

## What effect will electronic cadastral survey plans in Australia have on surveyor's intellectual property?

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**Key words:** Copyright, Cadastral Plans, Spatial Data, ePlan

### SUMMARY

In the 2008 case *Copyright Agency Ltd. v State of New South Wales* [2008] HCA 35 (CAL case), the Australian High Court determined that surveyors retained intellectual property in plans drawn as part of the process of creating and identifying interests in land. At the time of the decision, all jurisdictions in Australia required cadastral plans to be submitted in a hard copy form. Changes in technology, and in other types of land dealings, has led to the consensus that economic benefits for the State and private surveyors will flow if boundary and cadastral data are submitted in an electronic form. This paper asks if there are risks to the value of surveyor's intellectual property from these proposed changes.

The paper introduces the proposed new format for the depiction of cadastral data and examines it in the light of Australia's existing intellectual property regime. It examines the nature of artistic and literary works and the concepts of material form and authorship in the context of cadastral survey data. The paper concludes that the new form should allow surveyors the same copyright protection for the data file as they do now for hard copy cadastral plans. However, it highlights potential risks to that intellectual property income stream from the creation of derivative works that may replace the current demand for paper based cadastral plans. It suggests that unfair competition legislation may be a better protection for surveyor's economic interest rather than current copyright regimes.

Australia is a signatory to the World Intellectual Property Organization (WIPO) Copyright Treaty so, while each international jurisdiction will have its own intellectual property regime, sufficient similarity exists for the discussion to be relevant to other jurisdictions considering change to cadastral surveying standards.

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## 1. BACKGROUND

Maps and written descriptions of geographic information have long presented challenges for copyright law, particularly because they are perceived as factual compilations. The last few decades have seen extraordinary transformations in the methods and practices of collecting, storing, using, representing and disseminating what was once called “geographic information” but is now more broadly termed “spatial data”. This is in tandem with the government requirement to lodge survey plans in digital formats in a bid to eradicate paper surveys. Australia is moving towards integrating surveys with a digital spatial database to provide better accuracy, reliability and ease of access – including by introducing spatial data to assist in creating and verifying the survey plans.

In the 2008 case *Copyright Agency Ltd. v State of New South Wales* [2008] HCA 35 (CAL case), the Australian High Court determined that surveyors retained intellectual property in plans drawn as part of the process of creating and identifying interests in land. The Court found that cadastral survey plans attracted protection as *artistic works*. In that decision the Court considered pictorial forms fixed on paper with a clearly identifiable author. At the time, all jurisdictions in Australia required cadastral plans to be submitted in a hard copy form. Changes in technology, and in other types of land dealings, has led to the consensus that economic benefits for the State and private surveyors will flow if boundary and cadastral data are submitted in an electronic form. This paper asks if there are risks to the value of surveyor's intellectual property from these proposed changes.

To answer the question, we will first discuss what is driving the proposed changes to the nature of cadastral data. Following that we will explain the basis for the Court's decision in the CAL case and other facets of the Australian legal copyright environment. Lastly, we will evaluate if the proposed changes to cadastral surveying standards poses threat to surveyor's ability to receive recompense for their intellectual property.

## 2. THE CHANGING FORM OF CADASTRAL DATA

### 2.1 Surveyors and Conventional Cadastral Plans

In the *Australian Constitution* s51 sets out the limits for the matters for which the Federal Parliament may make laws. The framers of that constitution chose to omit land as matter for which the Parliament could legislate so, in Australia, each state has its own legislation that regulates the procedures for surveyors submitting survey plans. Notwithstanding this separation, since all states were confronted with similar problems, they have independently developed broadly similar requirements. For example, Queensland's *Surveying and Mapping Infrastructure Act 2003 (QLD)(SMIA)* sets out survey standards for cadastral surveys. It mandates that the Department of Resources administer the cadastral boundary system, by setting standards for surveying, managing the collection and dissemination of survey records and maintaining a number of state datasets (Queensland Government 2023a).

