

## Resolving IPR Issues Relating to Geospatial Databases and GIS Products- A Pressing Priority for Geospatial Industry in India

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Geospatial data means the geographical information derived through satellites, drones, airborne sensors, and ground sensors. This data is used in Geographical Information System (GIS) to provide value added products such as maps, elevation models, vector data, imagery combined with metadata, sketches, 3-D works etc. used in problem solving and decision making. There are concerns that geodata service providers do not enjoy requisite IPR protection. Data utilizers suffer from the want of easy access to data, data integrity, accuracy, and legitimacy. The originality or creativity rule makes it hard to secure copyright in GIS databases. It may lead to increased infringement of such works since Indian IPR regime does not provide protection for trade secrets or any other sui generis protection to such works. Computer related inventions are subject to the stringent rule of non-patentability under section 3 of the Indian Patent Act, 1970. For value added geodata products fully or partially developed upon public or open-source data, 'public domain' question restricts the IP protection. Moreover, there must be a balance between right to free flow of information and exclusive proprietary right to bits of information protected by intellectual property rights. In this context, this paper makes an analytical study of the scope of IPR protection in geospatial data and GIS products with reference to the relevant international case law and conventions, though more focusing on the Indian IPR law, policy, and recent trends in judicial decisions.

**Keywords:** Geospatial Data, Copyright, Patent, Compilations, Database, Originality, Technical Effect

The interaction between law and technology is twofold. Firstly, it is to foster the development of technology by formulating stimulative policy and regulation and secondly to check, control and reprimand wrongdoers in case the technology is used for unwanted purposes and leads to loss of life, property, or security of people. Technologies are expected to make our life safer, easier and more productive. One such very useful technology is Remote Sensing and Geographical Information System (GIS) which are widely utilised space technologies. Remote sensing means collecting data about an object without having any contact with that object such as data collected through satellites, aircraft, and drones. The data is collected from spectral, spatial, radiometric, and temporal resolutions. This data is then integrated with data collected through ground sensors and other ground-based survey techniques. Data is further processed using GIS to derive useful value-added products such as maps, elevation models, vector data, imagery combined with metadata, sketches and 3-D works. Although the Global Positioning System (GPS), internet mapping technologies, statistical models, socio-economic data and crowd sources data

analytics are important technologies used in GIS, nonetheless, remote sensing works as the most useful tool for creation of GIS models.

The Fifth Scientific and Technical Conference PTIP defined GIS as, "GIS is an IT system supporting the collection, analysis and sharing of data about objects uniquely spatially located".<sup>1</sup> The features of the given objects, the changes in such features over time, density of features, relationship with other objects and topographies and location of such features is described in GIS models. GIS data models are comprised of layers. Each layer provides description about the important phenomenon required to be studied for decision making. Geospatial data is very significant for location-based services such as e-commerce, logistics delivery and transportation. It is also utilized in agriculture, urban planning, resource management, emergency response, market research, business decision making as well as in law enforcement.

There are many legal issues involved in regulation of geospatial industry such as registration of space objects, spatial orbit allotment, lease of spacecrafts, insurance, liability for accidents and debris etc. The Indian Government has come up with several policies time to time such as Sat Com Policy 1997<sup>2</sup>, ISRO-NGP

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2002<sup>2</sup>, Spacecom Policy 2020<sup>3</sup>, Draft Space Based Remote Sensing Policy, 2020<sup>4</sup> and New Indian Space Policy issued in April 2023. The Government is also working on codification of a specific national space legislation. However, IPR issues have not found much space in any of the policies. IPR protection has become one of the major issues as the Government has opened the space sector for private enterprises who want to prevent the copying of their products. Geospatial industry requires huge investments, advanced R&D and therefore, IPR protection is required to incentivize the people working therein.

