



FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting
Our World,
Conquering
New Frontiers

Presented at the FIG Working Week 2023,
28 May - 1 June 2023 in Orlando, Florida, USA

Inconsistencies amongst Urban Plans and Cadastral Data of Hellenic Cadastre

Dionysia Georgia PERPERIDOU, Grece
Assistant Professor at University of West
Attica



Organized By



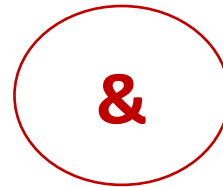
Diamond Sponsors



The focus of this presentation is to:

Examine the elaboration of Urban Plans provisions, especially of those that determine

→ **public spaces**
→ **spaces of common interest**



Separates them from **private spaces**, subjected to ownership by **fiscal or legal entities**.

Contents:

1. Hellenic Cadastre
2. Urban Planning in Greece
3. Detection of inconsistencies between urban plans and cadastral data of Hellenic Cadastre
 - ↳ 3.1. Misrepresentation of plots boundaries

↳ **3.2.** Misrepresentation of urban lines

↳ **3.3.** Misrepresentation of other urban plans administrative lines:
the case of STOA

4. Conclusions

1. Hellenic Cadastre:

1830: First law on Cadastre

1995: Greece's National Cadastre

Hellenic Cadastre is:

A parcel-centric system, deriving from a detailed and legally defined Cadastral Survey and after its completion Greece's Land Registries are completely replaced by operational Cadastral Offices georeferenced in the official Hellenic Coordinates System, EPSG 2100 (Greek Grid).

Hellenic Cadastre is under the strict supervision of Hellenic Cadastre legal entity under public law.

According to current legislation (Law 2664/1998) in the Hellenic Cadastre

Are recorded all necessary information, technical and legal, aimed at achieving the precise and in detail land parcels boundaries and the publicity of properties transactions, listed in cadastral books, to ensure public faith, protecting also every goodwill party transacting with properties based on those cadastral records, it is based upon 6 principles.

6 Principles:

- 1 Parcel-based structure for recording and modifying cadastral information, having as prerequisite the continuous elaboration, modification, or update of cadastral maps and diagrams.
- 2 Legality review prior to the approval of any new transaction registered in cadastral books
- 3 First-come first-served basis of any new transaction registration in cadastral books

4 Publicity of cadastral books and all relevant cadastral information/ data.

5 Public faith safeguard on property transactions.

6 Suitability of Cadastre as a receptive system for registration of any other relevant information (technical or legal) on properties, property rights etc., (Open Cadastre).

The status of Hellenic Cadastre is either under Cadastral Survey elaboration, undertaken by private contractors supervised by the legal entity under public law or Operational.



Operational Cadastre:

dark blue

Cadastral Survey:

i. Early stage: orange

ii. Mid-stage: green

iii. completion stage: red

Dodecanese Cadastre:

yellow

Figure 1: Greece's National Cadastre Status: Operational Cadastre: dark blue, Cadastral Survey: i. early stage: orange, ii. Mid-stage: green, iii: completion stage: red, Dodecanese Cadastre: yellow (Source: Hellenic Cadastre web map, accessed 10/03/2023)

Hellenic Cadastre consists of: 2D Spatial and Descriptive Cadastral Data Base.

2D Spatial Data Base is designed so as to include:

- ↳ The exact geometrical/ spatial location of each land parcel or plot that is defined in legal binding documents or in administrative that are either transcribed to land registries or published in the Governmental Gazette.

Hellenic Cadastre consists of: 2D Spatial and Descriptive Cadastral Data Base

2D Spatial Data Base is designed so as to include:

- ↳ The exact geometrical/ spatial location of each land parcel or plot that is defined in legal bidding documents or in administrative that are either transcribed to land registries or published in the Governmental Gazette.
- & contains all the necessary geometrical or spatial features or objects or **the spatial relations** that form **specific relations** or **restriction to property rights exercise**, prefecture/ municipality/ commune, cadastral sectors and cadastral units, easements, plots vertical separation etc., prefecture/ municipality/ commune, cadastral sectors and cadastral units, easements, plots vertical separation etc.

FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers

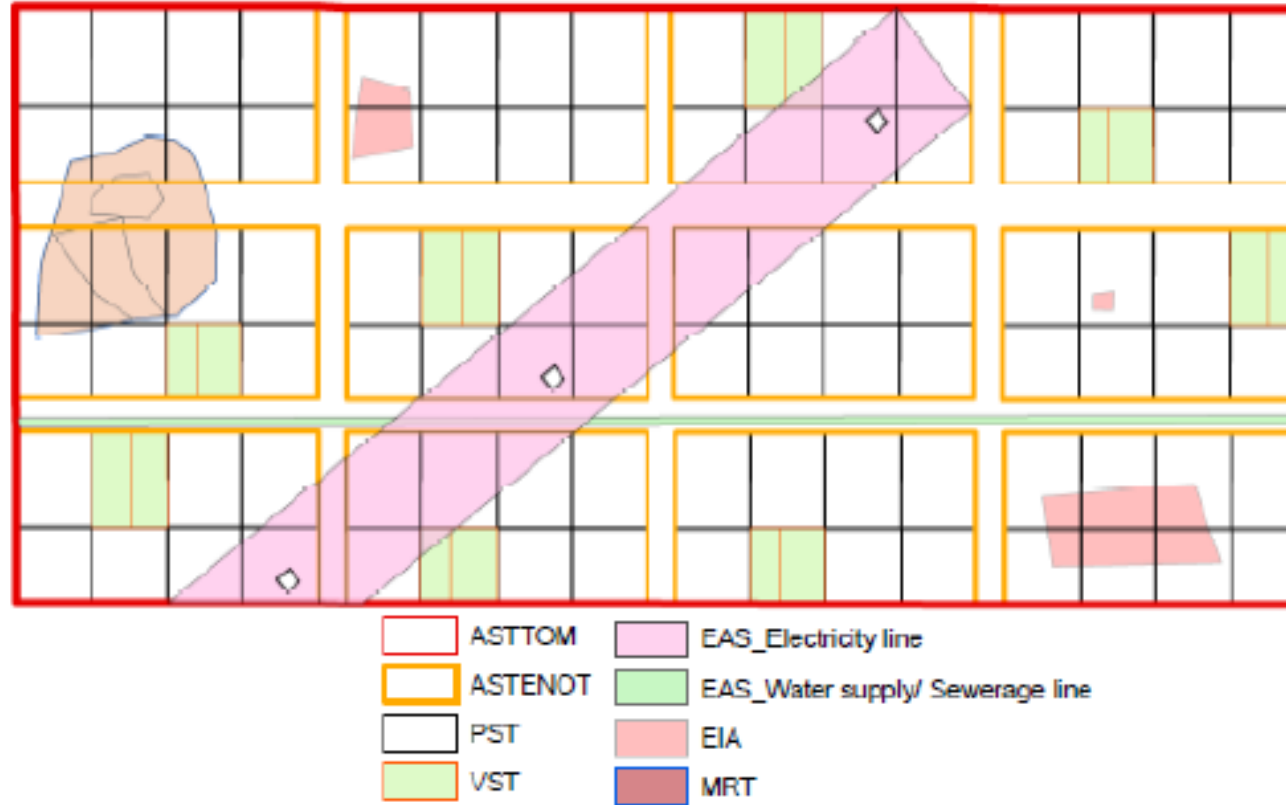


Figure 2: Hellenic Cadastral 2D Spatial DB (Source: (Perperidou, Sigizis and Chotza, 2021))

2. Urban Planning in Greece:

1831 : Urban, and spatial, planning in Greece.

1936 : The first legislation on urban planning, urban plans and their implementation.

1933 : The first urban plan «The Athens plan».

