of the downstream 3D printer users and printed part buyers, HP Legal helps steer the company around uncertain legal and competitive corners.

For instance, companies like HP, similar to traditional manufacturers, may not be regulated for the parts their printers produce. But their customers most certainly will be and will need to ensure that the 3D printed parts comply with regulations. HP takes it upon itself to understand the regulatory controls imposed on the 3D printed parts in various verticals. Will 3D printed consumer goods be subject to the same product safety regulations as their traditionally manufactured counterparts, and, if so, how will those regulations be interpreted? To the extent printed medical device parts are subject to recent FDA guidance, how will device companies best comply? And so on — always with the customer in mind.

Innovation is the dog; law, the tail.

In the digital world, law is important, but it is not the be-all-and-end-all. Far from it. Innovation is the dog; law, the tail. Naturally, compliance with law remains paramount. But the law function must embody the mindset of the business. And that means learning the demand side: What do customers need to succeed in the 3D print world of the present and future?

4IR businesses are in a constant mode of critical thought and reassessment, adapting business strategies to evolving markets and customer needs. Winning law functions are equally reflective, asking themselves: “Have we internalized our customers’ challenges and opportunities, both legal and beyond?” and “What unexpected concerns can arise when you don’t think about the end-user?” Adopting the customers’ worldview can thus become a competitive advantage.

The same idea — embodying the customer — extends to disruptive technologies across the 4IR landscape. Baking privacy and cybersecurity protections into IoT products; envisioning how users of blockchain and distributed ledger platforms will comply with financial services regulatory guidance; anticipating how patients can take on digital doctor services without legal concern — in each instance, taking a step outside the legal function’s normal purview and downstream to the customer can itself be a competitive differentiator.

3. Look inward: Ask the right questions about compliance

Having just addressed the importance of looking outward — toward the customer — the innovative legal function next turns inward to whether its own compliance shop is in order and shovel-ready for digital change.

Innovation by its nature breeds uncertainty and risk, which in turn necessitate compliance systems and a compliance-first mindset. For example, to advance the 3D print industry as a breakthrough pioneer in manufacturing, industry participants must size up associated regulatory, policy, and systems dimensions. This means:

1. Understanding the worldwide regulatory race to be the first mover, and standard-bearer, on 3D printing regulation.
2. Assessing end-user and regulatory requirements for parts across industry verticals. Does 3D printing technology meet legal requirements? Do regulatory requirements designed for traditional manufacturing apply to 3D printing technology? The legal function should not presume that existing compliance protocols must be adapted to new technology, any more than the agencies themselves should. Existing tools may work just fine as-is.
3. Evaluating gaps. For anyone in the 3D printing orbit, as with other 4IR technologies, some customers will operate before brand-new regulators and federal agencies, with brand-new forms and dimensions of risks. Has the company adopted preventative, anticipatory readiness measures that in effect fill those gaps while regulation lags?
4. Paying attention to regulation — a reality that cannot be ignored. While 3D print manufacturers and their customers may prefer voluntary industry standards to regulation, they must be prepared to address the government’s concerns for safety, security, and protecting IP.

Law routinely lags behind innovation, and that is certainly the case with the disruptive 4IR technologies. But the proactive law function cannot wait for the law to catch up. Technology is ready to launch, and customers want to benefit as quickly as possible. The enterprising general counsel’s

office builds compliance systems that fill the holes in the meantime.

4. Engage with influencers

In the ordinary course, law functions may focus most of their energies on obeying existing law. Recent highly publicized experiences of 4IR entities, such as Facebook and Tesla, being confronted by lawmakers and the media reinforce the importance of getting ahead of data, technology, and safety risks endemic to transformational digital technologies.

Forward-leaning law functions in the digital space are leaning forward like never before, including leaning proactively toward those who regulate them.

Regulators navigating the digital world may not know what they don't know. They often don't have the technologists and software engineers on staff who understand the technologies they are about to regulate and just as often lack the resources on their own to learn them. They often welcome visits, overtures, and dialogue with those within their regulatory ambit to help educate them and to hear their concerns. Information sharing before anything is broken can be safe terrain for innovative companies and their law functions.

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Companies such as HP are rising to the occasion, reaching out to policymakers, regulators, and enforcers in the spirit of education and information exchanges. Trading knowledge of the intricacies of 3D printing technology is mutually beneficial to everyone in the conversation. This foundational understanding is a prerequisite to ensure that lawmakers, regulators, and policymakers make informed decisions and can "get it right" when enacting or declining to enact rules that govern emerging technology. The digital law function must walk toward policymakers, not away.