If something is innovative or creative and it is manifested through some product or service, it can become subject matter for being registered as IPR. IPR provides incentive to the creator of intellectual or creative work for his hard work and efforts and ensures his returns in case of market failure. According to Aram Sinnreich, “Regardless of any highfalutin’ rhetoric about the law’s ordained purpose, IP in practice is one of many instruments used by organizations and individuals within a complex web of industrial relations in order to make money, reduce risk, and manage competition. In many cases, IP simply represents the ability to sue someone if they deviate from established business practices, and therefore it often serves as the “glue” that binds these industries together, creating a stable enough business environment to ward off market mayhem and inspire confidence among investors and creators”.<sup>5</sup>

IPR law prohibits the copying of work and being deceptively sold to the purchasers. It protects the consumer’s interest also. Consumers are not deceived by unfair trade practices. They know that the product belongs to a particular production house and therefore, they can trust them for quality and other features. The IPR incentives help in mass production of goods, economies of scale and consumers’ access to goods at fair prices. Earlier, Patents, Trademarks, Geographical Indications (GI) and Industrial Designs were compositely called industrial property under Paris Convention for the Protection of Industrial Property, 1883. Copyright was separated as it was to be granted for artistic works under the Berne Convention 1886. However, in the present times, IPR term is used for all kinds of intellectual property. According to Cornish and Llewelyn, “while this is a branch of the law which protects some of the finer manifestations of human achievement, it also shields much that is trivial and ephemeral. The ultimate art in

shaping IPR policy lies in securing outcomes that are proportionate to the aim of that protection”.<sup>6</sup>

IPRs are the intangible property rights which include the right to exclude others, right to alienate and the right to remedies in case of infringement. Therefore, seeing the jurisprudential character, IPR rights are negative in nature. They allow the owner to prevent others carrying out certain specified acts in relation to the subject matter without his consent.<sup>7</sup> The general remedies under IPR laws are the injunction against unauthorised production or use, account of profit and/or damages. Remedies are provided by the ordinary civil courts. However, the parties may solve the disputes out of the court too. The Alternative Dispute Resolution i.e., ADR (including ODR) mechanism is available, though the IPR statutes in India are silent on ADR.<sup>8</sup> World Intellectual Property Organisation (WIPO) provides ADR services at global level.<sup>9</sup>

Patent, Trademark, Copyright, Industrial Design, Geographical Indication and Semiconductor Integrated Layout Design are the recognised IPRs in India whereas trade dress, trade secrets, utility models and plant varieties etc. are also recognised in some legal jurisdictions.

### Research Problem

Within the scope of research problem in hand, this paper is focused to provide answers to the following questions: -

- (i) Do the geodata service providers enjoy requisite IPR protection under the current regime?
- (ii) GIS software can be copyrighted as computer program (and as patent in certain cases involving novel scientific invention), however the value-added product may or may not get database copyright protection as it depends on the level of human skill, choice, creativity, and judgement. It must be an ‘original’ literary work. The originality or creativity rule makes it hard to secure copyright in such databases which may lead to increased infringement of such works since Indian IPR regime does not provide protection for trade secrets or any other sui generis protection to such works. Then, what is the desired course of action?
- (iii) Geospatial data companies use the commercial data, Government data, open-source data and crowd source data for GIS and IPR claim over such value-added product is a debatable issue as the ‘public domain’ question will restrict IP

protection. See if an entity acquires data set from a provider and prepares some models or graphics adding some attributes to the original datasets, does the provider have any rights to such maps? What are the rights and obligations as to the use of open-source databases and the rights of the persons modifying open-source software?

- (iv) If some person suffers damage due to faulty online map, who will be responsible for damages? Does the IPR have any role to play therein?
- (v) Do the data utilizers suffer from the want of easy access to data, data integrity, accuracy and legitimacy?

### **Guidelines for Acquiring and Producing Geospatial Data and Geospatial Data Services including Maps, 2021<sup>10</sup>**

India is moving forward to indigenize geospatial data and mapping technologies and to create a competitive and innovative geospatial data market, GIS and mapping technologies. The Department of Science and Technology (DST) has issued 'Guidelines for Acquiring and Producing Geospatial Data and Geospatial Data Services including Maps' in February 2021. These policy guidelines are an attempt to deregulate Indian geospatial industry and to set a level playing field for private investors.

It is important to have brief refence to the Guidelines to understand the methodology followed by the Indian Government to give a boost to this sector. It will help in understanding the requirement of a strong IPR regime to facilitate the sector. The Guidelines provide that there shall be no requirement for prior approval, security clearance, license or any other restrictions on the collection, generation, preparation, dissemination, storage, publication, updating and/or digitization of geospatial data and maps within the territory of India. Individuals, companies, organizations, and Government agencies, shall be free to process the acquired geospatial data, build applications and develop solutions in relation to such data. They can use such data products, applications, and solutions by way of selling, distributing, sharing, swapping, disseminating, publishing, deprecating and destructing. There shall be some prohibited areas where data cannot be derived from and there shall be a list of sensitive attributes (which cannot be marked on a map) which shall be duly regulated by the Government through notifications issued from time to time.