- Urban plans are **approved by** decree signed by the head of the State, from 1975 is the President of Greece.
- Urban plans and detailed diagrams **are:**
 - ↳ **integral part of the decree**, that is officially published in the Governmental Gazette.
 - ↳ **official administrative acts**, affecting:
 - i. urban landscape and the city formation,
 - ii. create property rights such spatially in when it comes to public spaces such as streets, parks, squares, etc.

- Urban plans are **approved by** decree signed by the head of the State, from 1975 is the President of Greece.
- Urban plans and detailed diagrams **are:**
 - ↳ **integral part of the decree**, that is officially published in the Governmental Gazette.
 - ↳ **official administrative acts**, affecting:
 - i. urban landscape and the city formation,
 - ii. create property rights such spatially in when it comes to public spaces such as streets, parks, squares, etc.

The street line is the official administrative boundary between public spaces and private.

- Urban line is separating public spaces **or**, when it is different from the building line .

Green Color: Urban line

- Building line is the line within the property parallel to the urban line that the building is allowed to be placed, that is depicted in red color

Red Color: Urban line

FIG WORKING WEEK 2023


28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers



Figure 3: Urban lines and buildings lines, Athens official urban plan 1938 (Source: epoleodomia, official Web Portal of Urban Plans, Hellenic Ministry of Environment and Energy, accessed 10/03/2023)

A special category of urban spaces, foreseen in urban plans, is “**stoa**” (gallery).



is located at the street level, within the private property, but is of common use.

Stoa is formed by two administrative lines, its inner side and its outer line, which is the urban line.

Stoa's inner line is depicted with continuous red color, as it is the line where the building can be placed in street level, while its outer line is depicted in red dashed line, corresponding to the urban line coinciding to building line one level above street level.

The space between stoa's inner and outer line is colored in orange color, indicating the possibility of having a built-up space one level above the street, while at the edges of the building block where stoa's outer line is streets conjunction no built-up space can exist, and that space is not colored in the official urban plan diagram Figure 4.

In the case of stoa's determination by amendment of urban plan, existing buildings are not demolished, can be maintained but not expanded vertically, and the depiction of stoa's inner and outer lines follows the above described provisions.

When there is an amendment of the urban plan that usually is located in a specific and limited area, in the plan's amendment diagram the non-changing administrative lines are depicted in black color.

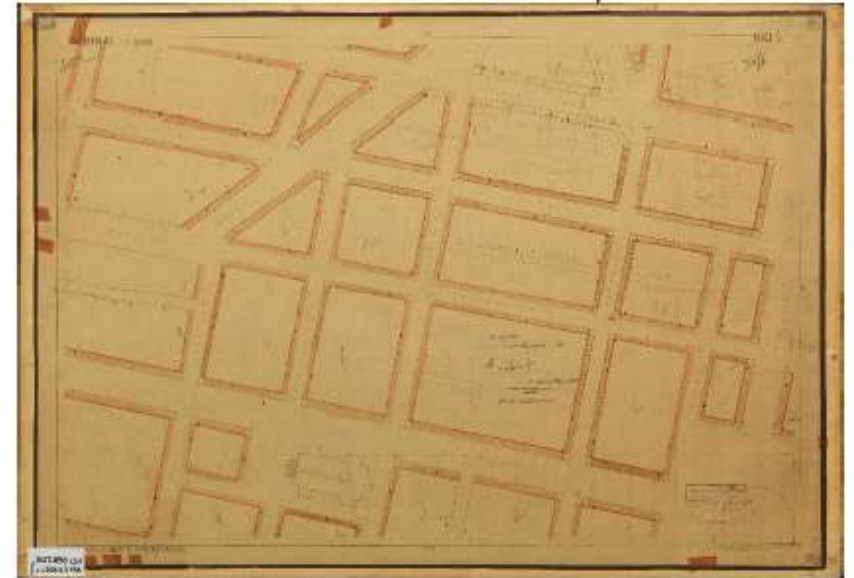


Figure 4: Stoa lines, Athens official urban plan 1956 at Athens City Center, Omonia Sq (Source: epoleodomia, official Web Portal of Urban Plans, Hellenic Ministry of Environment and Energy, accessed 10/03/2023)

