Procedures for the Cadastral Registration of a New Building and its Three-D Representation

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SUMMARY

Introduction
The Italian Buildings Cadastre was founded in 1939 and, since then, both the new construction and the inside and outside alterations carried out in each property unit, have been registered. The buildings cadastre also describes the three-D positions of all property units inside a building or a block of flats.
While in the land cadastre the parcel is the minimum unit treated and inventoried, in the buildings cadastre the minimum unit is called urban property unit or u.i.
The u.i. is a part of a building that can have a stand-alone income like flats, garages, warehouse, etc.
Every variation in the cadastral database is made by private surveyors nominated and paid by the buildings' owners .
Example of insertion of a new building in the cadastral database
The more complete example of a cadastral registration is the insertion of a block of flats in the database.
Here you can see a new block of flats made up of 12 flats and accessories.
While the flats are owned by several different owners, the property of the accessories is undivided and shared among the flats' owners.
The data insertion is made by a private surveyor who draws up a document, called doc.fa (buildings document).
This document will be transmitted to the Territory Agency through the internet for the validation and the input in the cadastral database.

Technical operations for the compilation of the above mentioned document

- Inside and outside survey of the entire building
- Map updating with the new building shape to be inserted in the land cadastre
- The new building u.i. partition, plan drawing (one for each u.i.) and general plan drafting. The general plan, called E.P. (planimetry paper) which shows in a graphic mode all the three-D u.i. position in the building.

Composition and compilation of the "doc. fa" document

Textual and descriptive part:

- A "D" model, reporting the particulars of the whole building like identification, ownership, address, etc.
- A "N1 part 1" model, reporting the general building description: structure, equipments, aspects, shared parts (stairs, passages)
- A few "N1 part 2" models (one for each u.i.) showing metric and descriptive features
- Graphical part:
- plan drawing (one for each u.i.)
- A general plan, called E.P. (planimetry paper) showing the three-D position of all the u.i

The whole model is edited through a free software distributed by the Territory Agency to each land surveyor of the area.

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1. INTRODUCTION

The Italian Cadastre was established in 1886, after the unity of Italy, dated 1861. Before that date Italy was divided into many different States, each of them with their own cadastral system.
Subsequently to the law N. 3682, issued in 1886, the Unified Italian Cadastre took form. That law had the purpose of unifying the different systems existing before the unity of Italy.
Since that date, the Cadastre has been made up of two different branches, the New Land Cadastre (N.C.T.) and the Building Cadastre.
The current Cadastre system was founded in 1901. In 1938 some amendments, that would lead to the effective separation between the Land Registry and the Building Registry, were gradually introduced.
After that date the Building Registry has been named "New Building Cadastre".
The two branches should not be seen as two different entities but as two parts of a unique system.
It is actually impossible to describe a building if its geographical position and collocation on the territory have not been formerly depicted.
Both Cadastres have had and still have both a descriptive and a revenue purpose. It is the Cadastre that assesses the taxable base on which taxes will be levied and that provides an accurate geometric description of what has been built.
The necessity of describing the current situation, together with the existence of a great number of blocks of flats on the Italian territory, has meant that, since its founding, the Buildings Cadastre has represented the UI (parts of a building that have a stand-alone income like flats, garages, warehouse, etc.) in all their 3-D dimensions, thus operating 2-D representation of the 3-D space
While in the land Cadastre the parcel is the minimum unit treated and inventoried, in the building Cadastre the minimum unit is called urban property unit or UI.
Every variation in the cadastral database is made by private surveyors nominated and paid by the buildings' owners .