Only Indian entities can operate in geodata services involving value finer than the threshold value

prescribed in the Guidelines. Foreign entities can operate in such areas only if they derive licenses from Indian entities and only for serving their customers in India. The data for ground truthing to enable user accuracy will be freely made available to Indian entities. The Guidelines further provide that all geospatial data produced using public funds, except the classified geospatial data collected by security/law enforcement agencies, shall be made easily accessible for scientific, economic and developmental purposes to all Indian entities without any restrictions on their use. Such access shall be given free of any charges and at fair and transparent pricing. It is expected that these Guidelines will facilitate the growth of geospatial industry, however, there will be requirement of sound intellectual property rights in geospatial services products. This aspect does not find any direct reference in the guidelines. Strong IPR regime clearly establishes the ownership over products and the terms and conditions of its use. The data users will also be in a better position so far as the authenticity and accuracy of data is concerned. Additionally, geospatial entities will have to properly manage their IP.

### **Relevant IPR Issues**

GIS value added products such as maps, elevation models, vector data, imagery combined with metadata, sketches etc. are mostly copyrightable works under the Copyright Act, 1957. If the computer program or computer system in GIS constitutes a novel invention, with or without novel hardware, it may be a subject matter for the grant of patent under the Indian Patent Act, 1970. IPR may be granted for industrial designs too.

### **Patentability of Computer Related Inventions**

A patent is a limited monopoly that is granted in return for the disclosure of technical information.<sup>11</sup> If the invention relating to computers satisfies the test of novelty, inventive step and industrial application, it can be granted patent under the Patent Act, 1970. However, the Patents (Amendment) Act, 2002 introduced explicit exclusions from patentability under section 3 for Computer Related Inventions (CRIs).<sup>12</sup>Section 3(k) provides that a mathematical or a business method or a computer programme per se or algorithms are non-patentable inventions in India. Section 3 (n) excludes the presentation of information as a non-patentable subject. GIS is an information technology system involving computer software, computer systems including data processing tools, presentation of data into databases and therefore ease

of patentability is crucial for more investment and development in this sector. The government has issued Guidelines for Examination of Computer Related Inventions, 2017 replacing the guidelines of 2016. The 2017 guidelines retain the features of novelty, inventive steps and industrial application as the basis for grant of patent in CRIs too. Earlier it was necessary that the computer program must have novel hardware also to get patented as the computer program per se is not patentable. The 2017 guidelines have done away with this requirement. However, the computer program or algorithm must produce some technical result or technical advancement in the existing state of the art, only then it can be considered for patenting.

In para 4.5, the Guidelines provide that, “Since patents are granted to inventions, whether products or processes, in all fields of technology, it is important to ascertain from the nature of the claimed computer-related invention whether it is of a technical nature involving technical advancement as compared to the existing knowledge or having economic significance or both and is not subject to exclusion under Section 3 of the Patents Act”. The Guidelines nowhere define ‘technical advancement’ and do not try to spell out the principles to determine the meaning and scope of technological advancement or technical effect, not even by illustrative methods. It requires us to fall back on interpretation of earlier CRI Guidelines to read them with 2017 Guidelines which is not the practically prudent method. It may create ambiguity. Moreover, guidelines are being frequently revised and there is not much certainty of law. The 2017 Guidelines clearly specify that in case of conflict, the Patent Act and Rules shall prevail, not the Guidelines. Again, it creates an environment of uncertainty, which makes the courts lean in favor of exclusion of computer program under section 3 of the Patent Act. There should be more clarity and certainty as to the law relating to patenting of CRIs and Guidelines should be redrafted. It is crucial for the geospatial industry which largely deals with computer programs and datasets. Investors would want a patent for their novel computer software used for geospatial data processing and creation of GIS models. Copyright is taken to be a weaker IPR in entrepreneurial endeavours.

