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Intellectual Property Rights in Technological Era

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Abstract: *The use of technology into criminal justice administration has revolutionised conventional methods, improving efficiency, precision, and transparency across several areas. This article analyses the many uses of technology within the criminal justice system, emphasising its function in law enforcement, court proceedings, and prisons. Innovations like predictive policing algorithms, biometric identification systems, and sophisticated forensic tools have transformed investigation methods, allowing law enforcement organisations to anticipate criminal actions and accelerate case resolutions. Digital evidence management systems and AI-driven legal analytics optimise case processing, minimising procedural delays and improving court decision-making. Moreover, the emergence of e-courts and online dispute resolution platforms enhances access to justice, especially in rural and underserved regions.*

The research examines the use of technology in prisons, including electronic surveillance, rehabilitation-oriented AI algorithms, and virtual reality (VR) training for offenders. Although these developments provide the prospect of a more efficient and just system, they also elicit considerable ethical and legal dilemmas, including data privacy, algorithmic prejudice, and the risk of excessive monitoring.

This paper further highlights the need of establishing regulatory frameworks and ethical principles to reduce dangers while enhancing the advantages of technology adoption. It critically examines the interaction of technology and criminal justice, contributing to the conversation on establishing a balanced and future-oriented justice system. The results highlight that a prudent use of technology, with human supervision, may greatly enhance the administration of justice in modern society.

Keywords: Law enforcement, Forensic Tools, E-Courts, Virtual Reality Training, Data Privacy, Ethical Principles

I. INTRODUCTION

The protections given to people or organisations for their discoveries or creations under legal framework are known as intellectual property rights (IPRs). By giving incentives and rewards to inventors, artists, and creators, these rights are vital in fostering innovation, creativity, and economic progress.These rights furnish people the ability to be in charge of and make money from their inventions, encouraging investment, study, and advancement. IPRs also inspire fair competition, safeguard customers against fake or subpar products, and promote cultural variety and economic prosperity. However, the administration and enforcement of intellectual property rights now face further complexities due to the technological era. The creation of new tactics and technology to safeguard IPRs in the digital sphere has been made necessary by problems like online piracy, copyright infringement and the simplicity of imitating and distributing digital information. In general, intellectual property rights are essential for promoting innovation, creativity, and monetary advancement. They maintain a careful balance between encouraging information availability and cross-cultural interaction while rewarding innovators and producers. To meet up with the demands and potential of the technological era, it is crucial to modify and improve intellectual property laws and practises as technology develops.

Unprecedented technological developments brought forth by the digital era have changed the way we produce, use, and exchange knowledge. The administration and preservation of intellectual property rights are now more difficult and important than ever due to these quick developments. We will explore the new vistas that have opened up in this dynamic period as we delve into the changing environment of intellectual property rights in the digital age.[1]

[1]**intellectual Property Right in the Digital Age- Exploring New Frontiers,Arpit Tiwari Author, guest blogger IP press.**

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The production, dissemination, and accessibility of intellectual property have all changed as a result of the technological revolution. Almost all types of creative information may now be effortlessly copied, transmitted, and shared around the world with just a few clicks, from music and movies to software and literature.

The widespread infringement of works to be protected by different legislative measure is one of the biggest problems in the digital era. Unauthorised people may now more easily reproduce and distribute copyrighted works without permission of copyright owner.

NEW FRONTIERS IN IPR

Digital information may now be secured using DRM technology to prevent unauthorised copying and distribution. Digital rights management (DRM) is the use of technology to control and manage access to copyrighted material. Another DRM meaning is taking control of digital content away from the person who possesses it and handing it to a computer program. DRM aims to protect the copyright holder's rights and prevents content from unauthorized distribution and modification. DRM is prominently vitalas digital content spreads through peer-to-peer file exchanges, torrent sites, and online piracy. It helps entertainment and media companies protect themselves from the cybersecurity challenges that all organizations face, such as protecting customer data, ensuring and demonstrating compliance, enhancing operational efficiency, and preventing downtime.

DRM enables authors, musicperformers, filmmakers and other content creators to clarify and control what people can and cannot do with their content. It also allows them to protect their copyrighted material, safeguard the creative and financial investment they put into their work, and make it impossible for their media to be stolen or shared illegally. For example, they can prohibit users from accessing specific assets, so they can abstain from any legal issues that could come from unauthorized usage. This is crucial to protecting copyright and intellectual property.[2]

How DRM Works?

The unauthorized distribution, sharing, and modification of digital content are covered by copyright laws, but monitoring the internet to prevent illegal activity is a challenging task. DRM addresses this by putting barriers in place to prevent digital content from being stolen.