Since the introduction of Torrens Title in the mid-1800s there has been a requirement for the creation of almost all land interests to be facilitated with a hard-copy cadastral plan like that shown in Figure 1. There is no statutory impediment to the submission of electronic cadastral data. Although Section 165 of the *Land Title Act 1994 (QLD)* requires a survey plan to be lodged, s164 allows the Registrar to determine whether it need be on paper or if that requirement can be dispensed with. At present s9.24 of the *Cadastral Survey Requirements (Queensland Government 2023b)* requires all plans within the definition of the *SMIA* must be drawn in black ink. Although there is now the *Electronic Conveyancing National Law (QLD)* which allows for electronic conveyancing, presently section 4 of the *Land Title Regulation 2022 (QLD)* does not list a survey plan as an instrument that needs to be lodged electronically. As will be seen in Section 3, the original surveyor's intellectual property in these cadastral paper survey plans was the subject of the successful High Court challenge to the previous status quo.

Of the state datasets maintained under the *SMIA*, of particular relevance is the digital cadastral dataset (DCDB). The digital cadastral dataset contains a digital representation of the current the property boundaries and related property description of all Queensland land parcels. It is used mainly by the State and Local Authorities for searching, planning and analysing land-related information. This data base was originally created through the digitising of paper-based cadastral mapping and its spatial accuracy has been periodically upgraded through projects that utilised field and numerical data. Even with the assistance of imaging techniques like optical character recognition (OCR) receiving updated cadastral information and measurements in hard copy form is an impediment to its efficient update.

The Intergovernmental Committee on Surveying and Mapping (ICSM) has released a national strategy for Cadastral Reform and Innovation in Australia, titled the *Cadastre 2034 (ICSM 2015)*. Whereas the previous 2014 plan focused on the digitisation of two-dimensional (2D) survey plans from paper-based to electronic formats, the 2034 plan focuses on moving to a digital database of survey plans in 3D (or even 4D) formats and their common standards across Australian states and New Zealand for better accessibility. The *Cadastre 2034* "is

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envisaged as a fully automated cadastral infrastructure where surveyed land parcels are registered in real-time directly from the field to the desktop ... This means a paperless process, void of duplication and with significantly reduced turnaround times”(ICSM 2015, p. 14). This vision and electronic conveyancing have been the drivers to require cadastral data in a flexible and electronic form.

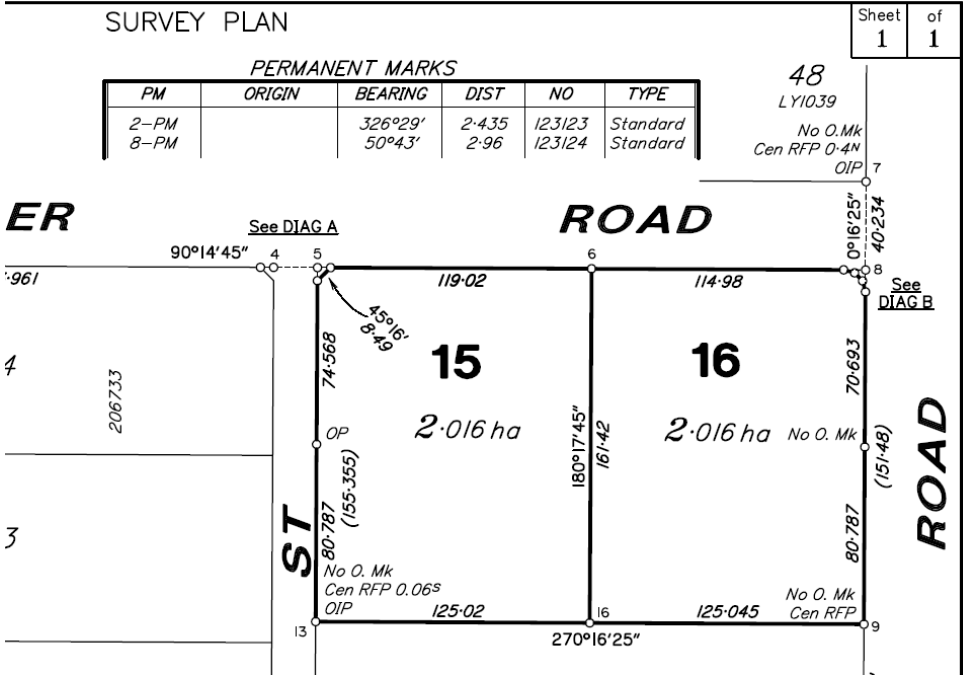


Figure 1 An excerpt from a Queensland cadastral plan.

**2.2 The Changing Form of Cadastral Data**

The ICSM developed a national approach to electronic cadastral survey plans called ePlan (ICSM 2016). This approach starts with a data model (ICSM 2010) and uses the international standard, LandXML as the mechanism to transfer spatial cadastral data between private surveyors and government agencies. A LandXML file that is consistent with the ePlan Model is called a Cadstral Information File (CIF). An excerpt from a file is shown in Figure 2 below.