Fortunately, in the case of *Ferrid Allani v Union of India and others*<sup>13</sup>, the Delhi High Court has held that The Patent Act and Rules must be read with the CRI Guidelines. This case involves a patent application

relating to a method and device for accessing information sources and services on the web. The patent application was rejected based on Section 3(k) of the Patents Act by the Controller General of Patents, Designs and Trademarks. The Court directed the Controller to re-examine the patent application since only computer programs per se are not patentable in India, and that a computer program that has technical effect or technical contribution is not a computer program per se. The Court stated in the case that computer programs embedded in digital or electronic devices must be tested for technical effect, and that inventions relating to computer programs must be examined in the context of modern technology. It stated that computer programs cannot be denied patent protection if they satisfy the requisite standards under the law. This is a welcome trend and hopefully will lead to more confidence in research and development in computer-related technology including geospatial technology and GIS.

The legal reasoning given by courts in the case of *Telefonaktiebolaget LM Ericsson v Intex Technologies*<sup>14</sup>, *HTC v Apple*<sup>15</sup> and *VICOM*<sup>16</sup> cases is also significant which were referred in *Farrid Allani* case. In *Telefonaktiebolaget LM Ericsson v Intex Technologies*<sup>14</sup>, Delhi High Court granted injunction against Intex for violating Standard Essential Patents of Ericson. While clarifying the law relating to CRIs, The Court referred to various tests performed in EU, USA, and UK to examine the patentability of computer programs. It unequivocally held that technical effect/technical advancement is a prerequisite for granting a patent for CRIs. Once it is proved, there is no other reason to deny patent to an applicant. The main task is to define and examine the technical effect on CRI. In the case of *AT&T Knowledge Ventures LP and Anr. v Comptroller General of Patents*<sup>17</sup>, The England and Wales High Court laid down some useful signposts to decide the technical effect of a computer software. These are: -

- i) whether the claimed technical effect has a technical effect on a process which is carried on outside the computer.
- ii) whether the claimed technical effect operates at the level of the architecture of the computer, whether the effect is produced irrespective of the data being processed or the applications being run.
- iii) whether the claimed technical effect results in the computer being made to operate in a new way.
- iv) whether there is an increase in the speed or reliability of the computer.

v) whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.

These guiding principles can be useful for Indian courts to lean in favour of more liberal grant of patent for computer software. The European Patent Office in the case of *Vicom Systems Inc* set aside the decision of the examining division and remitted the case for further examination. The Patent Office observed that, “an invention which would be patentable in accordance with conventional patentability criteria should not be excluded from protection by the mere fact that for its implementation modern technical means in the form of a computer program are used. Decisive is what technical contribution the invention as defined in the claim when considered as a whole makes to the known art”. The observations and ruling of Courts in all these cases show a positive trend in judicial arena. It will serve for better protection of IPRs in Geospatial Industry.

#### **Copyright in Computer Program and Database**

According to section 13 (1) of the Copyright Act, “Subject to the provisions of this section and the other provisions of this Act, copyright shall subsist throughout India in the following classes of works –

- a. original literary, dramatic, musical, and artistic works;
- b. cinematograph films; and
- c. sound recording”

The explanation to Section 13 (1) states that, “In the case of a work of joint authorship, the conditions conferring copyright specified in this sub-section shall be satisfied by all the authors of the work”. It means the international collaborations are feasible and the joint value-added products will get due protection under the Indian law, provided the contribution of all the authors satisfies the basic requirements under the copyright Act.

Section 2 (o) defines literary work as, “literary work includes computer programs, tables and compilations including computer databases”. It means the GIS products in the form of computer programs, tables and compilations including databases are copyrightable provided they pass the test of originality under Section 13(1).

According to Section 2 (ffc), “a computer program means a set of instructions expressed in words, codes, schemes or in any other form, including a machine-

readable medium, capable of causing a computer to perform a particular task or achieve a particular result”. Computer program per se is copyrightable under the Act. Both source code as well as object code are to be filed with application for registration of computer program.

The expressions table and compilations including computer databases have not been defined in the Act. According to the Oxford Learners Dictionary, database means “an organized set of data that is stored in a computer and can be looked at and used in various ways”.<sup>18</sup> In geospatial context, there are two kinds of data sets. Firstly, the very data collected by remote sensing and ground sensors and surveys. It is raw data, the very facts relating to geospatial elements to be analyzed. It does not get IPR protection as facts cannot be copyrighted though trademark law can help the creator to distinguish its data sets from the other competitors in the market. But that serves the purpose of commodity differentiation only and does not establish the first-hand authorship to the work in a controlling mode.