DRM typically involves the use of codes that prohibit content copying or limit the number of devices a product can be accessed from. Content creators can also use applications to restrict what users can do with their material or encrypt digital media, which can then only be accessed by anyone with the decryption key.

This enables content creators and copyright holders to:

Prohibit or limits users from editing or saving, sharing or forwarding, printing, or taking screenshots or screengrabs of their content or products

Set best-by-dates on media, which restricts access to users beyond that date or limits the number of times they can access it.

Limit media access to specific devices, Internet Protocol (IP) addresses, or locations, such as limiting content to people in the U.S. only

Watermark documents and images to assert ownership and identity of content.

Patents and technology

Patent law has technology in its DNA. But it is not mandatory that patents have not always been deemed appropriate to protect technological innovation such as example of software.Among other things, the European Patent Convention provides that "programs for computer" are not to be considered inventions for the purpose of patent protection. This means that protection is not available under patent law, though a computer program may be protected by copyright.This

[2]Digital Rights Management (DRM)https://www.fortinet.com/resources/cyberglossary/digital-rights-management-drm.

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said that patents can protect novel and inventive products like physical hardware and they can also protect inventive processes,even if the sequences of steps in these processes are carried out on a computer using software. The latter are known as computer-implemented inventions (CIIs). An example in this sense is the smartphone that you might be using right now to read this article: it is a device that is covered by numerous of patents relating to the chips, memory, sensors, receivers, transmitters and batteries inside; it is also covered by patents for the several processes, instructions and operations it carries out, which are all facilitated by software.

The latest technological advancements

Fundamentally, the most recent technological innovations have also been raising new point at issues for IP law and IP professionals alike. Novel emerging arenas likeArtificial Intelligence (AI), blockchain, and non-fungible tokens (NFTs).

AI has been raising the question of whether, for example, copyright and patent protection is available to AI-generated works and inventions. AI has been also prompting a change in how IP work is conducted. In the trade mark and design field, for example, the European Union Intellectual Property Office (EUIPO) has been using AI to develop its own image recognition service.

Finally, new technologies like blockchain and NFTs have been proving useful to both owners and users of IP to have access to information relating to, for example, the IP status and ownership of an object and especially when blockchain and NFTs are used in the art world, its authenticity[3].

DIGITAL DESIGN: Meaning

Digital Design can be mentionedas what is generated& developed for viewing on a digital interface or electronic screen. it can be addressed as any design that is interactive through a digital device used to present information or product or services rather than through print i.e. graphic design to be used on a computer. It encloses a wide range of creative processes and outputs across various mediums, including graphics, user interfaces, websites, multimedia, and virtual environments.

A graphical user interface (GUI) serves as a visual platform enabling user interaction with computers and electronic devices through elements like icons, buttons, and menus. Offering a user-friendly alternative to text-based interfaces, GUIs incorporate visual representations of data, enhancing user understanding and interaction. Widely employed in operating systems, software applications and websites. GUIs rectify the overall user experience and streamline interactions. The design of GUIs integrates digital design principles, including graphic and user experience design, which entails considerations such as colour schemes, typography, and layout. Digital designers utilize tools like prototyping and wireframing for visualizing GUIs prior to development, with a focus on responsive design for adaptability to diverse screen sizes.

COMPONENTS OF DIGITAL DESIGN

Digital design requires a code to be operational and traditional graphic designs need paper and ink. This process of coding is called development. Hence designer creates an offline mock-up and the developers create a mock-up into a functioning digital design.

Following are key facet and characteristic of digital design:

Electronic Format:

Digital design is specified by its electronic format. Unlike traditional design, which may involve physical mediums like paper or canvas, digital design exists in a digital or computerized form. It can be created, edited, and displayed using electronic devices and software.

[3]IP and the challenges of technology, Eleonora Rosati is an Italian-qualified lawyer with experience in copyright, trademarks, fashion and internet laws. published in AlicanteNews

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Creation with Digital Tools:
Digital designs are crafted using a variety of digital tools and software applications. Graphic design software, 3D modelling programs, animation tools, and other specialized applications enable designers to create visual content in a digital environment.

Visual and Interactive Elements:
Digital design incorporates both visual and interactive elements. Visual elements include graphics, images, typography and layout, while interactive elements involve user engagement, such as buttons, animations and responsive interfaces.

Multimedia Integration:
Digital design often covers the integration of multimedia elements. This can include the combination of text, images, audio, video and interactive features to create a dynamic and engaging user experience.