The CIF file contains the information carried in the cadastral plan shown in Figure 1. However, rather than being shown pictorially, the file keeps all the information in a nested, tagged, text format. Each boundary line, parcel or surveyed connection is explicitly referenced to the other spatial elements in a spatial database and in a from that is readily machine readable. In a machine-readable format, it is available for integration into larger cadastral datasets, like the DCDB or, if desired, the structured information can be rendered into any one of several pictorial representations, (the ‘plan’) for use by types of human users.

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the corporation, by Geoffrey James Mulhall, Cadastral Surveyor for whose work the corporation accepts responsibility and that the
plan is accurate, that the said survey was performed in accordance with the Survey and Mapping Infrastructure Act 2003 and Surveyors
Act 2003 and associated Regulations and Standards and that the said survey was completed on 27/10/2015." surveyDate="2015-10-27" />
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Figure 2 Excerpt from a Cadastral Information File.

### 2.3 Digital Plans

When discussing digital plans, in the context of their copyright, a distinction needs to be made between static or dynamic plans. Static maps are fixed; they do not change in response to user input or real-time data. They are pre-rendered as an image file, usually in a common image format such as PNG or JPEG, which can be printed or shared digitally. Static maps are typically created using drafting software or services that allow the user to select the area they want to display, choose the level of detail, and customise the appearance of the plan. Once the user has configured the map, the software or service generates a static image file that the creator can save and use in various applications, such as websites, mobile apps or printed materials.

Dynamic plans often necessitate third party user involvement. This can encompass modifying the plan's scale or visible region by zooming in or out, choosing which components or layers to display or eliminate (such as roads or images), or even initiating or halting a map animation. Dynamic maps are updated in real time. Most digital cartography products enable user interactivity by allowing users to manipulate content and visualisation properties, such as changing the scale, extent, information display and typography, thus granting the plan user more authority in determining how and what information is portrayed.

## 3. THE AUSTRALIAN COPYRIGHT ENVIRONMENT

Unlike land, s51(xviii) allows the Federal Parliament to make laws for “copyrights, patents of inventions and designs, and trademarks”. This power is exercised in the *Copyright Act 1968*. Section 35(2) of this Act gives the author of “a literary, dramatic, musical or artistic work” ownership of the copyright subsisting in the work. The nature of that copyright is detailed in

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s31, which allows owners of literary works (s31(a)) and artistic works (s31(b)) to reproduce in a material form, to publish or communicate the work to the public.

### **3.1 Copyright in Current Cadastral Survey Plans**

The High Court in the CAL case agreed that cadastral survey plans warranted copyright protection as they were artistic works. That is, via s10(1), of the *Copyright Act* as

*”(a) a painting, sculpture, drawing, engraving or photograph, whether the work is of artistic quality or not;  
(b) a building or a model of a building, whether the building or model is of artistic quality or not; or  
(c) a work of artistic craftsmanship whether or not mentioned in paragraph (a) or (b), not including a circuit layout within the meaning of the Circuit Layouts Act 1989”*

The Court agreed that the work in dispute, a *survey plan produced on paper* is a drawing, thus fell under the definition of an artistic work and hence deserved protection under the Act.

In the case the Crown Agencies relied on s176 of the *Copyright Act* which gives copyright to the Crown for original works made ‘under direction of Crown’. They argued that, because the substance of cadastral survey plans is controlled directives or standards set by the registering authorities, the State was the owner of the copyright whether or not it was the author. The Court rejected this line of reasoning as the plans were created by the surveyor at the behest of their client, not the Crown itself and that ‘direction and control’ does not apply to works created voluntarily by the author. In a sense, the Court said that while the data was required by, held by, and distributed by the Government, it was not the Government’s data. Therefore, it is important to differentiate between this data and that which form the subject of Open Government Data (OGD) initiatives. OGD is data “released by public sector bodies, in a manner that is legally and technically re-usable” (Lim 2021, p. 207) in a reciprocal relationship between the government and its citizens (Wirtz et al. 2022).

The consequence of this finding was that State repositories, that held and reproduced these survey plans for public use, needed to negotiate with surveyors who produce those plans for a license to continue that activity.

