

Legal Framework 3D Cadastres

Position Paper 1

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1. INTRODUCTION

This paper serves as the basis for discussions for the working session *Legal framework 3D Cadastres*, being one of the four working sessions at the 4th International Workshop on 3D Cadastres. The paper is intended to initiate discussions on the legal framework of 3D cadastres and aims at identifying the main topics concerning the legal aspects of 3D cadastre and further future research.

The paper starts by presenting and relating to results from the 2nd Workshop on 3D Cadastres and other research on legal issues. It continues by presenting some key topics in recent research and the challenges related to research in this field. Possible ways for how legal research can be increased are presented next, providing examples of possible research issues. The concluding part of this paper, finally, presents a possible way forward.

2. STATE-OF-THE-ART

The outcome of the legal framework discussions at the 2nd workshop initiated by a position paper by Ploeger (2011) resulted in a conclusion that further research on the legal aspects on 3D cadastre is required (Banut, 2011, pp. 3-4). This statement is somewhat challenged by Ho et al (2013), who in their research article on what impact legal issues have on the implementation of a 3D cadastre, state (Ho et al, 2013, p. 386) that it is “highly likely that the main barrier to cadastral innovation lies not in technological or legal issues, but more fundamental social and cultural issues that make up the institutional framework underpinning cadastral systems and its inherent processes”. They further conclude that finding alternative methods and processes to overcome perceived legal issues actually facilitates progress towards 3D property registration and 3D cadastre implementation, which challenges the dominant assumption that legal issues are a significant barrier.

The recent 3D questionnaire sent out by the FIG working group on 3D Cadastres (FIG, 2014) in order to make a world-wide inventory of the current status of 3D Cadastres 2014 and the plans/expectations for the near future (2018). This questionnaire has also raised the awareness of what is going on, also regarding legal issues, and can by sharing this information, as it is stated in the questionnaire, improve cooperation, make it possible to learn from each other and support future developments and can therefore serve as a good foundation for further comparative studies.

A survey of legal 3D publications during 2001-2011 showed the research themes that appeared regularly in the publications during the period (Paulsson and Paasch, 2013). Some of these themes are evenly distributed over the years. This indicates the trends in legal 3D

property research activity during the studied period. The trends can be related to the following categories:

- Description of the need for national 3D property
- Development of national 3D property legislation
- Implementation of national 3D property legislation
- Case studies on national 3D property
- Practical application of 3D property concepts
- Registration of 3D property
- Modeling of 3D property
- Standardization of 3D property.

Ho et al (2013, p. 380) have identified the following issues that they believe that the literature has mainly concentrated on so far:

- The concept of 3D property, its legal status and classification of associated rights
- Questions raised over the legislative framework required to support autonomous registration of 3D property
- Jurisdictional legislative limits and considerations
- Registration of real property vs. physical objects
- Effect of public law on private rights
- Common property regimes.

3. KEY TOPICS

The result of the survey by Paulsson and Paasch (2013) showing the lack of research on legal and organizational issues in the field of 3D cadastre, opens for discussions concerning the reasons for this development. Does the limited legal research imply a problem? If so, what should be done in order to change the direction of this development?

The proposition by Ho et al (2013) on challenging the assumption that legal issues are a significant barrier raises the question, as input for discussions, if legal issues are in fact a barrier in developing 3D cadastre and, if this is the case, what do these barriers consist of? Or should we shift our research focus to the institutional framework with its social and cultural issues? If this is the case, should we ally ourselves with researchers from other fields, such as e.g. sociology and ethnology?

The five practical issues to be addressed that were indicated in the position paper for the legal framework session during the workshop in 2011 (Ploeger, 2011, p. 547), see annex 1, still remain current topics to discuss and seem not to have been addressed to a large extent during the three years that passed since then. The question is then if the more fundamental issues should be dealt with first in order to be able to work with more practical issues such as those indicated.