User Interface (UI) and User Experience (UX) Design:
In the realm of digital design, a significant focus is on user interface (UI) and user experience (UX) design. UI design deals with the aesthetics and layout of digital interfaces, while UX design focuses on creating a positive and meaningful user experience through thoughtful design and usability.

Web Design and Development:
Digital design plays a crucial role in web design and development. Web designers use digital tools to create visually appealing and functional websites, ensuring a seamless user experience across different devices.

3D Modelling and Animation:
Digital design extends into three-dimensional spaces, with the creation of 3D models and animations. This is prevalent in industries such as gaming, virtual reality, and film production.

Digital Art and Illustration:
Artists use digital tools for creating digital art and illustrations. Digital painting, drawing tablets, and vector graphics software bestow to the creation of visually stunning and versatile artworks.

Prototyping and Design Iterations:
Digital designopens the door for the process of prototyping and iterative design. Designers can quickly create, test, and modify digital prototypes to refine and improve their designs before final implementation.

Responsive Design:
With the prevalence of various digital devices, digital design often includes considerations for responsive design. This ensures that the design adapts and functions optimally across different screen sizes and platforms.

Digital design is a dynamic and evolving field that continuously incorporateadvancements in technology to push the boundaries of creativity and innovation in visual communication and user interaction.

The shift from three-dimensional physical design to two-dimensional digital design, often referred to as "virtual migration," presents challenges for policymakers tasked with adjusting the legal intellectual property (IP) framework to accommodate the needs of digital designs. Simultaneously, firms face challenges in protecting this progressively vital form of intellectual property.

JUDICIAL PRECEDENT

The recent judgment by the Hon'ble High Court of Calcutta, in the case of **UST Global (Singapore) Pte Ltd. vs. The Controller of Patents and Designs and Ors.**[4] attempts to address certain issues related to the registration of Graphical User Interfaces (GUIs). This legal decision is significant in providing clarity and guidance on matters concerning the design registration of GUIs.

The judgment delves into aspects such as the eligibility criteria, examination procedures, and legal considerations specific to GUI design registration. It may shed light on how the existing legal framework, including the Designs Act and associated regulations, applies to GUIs. Such legal developments are crucial for establishing a more comprehensive and nuanced understanding of the protection afforded to GUI designs within the intellectual property landscape.

[4]MANU/WB/0584/2023

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The Assistant Controller of Patents and Designs, under the Designs Act, 2000, rejected a design application (No. 298921) on September 4, 2019. This application sought registration for a design titled "Touch Screen," specifically for a unique surface ornamentation constituting a Graphical User Interface (GUI).

The basis for the rejection rested on several key arguments. Firstly, it was asserted that a GUI isfundamentally incapable of being registered as a design. The denial was reinforced by the claim that a GUI is only visible when the product is in the 'ON' or operating mode. Consequently, it was argued that during the 'OFF' mode, the GUI does not exist as a design, thereby rendering it ineligible for design registration. This argument touches on the temporal visibility of the GUI as a key factor in its registrability.

In addition to this, the refusal highlighted the observation that the ICON/GUI does not conform to the distinctive process of industrial manufacturing. Instead, it was emphasized that the creation of ICONs and GUIs primarily involves software development processing. This distinction implies a departure from the conventional understanding of industrial processes in the context of design registration.

Major findings and observations from the Hon'ble High Court include:

Amendments to Design Rules, 2008:

The court notes that amendments to The Design Rules 2001 include rules for classifying designs and articles. The 2008 changes introduced a detailed classification system for goods and articles eligible for design registration. Specifically, Class 14.02 and 14.04 of the Locarno Classification identify items under "Screen Displays and Icons," recognized in the 2019 Design Rules Amendment. The 2021 amendments added a new category, Class 32, covering graphic symbols, designs, logos, ornamentation, and surface patterns. Therefore, the claim that GUI/ICON cannot be registered is incorrect, ignoring these amendments.

Visibility in ON Mode:

The court rejects the argument that a GUI is visible only in the 'ON' mode and, therefore, cannot be registered. It asserts that in-built GUIs, including ICONS, are displayed in shops and advertisements even when the device is not actively in use. The court underscores that designs may be registered if they enhance the aesthetic value of the product, regardless of the device's operational state.

Nature of 2D Design:

The court acknowledges that the submitted design is a 2D design, possessing length and width but not depth. It emphasizes that the novelty of the design can be judged solely by the eye as soon as the device is turned on, challenging the notion that depth is a prerequisite for design registration. Importantly, the Court highlighted that there is no need to physically touch the device to appreciate the design. This emphasisesthe tangible nature of GUIs and their capacity to convey aesthetic and design elements without necessitating tactile interaction.