### **3.2 Copyright Protection of Literary Works**

The Copyright Act does not provide a definition of “literary work” although s10 of the Act states that it includes ‘(a) a table, or compilation, expressed in words, figures or symbols; and (b) a computer program or compilation of computer programs’. The protection afforded to computer programs aligns with Australia’s obligation under Article 5 of the World Intellectual Property Organization (WIPO) Copyright Treaty (WIPO 1996) which states that compilations of data or other material, in any form, are protected if they constitute intellectual creations by reason of the selection or arrangement of their contents. A creator can exercise an exclusive right to make the data publicly available by selling or transferring ownership of it (Art 6) and communicating it to the public by wire or wireless means (Art 8).

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In addition, s204 of the Act extends the definition of a literary work to “a map, chart, plan, table and compilation”. Of these, compilations have received a deal of judicial consideration. In *IceTV Pty Limited v Nine Network Australia Pty Limited* [2009] HCA 14 the Court considered the need for originality by the author. In other words, has the author employed nominal skill, labour and intellectual effort in creating the work. Three Judges considered that it was not sufficient for the author to show “skill and labour” but they also needed to show some ‘original productive thought’ in creating the work (para 47) or as the judgement in *JR Consulting & Drafting Pty Ltd & Anor v Cummings & Ors* [2014] NSWSC 1252 put it, “Has the author deployed personal independent skill, labour, intellectual effort, judgement and discrimination in the production of the particular expression of the work?” (para 264). In contrast, *Desktop Marketing Systems Pty Ltd v Telstra Corporation Ltd* [2002] FCAFC 11 (*Desktop*) that the “sweat of the brow” involved in sourcing and compiling factual information was sufficient, even if there was not any creativity involved. Where substantial independent skill, labour and effort have been used to compile data, raw data, even that which can only be represented in one way will be protected by the Act (Australian Law Reform Commission 2004, p. 641). Thus, there is a balance struck between protecting compilations from reproduction and an unreasonable reuse of compiled facts in other original works (Honig 2007).

It would appear that a cadastral plan can be considered both an artistic and literary work. Perhaps it is more interesting is to consider the status of a spatial database like the CIF. This will be discussed in Section 4.

### 3.3 Material Form

Copyright law protects the expression of ideas and not the idea itself, with copyright only accruing when the work is made, that is, fixed in some material form. (s22(1)). The form of expression itself constitutes the material form. By definition the material form “includes any form (whether visible or not) of storage of the work or adaptation, or a substantial part of the work or adaptation, (whether or not the work or adaptation, or a substantial part of the work or adaptation, can be reproduced)” (s10(1)). The material form defines the medium in which a work or adoption is stored. It can be inferred from *StatusCard Australia Pty Ltd v. Rotondo & Anor* [2008] QSC 181 (*StatusCard*) that static plans, either produced on paper or directly to an image file, have a material form. The same can not necessarily be said for dynamic maps or spatial databases especially if they are constantly updated with real-time observations.

In *StatusCard*, the Queensland Supreme Court considered the status of images presented on a computer screen. The Plaintiff took objection to the Defendant using, what they claimed, was the same visual depiction schema to show their data as their own. From the Plaintiff’s viewpoint this infringed their copyright. At the heart of the dispute was the question of whether something as fleeting as a computer screen display could be said to be in material form, and thus protected by the Act. It was found that a computer-generated screen display was too ephemeral to qualify as being stored for the purposes of the fixed form definition.

That the storage is transient is not necessarily a limit to copyright protection. Although, in *Kabushiki Kaisha Sony Computer Entertainment v Stevens* (2003) 200 ALR 96 the majority of the Federal Court held that storing a portion of a PlayStation game in the console's RAM while running the game did not amount to reproducing the program in a 'material form'. The Federal Court decision was affirmed by the High Court (*Stevens v Kabushiki Kaisha Sony Computer Entertainment* [2005] HCA 58) based on the then requirement that the material could not 'be reproduced' from the RAM. Later amendments to the Act removed the necessity for the stored work to be capable of reproduction which has led to speculation that the majority may have come to a different conclusion if the new definition was considered. The thinking of Finklestein J, in dissent of the original decision, who drew on United States precedent and argued that the *Copyright Act* should be construed to accommodate scientific changes may have held sway. The Judge suggested that although RAM is transient and often fleeting, it is theoretically possible for something to be stored in RAM for the life of the computer. Therefore, it can be argued that, however fleeting the fixation may be, it is possible for permanent fixation to occur (via a screen grab for example) and therefore copyright ought to subsist.