International outer space law encourages sharing of benefits and does not provide for any guiding principle for exclusive protection to data collected by remote sensing in outer space. The outer space law is meant to regulate the behaviour of states and it does not extend to regulate private enterprise in space exploration, space mining and trade in geospatial products. The second kind of data set is the databases created by processing the raw data and relating to different elements by creative decision making. These databases enjoy some sort of copyright protection. The question arises what level of originality is required for a compilation or database to be copyrightable as literary work? In the case of *University of London Press Limited v University Tutorial Press Limited*<sup>19</sup>, the Court of Chancery Division, UK held that if a sufficient effort has been expended in compiling a work, to give it new or original character, it qualifies as a literary work. In the case of *Rural Telephone Service Company v Feist Publications Inc.*<sup>20</sup>, the US Supreme Court has firmly ruled in favour of ‘creativity requirement’ for granting copyright in literary works, including databases. The 1996 Directive on Databases of the European Community also provides that there must be a sufficient level of creativity for database to be eligible for copyright. UK has been in favour of ‘sweat of the brow’ doctrine. In the UK case of *Water low v Reed*<sup>21</sup>, it has been held that if sufficient amount of labour, skill and capital has been spent on a

work, it qualifies to be copyrighted as literary work. Copinger and Skone James clarify the UK approach stating that, “in the end, the question is merely whether a written artifact is to be accorded the status of a copyright work having regard to the kind of skill and labour expended, the nature of copyright protection and underlying policy. It is not sufficient to say that the purpose of the law is to protect original skill and labour and it is not of much weight either that other forms of protection may be available”.<sup>22</sup> This approach eventually leads to copyright ability of mere facts. In case of competitors making databases from common source, such as data in public domain, both will be able to claim copyright for their hard work for enhancements over the raw data which seems to be against the very idea of the copyright law. This is jurisprudential anomaly.

In the case of compilations, the form of selection and arrangement of content are significant, and the requirement of creativity is not that high, though mere compilations of images will not get literary work protection. In the case of *Apple Computer Inc v Computer Edge*<sup>23</sup>, the High Court of Australia held that the conversion of the source code into object code of machine-readable form is a form of translation of the work.

Thus, computer programs are a copyrightable subject under the Copyright Act and there is not much problem in establishing the rights therein. In the case of tables, compilations and computer databases, there must be some creativity or originality of work, mere ideas or raw datasets are not copyrightable. A collection of images is not copyrightable as database, though individually an image is copyrightable as a photograph. Since the geospatial data is more raw data but collected with huge amount of investment and scientific precision, the creativity requirement will derail the protection of such data as copyrightable data. So, the sweat of the brow doctrine will be more helpful. Then the GIS models, layered graphics and datasets will have more chances of getting copyrighted. Another course of action may be the recognition of trade secrets as IPR. If trade secrets are recognized as IPR, the geospatial algorithm products may be protected. A good regime of uniform licence norms must also be developed to facilitate the growth of geospatial industry.

#### **Data Authenticity and Accountability**

Apart from prevention from copying, IPRs accord value to the product and authenticate the ownership assuring quality control and therefore, the authenticity

(issues of manipulation or modification in original data) and accuracy (degree of similarity between the satellite imagery and the actual object) of geospatial datasets become very significant factors for growth of the geospatial industry. The data utilizers should not suffer from lack of authenticity and accuracy. IPRs should be accorded with care so that their function and utility is not taken for granted. There should be a record of all sorts of data, i.e., raw data, processed data and the processing and value additions including the record of metadata such as the position of the satellite, date of image, satellite description and sensor description. The data file and the licence agreement should contain such information. The geospatial enterprise must have the backup file and when copyright is granted, this fact must be considered by the copyright registration office.

