

BIM Legal: the standard for the 3D digital transformation of cadastral registration of apartment complexes

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SUMMARY

BIM Legal and legal certainty of apartment complexes

How do you combine legal real estate information with a digital 3D BIM model to improve legal certainty? BPD Bouwfonds Development has investigated this since 2018 together with Dura Vermeer, the notary offices Westport, Hermans & Schuttevaer in the collaboration *Platform BIM Legal*. They also involved Kadaster, the Dutch land registry.

With a digital building information model (BIM), rights and obligations that are now included in paper deeds and 2D-drawings, can be visualized and clarified. Firstly, BIM Legal gives a 3D-representation of the private and the shared spaces of an apartment building. Secondly, BIM Legal includes pop-ups that are linked to certain spaces and building elements. These pop-ups contain the rights and obligations relating to these spaces and building elements in an understandable language and can also refer to the text of the notarial deed.

In complex building situations, currently it can be difficult to get a grip of the legal, cadastral and actual situation. BIM Legal can visualize and clarify these complex situations, so that both the legal, cadastral and actual situation become clearer and more accessible. Especially as a result of the energy transition, new buildings often have sustainable energy systems installed (such as solar panels and thermal storage systems). These systems can have elements through the whole building. In many cases, specific rights and obligations apply to these systems and different elements. BIM Legal can visualize and clarify these situations. This contributes to the legal certainty relating to apartment buildings.

Together with the Platform BIM Legal, Kadaster is researching a possible implementation of BIM Legal in the process of the registration of apartment rights with the land registry. In the current process to register apartment rights with the land registry, a notarial deed of division into apartment rights is registered. Together with this deed a 2D-drawing is registered, that shows the private and shared spaces of each floor of the building. A possible way to implement BIM Legal in the process of registration with the land registry could be that the BIM Legal model will be registered in addition to the deed and the 2D-drawing. In this

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way, the BIM Legal model gives extra information on the legal, cadastral and actual situation of a building.

A further reaching next possible step of implementing BIM Legal could be that the BIM Legal model replaces the 2D-drawing. This would require a change of the law.

Before implementing BIM Legal in the process of registration of apartment rights with the land registry, it is up to the building and construction community, property developers and civil-law notaries to adopt the 3D BIM Legal standard and implement this new era work practice. To create this commitment, current research concerns the development of a standard for BIM Legal models (including a validator), a 3D viewer and editor, and a 3D to 2D generator (to automatically generate a 2D-drawing from a BIM Legal model).

Defining a standard for 3D cadastral registration of apartment complexes

The use of Building Information Models (BIM) to establish rights and responsibilities for multi-level building complexes has been explored in many initiatives. However, the implementation of BIM-based cadastral registrations in practice remains limited due to the complex interplay between legal and technical aspects.

In collaboration with Kadaster, Delft University of Technology, and a BIM expert from Australia, we are investigating the specifications for a BIM Legal standard that will allow the 3D cadastral registration of apartment complexes via a BIM Legal file. The BIM Legal standard will align the technical potential with the legal requirements of the Dutch cadastral registration.

The aim of this research is to define a suitable standard for a BIM Legal file to be submitted when an apartment complex is being registered, based on IFC (the open standard used in the BIM domain). The BIM Legal standard will specify how to assign rights to private and shared spaces as well as responsibilities to specific elements of the building complex (such as load-bearing walls, facades, roofs, etc.).

The geometric and non-geometric data requirements will be defined to allow the BIM Legal model to be registered, updated and shared with stakeholders in the Land Registry independently of the BIM source data. It will also be explored how the submitted BIM Legal model can be used to update other registrations and databases, preferably including the relevant 3D information, such as the cadastral map and the building and address registry. Based on the data requirements, a data model is being specified in UML, which we will also align with other national and international standardisation initiatives, such as the LADM (Land Administration Domain Model). Wherever possible, classes will be mapped to IFC elements.

The research will use prototypes to substantiate the different choices.

The validation of the BIM Legal standard is also part of this research. It includes a technical validation to check that the submitted BIM Legal file conforms to the BIM Legal standard. For this purpose, we will adopt the validation service offered by BuildingSMART which will be extended for our case.

In the proposed presentation, the progress of the work will be presented including the UML model and the choices made which are illustrated by IFC example files.

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BIM Legal Value Chain

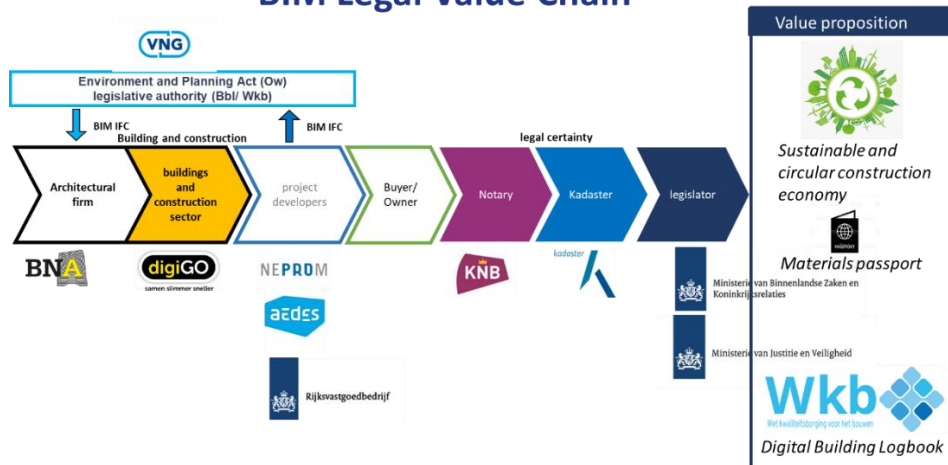


Figure 1: The BIM Legal value chain connecting the Building and construction with the Legal certainty value chain

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