While it is perhaps still a somewhat open question it would appear that dynamic maps and spatial data are unlikely to attract copyright protection. Furthermore,

*“ it is also important to distinguish between the less-frequently-updated base map, and any overlay, such as traffic updates being streamed in real-time. Even if such maps are considered sufficiently stable for 'material form' purpose in copyright law, further issues are raised as to when the map has been sufficiently altered for it to amount to a 'new' work — thereby acquiring a new copyright term of protection.”* (Alexander & Jankowska 2018, p. 957)

For the purposes of a cadastral plan, that it is automatically rendered in a pictorial form from a surveyor supplied CIF file, display to a screen would be unlikely to be enough to be judged as having a material form, but a rendering to a fixed digital file form like PDF/TIFF would meet the criteria.

### **3.4 Underlying Data vs Output**

In addition to the question of material form, another aspect of *StatusCard* is of interest. Aside from the question of fixation, the method of creation was debated in the case. The Plaintiff argued that the Defendant's software created an output that so closely resembled the output from their software so as to infringe the copyright they held in an original artistic or literary work. In that case, since the output was found to lack complexity and evidence of aesthetic purpose, the very similar output produced by the Defendant's software did not infringe their copyright. That is to say that the functionality of the software had made available very few original design choices for the output, so it there was limited ways in which the Defendant could distinguish their output.

Perhaps of more importance to this discussion, the underlying code that produced the output was sufficiently different for the Court to find that the Defendant had not copied the



Plaintiff's source code. Although the Courts drew a distinction between the code itself and the output image it produced in this case, they are yet to draw a distinction among the underlying spatial data, the computer program, and the output screen display.

### 3.5 Authorship

Copyright law in Australia protects original works produced by humans. This view is predicated on the assumption that only humans are capable of originality and creativity. Progress in the area of Artificial Intelligence (AI) are now challenging this assumption and therefore the concept of authorship. A discussion of this is beyond the scope of this paper, but the question of authorship of works produced by automated processes is germane to the discussion.

In *Data Access Corporation v Powerflex Services Pty Ltd* [1999] HCA 49 the result of a compression algorithm produced by the Plaintiff's computer program was protected by copyright. The Court made the point that it was not the algorithm itself that was protected, as it was an abstraction, but the particular expression of that algorithm contained in the code written by the Plaintiff. It was the "originality with which it expresses that algorithmic or logical relationship"(para 85) that must be assessed when considering breach of copyright.

In contrast, in *Telstra Corp Ltd v Phone Directories Co Pty Ltd* (2010) 194 FCR 142 (*Telstra*) found that phone directories created automatically by software were not worthy of copyright as the human agents did not exercise sufficient "effort to a literary nature" or "independent intellectual effort". Another case, *Acohs Pty Ltd v Ucorp Pty Ltd* (2021) 201 FCR 173 (*Acohs*) decided that the copyright in literary works created automatically using a predetermined schema was considered. *Acohs* concerned the creation of Material Safety Data Sheets (MSDS) by a computer program. The original Plaintiff created a large relational database to store all the data required to generate MSDSs on demand. When a MSDS was requested the code assembled the components from the database and creates a HTML for viewing by the user. The majority of the database was created by transcription. Existing MSDS were copied but the elements of information were tagged. The output of the system (Infosafe) was different in style to the original, but the content is the same. The primary and appeal judges agreed that the MSDS was a literary work, but the question was whether it was an original literary work. The Court found that "the programmers in writing the underlying computer programs in the Infosafe system, those activities were separate and distinct from the activities involved in creating each MSDS, including those created by way of transcription." (para 85) and thus the programmers were not the author of the work.

The key element is authorship would appear to be the level of independent intellectual effort exercised by the human agents in the relevant output. This is common across other international jurisdictions. For example, in the USA, a human act is required to satisfy the authorship requirement (U.S. Copyright Office 2021 § 306). Recent US Copyright Office decisions indicate that copyright authorship will not be granted to autonomous AI-generated works (Copyright Review Board 2022). The European Union's (EU) emphasis on authors' rights also recognises the importance of human acts. So far, the EU's approach has been to

grant authorship to human actors only. The increased use of AI-assisted and AI-generated works, however, has led the EU to recognise the need to reassess authorship rules in light of technological developments (Hugenholtz & Quintais 2021).