Industrial Process Application:

The court discusses the process of applying the GUI to the article,underscoring that the mechanical and manual process of application covers the definition of "industrial process" mentioned in the Designs Act 2000. It highlights that the design is applied through a software development process, embedding source code in micro-controllers, micro-processors and electronic means and the use of pixels for display, the court aims to establish that the design's application is not merely a manual or craft-based process but involves technology and machinery. This framing potential for the argument for the GUI's eligibility for design registration under the criteria of the Designs Act 2000.

As a result, the Hon'ble High Court has cancelled the Controller's order, remanding the matter back for reconsideration within three months. Significantly, the Controller is not Strictly bound by any findings or observations made in the court's decision when re-evaluating the case. This court's decision introduces important considerations regarding the registrability of GUIs and how the evolving legal framework, including recent amendments, influences the protection of digital designs. The Controller's subsequent review of the matter will be closely supervised for its potential impact on future cases involving GUI design registration.

IMPACT OF DIGITAL DESIGNS ON THE DESIGNS ACT

The impact of digital designs on the Designs Act, or any relevant legislation pertaining to intellectual property, is intense and has led to a model shift in how design rights are perceived, protected, and enforced. Here are many ways in which digital designs have influenced the Designs Act:

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Expanding Definition of Designs:

Traditional vs. Digital: The Designs Act, which traditionally akin with the protection of designs applied to articles, has had to adapt to the digital era. Digital designs, including those created for user interfaces, web designs, or virtual objects, have challenged conventional definitions of "article" and "design."

Adaptation of Legislation: Many jurisdictions have amended their design legislation to explicitly include digital designs within the umbrella of protection. This adjustment acknowledges the changing nature of design in the digital landscape.

Challenges in Registration:

Dynamic and Interactive Designs: Digital designs often involve zestful and interactive elements, presenting challenges in the registration process. The fixed representations required for registration may not fully capture the essence of digital designs.

Multi-Dimensional Designs: Traditional design registration systems were built for fixed, physical objects. Adapting these systems to accommodate multi-dimensional digital designs raises questions about how to adequately represent and protect them.

Enforcement Issues:

Ease of Replication: Digital designs are susceptible to rapid reproduction, posing challenges in enforcement. The ease with which digital designs can be imitated or modified raises questions about how effectively design rights can be enforced in the digital realm.

Jurisdictional Challenges: With digital designs easily reachable across borders, enforcing design rights becomes impossible. Determining jurisdiction and applicable laws for digital designs that go beyond geographical boundaries is a considerable challenge.

Duration of Protection:

Rapid Obsolescence: Digital designs often become outdated more quickly than traditional designs. The Designs Act may need to consider whether the span of protection is enough for digital designs given their potentially shorter lifespan and the fast-paced evolution of digital technologies.

Emergence of New Business Models:

Digital Licensing and Marketplaces: Digital designs have given rise to new business paradigm, including licensing and marketplaces for digital assets. The Designs Act may need to adapt to put up these novel ways of commercializing design creations.

Intersection with Other Intellectual Property Rights:

Overlap with Copyright: Digital designs often demonstrate elements of both design and copyright. The interaction between design rights under the Designs Act and copyright protection may need clarification, especially in cases where designs include artistic or creative elements.

In summary, the strong impression of digital designs on the Designs Act is multifaceted, necessitating ongoing adaptation to address the unique challenges and opportunities presented by the digital era. The Legal frameworks must yield to provide strong protection for digital designs while balancing the need for innovation and creativity in this dynamic and rapidly changing landscape.

The Advancement of legal technology and its impact on trademarks

The use of technology has had an immense effect on intellectual property law, as can be seen by cyber squatter laws and other important legal and practical improvements in protecting intellectual property, notably in the case of trademark infringement.

The environment for trademark concerns has changed dramatically as legal technology has advanced. New problem and risk have emerged, such as trademark infringement in online promotions and advertising, cybersquatting, trademark

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dilution on social media platforms, and counterfeiting in online marketplaces, but along with the problems, legal technology has also brought novel instruments and answers to these problems.

Common Trademark Issues in the Digital Age

The digital environment has offered businesses several advertising and marketing alternatives. It has; however, get larger the number of trademark infringement cases. Businesses now face unique challenges in protecting their intellectual property rights on the ever-evolving digital platform. These challenges covers the illegal use of trademarks in internet marketing, cybersquatting, domain name disputes, trademark dilution on social media platforms, and the rise of counterfeiting and online infringement.