4. POSSIBLE SOLUTIONS

If, in fact, legal research should be increased, there are several ways in which this could be achieved, for example by increasing the awareness of the importance of legal research issues and the discussion of what are the main research issues. Examples of possible research issues are (based on Paulsson and Paasch, 2013):

- Comparative studies on the use of 3D property concepts
- An international perspective on publications
- 3D property terminology
- Delimitation and definition of 3D property
- Co-operation between 3D property owners
- The need for creation of 3D specific land use or access rights.

Furthermore, the legal framework of 3D cadastres cannot be discussed without including the standard for land administration, ISO 19152, Land Administration Domain Model (LADM) (ISO, 2012). Since its publication in 2012, and during its development, the LADM has gained considerable interest within the research community, resulting in numerous articles and conference papers, see e.g. Van Oosterom et al (2013). The administrative part of LADM describes rights, restrictions and responsibilities. The standard facilitates legal space utility networks and legal space building unit. How does the standard benefit legal 3D research?

Even though 3D cadastre is a rather limited field of research and the community is small, it might benefit from being divided further into groups related to the working session topics of this workshop, i.e. legal framework of 3D cadastres, initial registration of 3D parcels, 3D data management and visualization, distribution and delivery of 3D parcels. Each such group could form its own (informal) network and include cooperation with researchers with other background and perspectives of legal issues. If, for example, each participating country of the FIG working group on 3D cadastre would provide its own description of the legal framework for 3D cadastre and property rights within its own jurisdiction, as an extension of the recently delivered questionnaire responses, it would form an excellent foundation for further discussions and comparative studies.

5. CONCLUSION

As can be noticed, the lack of research on legal issues in the field of 3D cadastre still remains to a large extent since the previous workshop. There is, however, interesting ongoing research on legal and organizational issues that might increase the awareness and focus on such issues. We believe that co-operation and comparative studies are needed, and perhaps the creation of a separate legal 3D cadastre network, in order to promote such studies and to increase the possibilities for a larger share of such papers presented at the next workshop on 3D cadastre. The working session on legal framework at this current workshop will also hopefully bring forward some useful suggestions for ways forward.

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ANNEX 1

From Ploeger (2011, Section 6, p. 547)

PRACTICAL ISSUES TO BE ADDRESSED

1. Which types of 3D cadastral objects (3D properties) can be registered? Are these always related to constructions (buildings, pipelines, tunnels, etc.) as in Norway and Sweden or could it be any part of the 3D space (both airspace or in the subsurface).
2. In case of infrastructure objects crossing 2D parcel boundaries, such as long tunnels, and pipelines and cables networks: should these be divided based on the surface parcels (as in Queensland, Australia) or treated as one cadastral object (as in Sweden or the Netherlands)?
3. How to deal with the fact that the legal status of such an object, does not have to be the same for all the ground parcels. E.g. one construction situated in three ground parcels, each on the basis of an other type of right (e.g. easement, restrictive covenant, lease).
4. For the representation (and initial registration) of a 3D cadastral object, is the legal space specified by its own coordinates in a shared reference system (as is the practice for 2D in most countries) or is it specified by reference to existing topographic objects/boundaries.
5. Should the 3D registration and visualisation reflect the actual dimensions? Or is it sufficient to have a visualisation of property units in buildings based on standard floor-to-floor heights, as in Spain? What is the legal value of these boundaries. Is an investigation of the source documents (title deed, survey plan) needed to get legal binding information?

BIOGRAPHICAL NOTES

Jesper Paasch is a researcher and developer at Lantmäteriet, the Swedish mapping, cadastral and land registration authority, Gävle, Sweden. He holds a MSc degree in Surveying, planning and land management, a Master of Technology Management degree in Geoinformatics, both from Aalborg University, Denmark, and a PhD degree in Real Estate Planning from the KTH Royal Institute of Technology, Stockholm, Sweden. His thesis concerned the classification of real property rights and public regulations. He is chairman of the Swedish Standards Institutes technical committee on metadata for geodata and a member of the FIG Joint Commission 3 and 7 Working Group on '3D Cadastres'. He is a Swedish delegate in FIG, Commission 3, and was a national delegate in the drafting team of ISO 19152:2012 LADM.

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