In considering what sort of outreach may be appropriate for digital disrupters, in-house counsel should strive to understand the regulators' needs and designs — just as they do when striving to think like their business customers. They should also have concrete (and realistic) goals in mind with outreach: Is it to make law, create a relationship built on trust and/or open a dialogue, or become a sounding board? And it's important through research and discussion with counsel to understand which government bodies appreciate outreach — and which don't.

Conventional risk aversion should be questioned. Low profiles in the hallways of Congress and with regulators may mean your company has no seat at the table as digital-related law is being hatched. Consider engaging government affairs and policy counsel to develop and implement strategies to keep your company engaged and at the forefront of regulatory change. In this fluid environment, regulators are likely seeking input that will help inspire — not stymie — innovation. The opportunity is now.

5. Understand your ecosystem

There's no "I" in "ecosystem," and it's not only about your digital company. Digital transformation is unfolding within an entire cosmos; it is being created, and will be created, with or without you.

Successful development and adoption of new digital ecosystems will depend on incorporating lessons learned from other disruptive ecosystems. Speed will be at a greater premium because emerging digital transformation technologies are going to be implemented more quickly than past emerging technologies. In prior iterations, ecosystems that facilitated interoperability would take years to develop and implement. That rate of change would slow the process of bringing to market digital transformation products and services. The time horizon is much shorter now; market participants must come together and build ecosystems more quickly than ever.

Another lesson companies can learn and incorporate is that the development and adoption of past emerging technology ecosystems supporting interoperable networks have often spawned choosing "sides," resulting in massive litigation and uncertainty for such ecosystems. Interoperability of technology means that each device operating on the same network (for example, 4G mobile telephone networks) must perform particular functions in exactly the same way. To develop ecosystems where interoperability is critical, engineers for market participants collaborate through private standard-setting organizations to choose standard-essential technology — that is, the patented technology that will be the one required way for devices to perform particular functions.

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At one extreme, there are standards contributors who invest heavily in R&D and generate revenue through licensing their standard-essential patents (SEPs) to implementers. At the other extreme are implementers who cater to consumer demand and generate revenue through practicing the technical standards in the devices they sell. Standards contributors generally want to earn higher licensing revenues while implementers generally want to pay lower licensing royalties for SEPs. In mobile telecom ecosystems, this partisan battle led to a proliferation of infringement litigation widely known as the "Smartphone Patent Wars," as well as litigation over what SEP licensing terms are fair, reasonable, and non-discriminatory (FRAND). And some have alleged that various companies lobbied to have their technology incorporated into technical standards for technologically inferior reasons.

In-house and outside counsel working closely with their business clients can be the ones to prevent these issues from impending development and adoption of 4IR digital transformation technologies. They can also be the ones to help solve these issues so as to accelerate successful formation of digital transformation ecosystems. For example, a consortium of companies, committed to 3D printing's success in revolutionizing the US$12 trillion manufacturing industry, has come together on the 3D Manufacturing Format (3MF) — an interoperable next-generation file format for 3D printing. A standardized 3D printing file format allows Computer Aided Design (CAD) applications to send full-fidelity 3D models to 3D printers as well as to other applications, platforms, and services. The 3MF consortium addresses the problems of past technology ecosystems. Through members' agreements to either contribute their standard-essential technology as open-source code or license it royalty-free, the 3MF consortium removes the need for licensing enforcement or thermonuclear patent infringement litigation.

Applying lessons learned from the creation of these prior technology ecosystems can provide the speed, efficiency, certainty, and reduced litigation environment necessary to accelerate the successful development and adoption of digital transformation ecosystems. Soon, the engineers for all of the companies and other stakeholders in your arena will sit down and make similar

decisions. The companies that own and understand the relevant technology will be in the best position. There may be a moment when the competitors in your space jockey for position to see whose technology will be incorporated into the relevant standards. But companies must learn from history so that our most promising innovation isn't overburdened with litigation and increased costs eating away at returns or passed along to consumers.

> Don't wake up and find yourself in an ecosystem that doesn't work for your products. Speak up. Get involved now in tech standard-setting and the way the ecosystem is going to work.