3. Detection of inconsistencies between urban plans and cadastral data of Hellenic Cadastre:

According to Hellenic Cadastre Cadastral Survey technical specifications (for the creation of operational Cadastre) in urban areas, as those are defined by the Hellenic Cadastre legal entity under public law, detailed field surveys, carried out in EPSG 2100, have to be undertaken so as:

- a) the actual status of urban fabric to be documented,**
- b) the collection of sufficient measured in EPSG 2100 reference points for the integration of urban plans to Hellenic Cadastre 2D Spatial DB.**

In multiple cases Cadastral above described technical specifications are not implemented.



inconsistencies between Urban Plans administrative lines and Cadastral Data of Hellenic Cadastre.



serious problems, especially in the operational Cadastre phase, where the correction process is costly and time-consuming.

Due to those inconsistencies plot owners cannot issue a building permit or are not able to sell their property, unless those inconsistencies are solved.

The most common inconsistencies are:

- 3.1. Misrepresentation of plots boundaries,
- 3.2. Misrepresentation of urban lines,
- 3.3. Misrepresentation of other urban plans administrative lines such as stoa.

3.1. Misrepresentation of plots boundaries,


- Greece's legislation on urban planning and urban plans imposes that urban plots have to have **rectangular** or **regular shape**, thus no-regular or no-rectangular plot shapes usually do not acquire building permit.
- During cadastral survey only plots' façade and building blocks are measured,  resulting in urban plots cadastral diagrams of no-normal or no-rectangular shape, causing serious problems during building permit acquisition or property sell.

FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers



Figure 5: Cadastral Diagram excerpt of no-normal urban plot shape, Ampelokipoi Municipality, Thessaloniki Prefecture (Source: Hellenic Cadastre web map, accessed 10/03/2023)

3.2. Misrepresentation of other urban plans administrative lines such as stoa.

- The urban lines must be integrated in the Hellenic Cadastre 2D Spatial DB georeferenced in EPSG 2100. Nonetheless, in many areas, especially those that are covered by old urban plans that are non-referenced in official coordinates system, urban lines have not been properly integrated, causing serious problems during building permit acquisition or property sell.

FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers



Figure 6: Cadastral Diagram excerpt of no-normal urban plot shape, Athens Municipality, Attica Prefecture (Source: Hellenic Cadastre web map, accessed 10/03/2023)

3.3. Misrepresentation of other urban plans administrative lines such as stoa.

- In the case of stoa the Cadastral Survey, for the creation of Hellenic Cadastre, has to deal with inherent problems on urban plans amendment record-keeping and diagrams modification.
- In numerous cases the original diagram provisions that are not amended, are misrepresented or wrongly presented in the amendment diagram.

- The private contractor of the Cadastral Survey is obliged to integrate to the Hellenic Cadastre 2D Spatial DB the latest valid diagram, and frequently does not cross-check with the older one.
- In the case of Stoa depicted in Figure 4 the latest valid diagram misrepresents valid administrative lines that have not been amended, resulting in wrong depiction of those administrative lines in the Hellenic Cadastre 2D Spatial DB, Figure 7.