Purpose of a Trademark and its Benefits

Investing in intellectual property, specifically trademarks are a vital strategy for companies and entrepreneurs. Businesses may set up a solid sense of identity and protect their important intellectual property in the digital era by applying for and registering trademarks early and often. In addition, businesses can keep ahead of possible infringers and protects their brand values in real-time by using modern technology such as artificial intelligence and machine learning.

Trademark infringement in online advertising and marketing:

In the digital age, trademark violation in online advertising and marketing presents real issues. Number of influencers and marketers may misuse trademarks without authorisation or endorsement agreements. It demands the unauthorized usage of trademarked names, logos, slogans, or other protected elements in online ads, promoted links, keyword targeting, affiliate marketing, and social media advertising.

Competitors may abuse trademarks in their advertisements, diverting consumers and creates confusion.

Another way is by keyword targeting; this may activate advertising based on trademarked phrases even when the trademark is not shown. Brand uniqueness may be diluted and unauthorized affiliates and brand hijackers might deceive the customers.

Cybersquatting and domain name disputes

The act of registering or utilizing domain names that are resembles or confusingly similar to recognized trademarks to benefit from their goodwill is called "cybersquatting." It is the unauthorized use of someone else's trademark in a domain name, usually to sell the domain to the legitimate trademark owner to earn profit off for brand's reputation. Domain name disputes arise when trademark owners attempt to protects their rights by contesting the registration or use of a domain name that infringes on their trademark.

This is done to make a profit by selling the domain name to the original brand or service owner. Sometimes a person registers a name with the intention of selling it to the highest bidder.

Trademark dilution in the age of social media

The illegal use and/or application for a trademark likely to weaken or impair a renowned mark are termed as "trademark dilution." In contrast to trademark infringement, trademark dilution may not always include the illegal use of a mark in connection with goods or services that are confusingly identical to those supplied in connection with the renowned mark.

Most nations recognize some sort of trademark dilution. Although, the idea and the rules and penalties differ from jurisdiction to jurisdiction. However, the United States, the European Union, South Africa, India, Japan, and numerous Central and South American nations officially recognize trademarkdilution. To be diluted, a trademark must be well-known. As per US norms, a mark must be widely recognized by the general consumer population. However, in most nations, fame is decided on a case-by-case basis by courts and trademark authorities. Secondly, the unauthorized use must likely erode the famous mark's capacity to identify and differentiate the famous products or services, or it must tarnish the famous mark. The owner of a famous mark needs only demonstrate the probability of dilution, not actual dilution.

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II. CONCLUSION

One of the main challenges of intellectual property enforcement in the digital era is the matter of piracy. Piracy marks as the use without consent, reproduction, or dissemination of copyrighted works. The ease with which digital content can be imitated and disseminated has led to widespread piracy, especially in the music, film, and software industries.

Another challenge is the question of jurisdiction. With the global nature of the digital network, it can be complex to enforce intellectual property rights across different jurisdictions. Laws and regulations regarding intellectual property differ from country to country, therefore, it make challenging for content creators and owners to take legal action against infringers in different regions.

To evict these challenges, governments and organizations have implemented various protective measures, such as anti-piracy legislation and international treaties to foster intellectual property protection. Digital content creators and owners can also protects their intellectual property, by using digital rights management technologies and seeking legal remedies against infringers.

Overall, the challenges of intellectual property enforcement in the digital age require a multi-faceted approach that associated with the cooperation of governments, organizations, content creators, web logger and owners. By working jointly to protect intellectual property rights, we can help ensure that creativity and innovation continue to thrive in the digital age.

In the digital era, navigating intellectual property challenges requires a comprehensive understanding of the legal and technological landscape. Content creators and owners must be wide-awake in protecting their intellectual property rights by registering their trademarks, copyrights, and patents and actively keep an eye on the internet for infringement. Additionally, cooperation with legal and technological experts is pivotal to effectively notifiy these challenges.

Evolutions in technology have created both opportunities and challenges for intellectual property protection. While digital rights management technologies and artificial intelligence can assist to prevent piracy and detect infringement, the ease of reproduction and distribution of digital content has also made it complex to control the use of intellectual property.

Ultimately, navigating intellectual property in the digital era requires a balanced and collaborative approach that combines legal and technological solutions. By working jointly to protect intellectual property rights, we can ensure that creativity and innovation continue to thrive in the digital age.

Since its very inception, IP has been concerned with and affected by technological advancement. Similarly, the way people execute their tasks has constantly changed and mostly improved with the introduction of new technologies. On both fronts, things are not going to change going forward. The task of IP law will be thus that of continuing to react to and regulate the use of such technologies.