Unlike innovation events of the past, digital technologies do not stand alone: They intersect and connect in many ways. For example, IoT will soon network 50 billion things — a wide variety of different types of devices — with each other, and with five billion humans. And the 3D printing ecosystem overlaps with cyber technologies, which intersect with Big Data dynamics and AI, which engage with robotics. The law function must have sufficient intellectual curiosity and space to roam so that it can develop at least a rudimentary understanding of all these paradigms.

Don't wake up and find yourself in an ecosystem that doesn't work for your products. Speak up. Get involved now in tech standard-setting and the way the ecosystem is going to work.

6. Understand the data currency

Many 4IR technologies depend on access to a new kind of currency: data currency. Without access to shared data, the following technologies and processes won't work: connected 3D printers using machine learning data to optimize part quality; self-driving vehicles linked to a network so that they can "see" around corners; "smart" appliances, homes, and cities connected on the IoT; and certain digital health platforms. As the sheer amount of data generated and collected has increased (leading to descriptions such as Big Data), data has become a valuable business asset. It powers innovation in new ways; data analytics can predict a wide range of conduct that drives business decisions, from customer preference to when equipment will require maintenance. But as data becomes more valuable and accessible, businesses may face more and new legal risks.

It is important for in-house counsel to ask the right questions to understand not only the creation of these data assets, but which of these assets have monetary value and drive the business. There is a growing expectation that companies will use Big Data to monitor and protect their supply chains, or for greater insight into their customers. As Big Data tools become more powerful and mainstream, companies may be required to foresee potential safety and security issues with new products and new technologies. Understanding the company's data and what may be learned from the data will help in-house counsel mitigate the legal risks of having such data and not acting on it.

> While the promise of Big Data is great, it is not without responsibility.

It is thus necessary to develop a better understanding of what your company should know from its data (and to use analytics, where appropriate) to proactively identify any risks lurking in the data. This requires a bird's-eye view of all of the different compliance functions, including data privacy, fraud, anticorruption, export controls, and customer complaints. It is a good idea to keep an eye on what competitors and peers are doing in terms of compliance and monitor what regulators seem to expect from the industry.

Another issue that comes into play is data ownership and license rights: Who owns (or should own) the data? Once your company understands the ownership of the data, it must explore other concepts as well. For example, ownership of large amounts of data could be an attribute of market power, which could lead to antitrust concerns. Big Data could also expose companies to claims for trademark and copyright infringement, particularly given the ease of storing and sharing electronic content and lax compliance with key license agreements. To protect data, businesses will need to craft contracts that enhance and protect their intellectual property and other legal rights.

Companies often share data widely and across jurisdictions, creating further challenges in terms of confidentiality, security, and privacy compliance. As technology evolves, and cybercriminals become more sophisticated, the law is also evolving. For companies trying to figure out how to build products and provide services, varying data security and privacy laws and regulations in the United States create a uniquely challenging environment that in-house and outside counsel must navigate.

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7. Consider the social impact of digital innovation — and make a difference

Innovative digital companies are focused not merely on the bottomline. As digital transformation changes how business is done, it is also changing how “doing good” is done. Drones are providing basic necessities to the needy in remote locations; 3D printing is localizing machining to populations desperate for parts and jobs; digital health is bringing medical care more immediately to the patient; and blockchain technology is bringing trust to transactions in unsettled, trust-free ecosystems. Societal benefits will flow from these innovative technologies. And innovative law functions are getting in the game and giving back as part and parcel of their core business vision. Not only do opportunities to give back provide a public service, they may also improve employee morale, keep employees engaged, and unite generations at work around common causes.

Some law firms are doing this as well — stepping up by partnering with clients on worthy “doing good” projects. Offerings include drafting corporate documents and contracts for worthy digital causes; guiding innovations through regulatory channels for those who cannot afford legal representation; drafting policy frameworks for countries seeking to provide humanitarian benefits to its citizens through the use of advanced technologies; seeking policymaker support for digital-enhancing legal protections for those in need; and obtaining IP protection for startup digital innovators.

There is no single recipe for success for the digital law function. The measures described in this article are some means of making a difference and are helping HP and other digital pioneers bring advances to market and sharpen their competitive edge. Law departments are evolving to advance the mission of their organizations — and mitigating risk is not the whole story. As legal departments navigate the digital revolution, they must understand the innovation their companies sell. But they just as surely must innovate themselves.

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