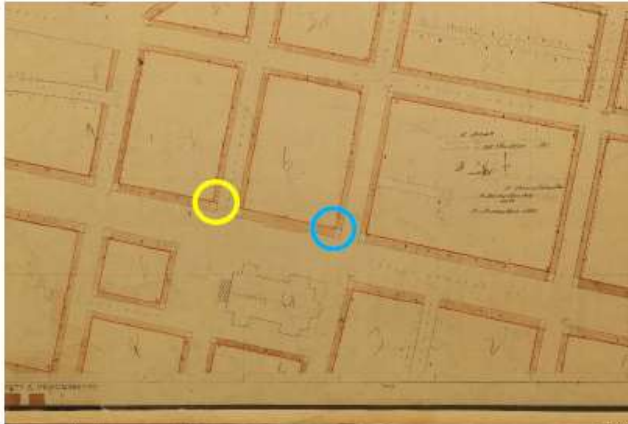
- The private contractor is obliged to survey the current status of the urban fabric and is unaware of the urban plans provision and Stoa depiction, in numerous cases wrongly depicts the property status in respect of administrative lines in Hellenic Cadastre 2D Spatial DB, Figure 7.

In the following Figure 7 they are represented by:

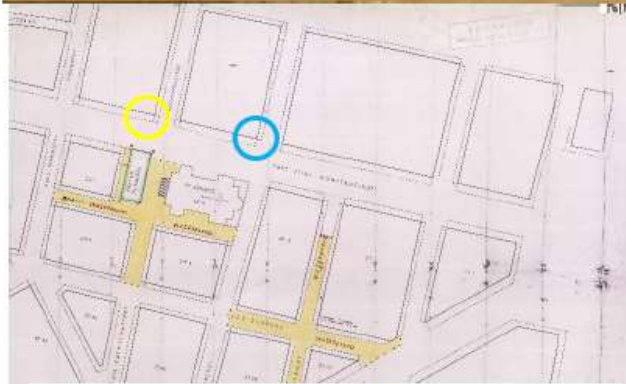
- Yellow circle not amended in 1991 urban plan / right depicted in 1956 & 1991 urban plan diagrams

- Blue circle not amended in 1991 urban plan/ wrong depicted in 1991 urban plan diagram - Red circle not amended in 1991 urban plan / right depicted in 1956 & 1991 urban plan diagrams/ wrong depicted in Hellenic Cadastre 2D Spatial DB
- Red circle not amended in 1991 urban plan / right depicted in 1956 & 1991 urban plan diagrams/ wrong depicted in Hellenic Cadastre 2D Spatial DB

a)



b)



c)



Figure 7: Stoa lines, Athens official urban plan 1956 at Athens City Center, Omonia Sqr (a), urban plan amendment 1991 (b), Cadastral Diagram excerpt (c) (Source: epoleodomia, official Web Portal of Urban Plans, Hellenic Ministry of Environment and Energy, accessed 10/03/2023 for (a) & (b), Hellenic Cadastre web map, accessed 10/03/2023 for (c)) - Yellow circle not amended in 1991 urban plan / right depicted in 1956 & 1991 urban plan diagrams- Blue circle not amended in 1991 urban plan/ wrong depicted in 1991 urban plan diagram - Red circle not amended in 1991 urban plan / right depicted in 1956 & 1991 urban plan diagrams/ wrong depicted in Hellenic Cadastre 2D Spatial DB

4. Conclusions

- The main inconsistencies of the representation of official urban plans provisions and especially of the administrative lines, in Hellenic Cadastre 2D Spatial DB are presented.
- The basic legislative provisions for the Hellenic Cadastre Cadastral Survey, mainly of technical aspect, and the technical specifications on depicting the administrative lines of officially approved urban plans, three categories of misrepresentations of urban plans provisions in the Hellenic Cadastre 2D Spatial DB are presented.

- The misrepresentations presented result in inconsistencies of the Hellenic Cadastre spatial and geometrical data affecting properties' legal and physical status and boundaries, and imposing obstacles in obtaining building permits or in selling the property procedure
- Future research can be focused on assessing the actual economical and administrative cost of those inconsistencies and to define a methodology to address them.



FIG WORKING WEEK 2023

28 May - 1 June 2023 Orlando Florida USA

Protecting Our World, Conquering New Frontiers

Thank you !!!

Dionysia Georgia PERPERIDOU, Grece

<https://www.researchgate.net/profile/Dionysia-Georgia-Perperidou>

Organized By



Diamond Sponsors