This issue is important for dispute resolution too. The problem is that the end users rely on final value-added products and do not get to know the whole process of collection, processing or value-addition and the irregularities related thereto. If some raw images are produced before the court as evidence, probably it will not be able to appreciate its value unless it is presented in appropriate value-added form in the court proceedings. Now the processing of imagery may lead to different interpretation and create validation confusion. The Evidence law requires data authenticity for verification use and the failure of which may lead to inadmissibility of evidence. Whether the satellites resolution, swath or safety nets against absorption and dissemination of wavelength in the atmosphere are so able to provide correct data for a particular purpose, particularly for evidence purpose, is an important question. The reporting of standard errors needs and traceability (such as bar coded in processed food products) is to be made an essential ethical practice. Electronic tools such as digital watermark can be useful. The need for specification of products through marks and labels is also a relevant factor. The data is made readily available for humanitarian and disaster relief purposes free of charge but for other purposes, adequate access to data and reasonable pricing needs to be ensured. All these matters are a tedious task to handle and therefore, it is important to have sound data policy and legislation for geospatial industry.

#### **Public Domain Issue**

The precondition of originality will hamper the IPR protection for value added works where the premise data is derived from the Government sources or

crowd sources. The UK approach of sweat of the brow can be helpful to overcome this difficulty as value addition on public data requires investment and labour to make it acquire a market value as a tradable product. It will save costs of unnecessary litigation too. However, there is another broader question here which is more significant and that is the balancing between the right to information and the right to IPR. It cannot be forgotten that state has spent a lot on creating space infrastructure in India and the people have reasonable right to get spatial information which cannot be hampered by undue recognition of IPRs for private enterprises who will be capitalizing on the public investments. The Geospatial Guidelines 2021 have secured some pre-emptive rights in favour of public entities, and it is a welcome measure.

### Conclusion

Dan Hunter beautifully summarizes that “Intellectual property is a legal layer of artificial scarcity imposed over specific types of information in order to facilitate the trading of those information goods. Its goal was to realign the properties of information, a non-rival good, with the properties of the medium into which it had been embodied, typically, a physical, and therefore rival good. This model broke down with the advent of the internet and digital technologies. Digital resources are, like all information, inherently non-rival: they can be held and consumed by multiple people at the same time, without this affecting the opportunities for others to enjoy the same resource”.<sup>24</sup> The ideal concepts of possession and ownership have been diluted in internet age. It has posed challenge before the industries dealing with information goods. IP community must take proactive approach to solve the IP issues faced by these industries.

There is a dire need for more clarity and better legislative recognition of appropriate intellectual property rights in computer programs, compilations and databases which is very significant for the growth of geospatial industry. International space law indicates that outer space represents commons and therefore, the major components of international space law i.e. The Principles of Outer Space Treaty 1967<sup>25</sup>, The Registration Convention 1976<sup>26</sup>, Liability Convention 1972<sup>27</sup> and The United Nations Declaration on Principles Relating to Remote Sensing of the Earth from Outer Space, 1986<sup>28</sup> are silent on the issues of ownership and licensing of geospatial data, its processing and value addition, dissemination,

utilization and IPRs.<sup>29</sup> TRIPS provides IPR protection for compilations of data or other material which is an intellectual creation.<sup>30</sup> WIPO Copyright Treaty 1996 also provides for the same.<sup>31</sup> Under the EC Database Directive, IPR protection is given to intellectual presentation of data (as copyright) and to the database *Sui generis*, the uniqueness of data. India does not provide for *sui generis* protection for compilations and databases, neither it recognizes trade secrets as enforceable IPRs. Open-source software are available with general licence terms giving freedom to use, distribute and modify open-source software, yet recognizing the source code and author’s moral rights and imposition of no further restrictions upon public dissemination. Same rules will apply to open-source data. The IP rights in value added products made from open-source data are still a debatable issue. There is not much judicial activism on this topic in India. There should be clear rules as to this issue in Copyright Rules.

After profound analysis of the problem at hand, it is suggested that the Copyright Act, 1957 itself can accommodate the required changes and there is no need of *sui generis* protection. Section 13 (1) of the Copyright Act should be amended to include clause (d) as ‘tables and compilations including computer databases’. There is no requirement of originality in case of cinematograph film and sound recording and so can be done in case of tables, compilations, and database too. The words ‘tables and compilations including computer databases’ should be omitted from Section 2 (o). Since there is no need of 60 years long copyright protection for tables, compilations, and databases (being of lesser shelf life), the protection should be given for 10 years only. The Copyright Act already provides for different duration for copyright works and therefore, the suggested changes do not violate the policy of the Copyright Act.

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