#### 4. SURVEYOR'S INTELLECTUAL PROPERTY IN CADASTRAL DATA

ICSM's vision for a fully automated cadastral infrastructure drives the desire to require cadastral data in a flexible and electronic form. Having only recently established that they do have intellectual property in cadastral plans, that they have long asserted, Australian cadastral surveyors are rightfully wary about changes to the form and content of their work. The, albeit modest, income stream that flows to surveyors comes from the license to the State to sell their plan copies to the public.

There is ample evidence in the previous sections to be satisfied that surveyors will hold copyright in the CIF or any other format that use a structured schema to tag and identify individual elements of cadastral data. The protection will come through considering them to be literary works. We would argue that a spatial database comes broadly within the scope of "compilations", "databases" and computer programs. Notwithstanding how it may be transferred to the registering authority, it exists in a material form. Additionally, in the CIF a surveyor exercises original productive thought in the selection of marks, boundaries, and other cadastral data that is required to uniquely define the legal interest being created. Like a current plan these will be works created voluntarily by the author at the behest of their client and will not be made 'under direction of Crown'. As such the surveyor is clearly the author even though some of the data used will have been compiled from previous sources. The sale, by the registering authorities, of CIFs to other cadastral surveyors will need to be done under license. At present NSW requires both a static plan and spatial database file to be submitted and then supplies the data file at no additional charge to the plan purchaser. The same property in two formats may not warrant any additional copyright payment but that would be a matter of negotiation with the licensee.

Less clear though, is the status of whatever document is rendered from this database for public use. In ICSM's vision, surveyors will work directly from the CIF or some form of aggregated database. While machine readable, presumably surveyors will need the ability to generate plans for human comprehension from the CIF. The majority of current purchasers of plans need limited details and that usually pertaining to a single land parcel or interest depicted on the plan. The aim is to render the CIF into any one of several pictorial representations, for use by less technologically sophisticated users. A plan of this type will only be fixed in material form when it is created. It will be created from the CIF or a DCDB by computer code by way of a fixed, and almost certainly, automatic algorithm. Whether this output will have an author will almost certainly be matter of fact and degree, but the results of the *Telstra* and *Acohs* cases suggest that it is possible, if not probable, that the output would be considered authorless.

Even if authorship exists in the render, it seems unlikely that the authorship will reside in the original surveyor whose independent intellectual effort created the value that is being sold. A situation like this could easily be classified as free-riding. Free-riding is a form of market failure where the benefits derived from selling and costs involved in producing are not fairly aligned. In this case the labour, creativity and intellectual effort of producing the cadastral data resides with the surveyor. For their client to achieve their required end, the data is then submitted to a registering authority in a form of the State's choosing. It is required in a form that makes it easily automatically manipulated by the State but also sold to the public. As in other cases of market failure, public policy can be used to fix the failure. The area of unfair competition law could, and has, been used to limit the free-riding problem in other circumstances (WIPO 2022, p. 180). Unfair competition is defined in the *Paris Convention for the Protection of Industrial Property* (Article 10bis) as competition contrary to honest practices in industrial or commercial matters. Being able to obtain financial gain from others intellectual and creative work without compensation falls clearly within this definition. As early as 1997 Reichman and Samuelson were warning that "*Once compilations of data are electronically disseminated in databases that are made available to the public, second comers can easily and cheaply copy and manipulate the contents of such databases and disseminate the resulting products to large numbers of people.*" (Reichman & Samuelson 1997, p. 67) Once the database creators lose control, either through publication or submission to the another economic player, they potentially lose their ability to receive just reward for their effort. Although unfair competition legislation exists at the Commonwealth level (Competition and Consumer Act 2010), it currently does not address matters of the type of interest to this paper as its primary focus is the protection of users rather than producers. It then becomes incumbent of surveyors and other spatial professionals to propose remedies to the potential market failure and to lobby to protect their intellectual property.

## 5. CONCLUSION

Intellectual property law is a complex legal topic made more so by continual technological change. The State and registering authorities have benefitted from reselling the intellectual property of the surveyors and, since the resolution of the *CAL* case, have paid a suitable license fee for that benefit. There is a risk that the State and surveyors, in attempting to harness this change for the betterment of their communities, may inadvertently change the mutually beneficial intellectual property environment cadastral surveying has established. Further consideration of the risks highlighted in this paper will be needed to ensure this partnership is not unwittingly damaged. As a first consideration, we suggest that modification to unfair competition protection legislation may be the easiest long term, technical fix to provide a better protection for surveyor's economic interest rather than current copyright regimes.

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