2. EXAMPLE OF INSERTION OF A NEW BUILDING IN THE CADASTRAL DATABASE

To understand the procedures and methodologies used to insert a building in the cadastral database, you can see, for example, the insertion of a new block of flats made up of 5 single property flats and accessories, both single and undivided, owned by all the flats owners.
This typology, one of the commonest in the Italian building setting, needs an accurate description and representation in order to understand which parts are of individual property

(houses, garages, etc.) and which are in sharing property. In fact, while the flats are owned by several different owners, the property of the accessories (stairs, passages, etc.) could be undivided and shared among the flats' owners. These parts need to be described too, being they related to individual properties and must be inserted in case of sale or other acts.
It would be wrong to think that the property of the "accessories" is not to be represented due to the fact that it doesn't have a stand alone income or a single owner. Actually, in case of a property transfer, it would not be clear which portion of the property legal rights are exercised on.
Those portions are called shared goods, and they can't be censussed, if they have a stand-alone income, (shared storehouse in a block of flats) or not censussed, if they don't have a stand-alone income (stairs).

The data insertion is made by a private surveyor who draws up a document, called doc.fa (documento fabbricati = buildings document).
This document will be transmitted to the Territory Agency through the internet for the validation and the input in the cadastral database.
The cadastral registration represents the last step of the building process, because is made when the construction works are finished

3. TECHNICAL OPERATIONS FOR THE COMPILATION OF THE ABOVE MENTIONED DOCUMENT

- outside survey of the entire building and its positioning on the cadastral map. The survey can be made by a total station or a GPS. This preliminary operation is made for the map updating and it is put into effect with the transposition of the building shape that has been surveyed
- inside survey of the entire building and following data transposition on a file. The survey reports the inside space definition, rooms, openings, and everything that is important to describe the flat. Also gardens, courtyards, and everything that is individually owned must be surveyed. The file thus obtained, corresponding to precise specifications, will be uploaded into the doc.fa software to be an integral part of it and it will be looked through in future by the cadastral database
- The new building u.i. partition, plan drawing (one for each u.i.) and general plan drafting.
- The general plan, called E.P. (planimetry paper) which shows in a graphic mode all the 3-D u.i. position in the building. Each portion is described by a unique identifier that must be indicated in the cadastral database and in the property deeds in order to describe exactly which part of the building is owned

4. COMPOSITION AND COMPILATION OF THE "DOC. FA" DOCUMENT

Textual and descriptive part:
- A "D" model, reporting the details of the whole building like identification, ownership, address, etc.
- A "N1 part 1" model, reporting the general building description: structure, equipments, aspects, shared parts (stairs, passages)

– A few “N1 part 2” models (one for each u.i.) showing metric and descriptive features. In this model the data for a taxable base on which revenues are calculated are computed and shown

Graphical part:

– plans drawing (one for each u.i.) which has to be the exact graphical representation of the U.I. The plan drawing must be attached to the ownership transfer acts in order to describe the object of sale. It is also requested to update the plans in case any changes to the U.I. have occurred.
– A general plan, called E.P. (planimetry paper) showing the three-D position of all the u.i in the building and a global vision on the entire block of flats and the neighbouring parcels. This is precisely a 2D representation of the three-dimensional space, as the layout of the U.I. is not visible on a 3D model but it is represented on separate layers, which show the floor of the above mentioned building. The decision of describing the position of the U.I. on a two-dimensional space on a paper medium offers a less detailed description of the building , but it allows an easy recognition also to the people not in charge, because there is no need of any software to be shown For this reason, although this mode of representation was started almost a century ago, it has never needed to be transformed into a 3D model and is still considered valid.

The whole model is edited through a free software distributed by the Territory Agency to each land surveyor of the area.
At the end of the elaboration the software generates a file that is transmitted through the internet to the Agency that checks, controls and then proceeds to the inclusion in the national database and sends an electronic receipt to the surveyor.
The entire process is fully computerized and the surveyor doesn’t have to get personally in contact with the Cadastral Office

5. CONCLUSIONS

This kind of procedure is generally highly effective because:

– it describes in both analytical and graphic way the buildings or parts of them
– it shows, clearly and unmistakably through the assignment of “subordinates”, on which buildings or parts of block of flats rights can be exercised on
– it offers fast processing by sending and receiving documents through the web
– it offers uniformity through the adoption of a unique software for all surveyor work in the cadastral process
– it offers easily consultation of the cadastral database both by professional people and buildings owners
– it allows subsequent interventions on existing buildings in an easy way being the archive fully computerized and paperless

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