

FIG CHAMBER OF GRADUATED SURVEYORS **FIG Working Week** 17 - 21 May, Bulgaria
From the wisdom of the ages to the challenges of modern world **FIG** SOFIA 2015

A GIS - BASED MODEL FOR MARKET ANALYSIS, VALUATION AND MANAGEMENT OF RESIDENTIAL PROPERTIES INTO THE GREEK REAL ESTATE MARKET

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FIG Commission 9 - Valuation and the Management of Real Estate

OUTLINE

- Introduction**
- The status quo of Greek Real Estate Market**
- Problem**
- Methodology**
- Results**
- Further work, parallel & future**
- Conclusions**

A GIS - based model for Market Analysis, Valuation and Management of Residential Properties into the Greek Real Estate Market

THE GREEK REAL ESTATE MARKET (GREM)

The real estate market was one of the pillars of economic growth in Greece for many years before the recession. It is indicative that the construction industry contributed 6% - 8% to the country's GDP from 2000 until the financial crisis and occupied almost 7% of the country's labour for the same period.

The Greek Economy continues in the dawn of 2015 the 7th year of recession by affecting severely the real estate market.

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THE GREM DURING THE ECONOMIC CRISIS

High unemployment rates and a further contraction in households' disposable income, real estate tax hikes, as well as liquidity shortage against the backdrop of banks' tightened credit standards

Weak –almost zero- demand and excess supply

On a cumulative basis residential property values fell up to 34.4% between 2008-2014. The drop in prices was even stronger for urban areas, such as Thessaloniki, the second metropolitan area in Greece and the largest in northern Greece, which reached 37.8% for the same period of time (Bank of Greece, 2014).

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THE PROBLEM IN TERMS OF MARKET ANALYSIS & VALUATION IN THE GREM

- The main problem that exists in GREM, is the lack of an information system with real time data regarding market and rental values.
- The finding of comparable data for residential/commercial transactions and valuation reports has been an issue for Greek appraisers for many years.
- In Greece the only database of values regarding real estate properties is the one provided by the Ministry of Economy for the Taxed assessed values (Ministry of Economy, 2015).
- These values were constructed only for the determination of property taxation and updated for the last time during 2007-2008.
- Therefore, it is clear that the out-dated Taxed assessed values do not reflect the reality of the market, as they were determined before the economic crisis and in the scope of collecting as many taxed money as possible.
- The Bank of Greece published indices referring only to the percentage change annually and quarterly for Greece in total and the largest metropolitan areas.

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THE PROBLEM IN TERMS OF MARKET ANALYSIS & VALUATION IN THE GREM



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APPLYING THE COMPARATIVE METHOD IN THE GREM

- It is common knowledge that the comparative method is the “mother” of all methods and is basically taken into account in different extent in each valuation.
- Due to lack of an information system with real time data regarding market and rental values, the application of the comparative method for valuation tasks, in Greece becomes quite difficult, if not unfeasible.
- As a result, in Greece, a common practice, that has prevailed among the appraisers in order to be able to apply the comparative method, is to adjust the comparable evidence used in the valuation of property despite not only by the complex nature of most property assets, but also by the fact that property transactions frequently do not fully meet the criteria required to provide good evidence.

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APPLYING THE COMPARATIVE METHOD IN THE GREM

In order to achieve that, appraisers use special adjustment indices in terms, of technical characteristics of the property such as date, age, floor, accommodations and facilities, view, size, asking price etc. for the comparable evidence to be a 'perfect match' for the property subject to valuation.

It should be noted that the following adjustment indices are more an acceptance of common experience along these years among the members of the valuation sector in Greece rather than a result of a calculation process.

Adjustment indices used in comparative approach for residential properties	
floor/level	+ - 3%
age of property	+ - 2%
accommodations and facilities: parking space, storage space	+ - 7%, + -3%
view/facade: one sided, two sided	+ - 5%
size	+ - 10%
condition/renovation	+ - 10%
asking price	+ - 10-15%

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THE MODEL

From all the above, it is obvious that the creation of a database of property values (market and rental) constitutes a necessity for Greece.

This research aims at presenting a GIS - based model for market analysis, valuation and management of residential properties into the GREM with initial application to the metropolitan area of Thessaloniki, a database which provides technical - structural data for each residential property in combination with its spatial and time reference.

This way external factors, such as location, neighbourhood characteristics, distance from infrastructures etc., can be taken into account during valuations or any kind of property analysis.

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THE METHDOLOGY



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DESIGN PHASE

- The nature of the information to be recorded may varies to some extent with the type of residential property being valued.
- During the design phase, a geodatabase is built within GIS environment regarding the residential property characteristics in terms of location, technical and economic aspects.
- It is adapted to take account of particular types of residential property and individual circumstances.
- The list below provides a summary as to the generic headings that should occur in most records.
- The geodatabase consists of four different thematic sections.

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DESIGN PHASE

Unique identifier of residential property in ArcGIS	Spatial characteristics	Technical characteristics	Economic characteristics
a/a	Region	Land Use	Land zone of tax assessed value
FID	Metropolitan Section	Property type	Rate of tax assessed value (€ per sqm)
	City	Property area (square meters)	Tax assessed value (€)
	Municipality	Property's Percentage of co-ownership of the land	Valuation/Property transaction/Leasing property/Property Advertisement
	Address	Year of construction	Valuation method/Information source
	Post Code	Age (years)	Month of data
		Newly Built property	Year of data
		Renovated property	Value type
		Condition	Property Value (€ per sqm)
		Level	Property Value (€)
		Number of bedrooms	Capitalization Rate (%)
		Kitchen type	Rental value (€ per sqm)
		Bathroom/WC type	Rental value (€)
		Orientation	Type of record
		View	
		Facade	
		Elevator	
		Parking space	
		Type of parking space	
		Number of storage rooms	
		Level of storage room	
		Heating type	
		Window frame material	
		Flow-space material	
		Entrance Door type	
		Energy Performance Certificate	
		Arbitrary constructions-Semi-outdoor space/Adjustment-penalty	

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FIELD SERVICE DATA COLLECTION PHASE

The value of a property may be influenced by many different factors, each of which can have a significant influence on the outcome.

Therefore in order to build a sufficiently robust basis of evidence which can then be applied with confidence to the property being valued, information were collected from a range of sources creating an initial sample of over 1000:

- mainly, data regarding residential selling and leasing transactions,
- valuation reports and
- less, asking prices,

for the period 2009-2014 (December and June of every year), at the Metropolitan area of Thessaloniki, Greece.

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ANALYSIS PHASE

At the analysis phase, because of the diverse nature of the property market and the relatively small number of transactions available to provide evidence and due to poor and falling GREM's conditions, the initial sample of comparable information need to be carefully scrutinized, assessed and analyzed in detail before it can be used as evidence in a valuation.

The available data were entered to the GIS environment and by using spatial analysis tools and techniques the false market values were identified and excluded from the geodatabase.

Information for each record is summarized in a form that is easily comprehensible and aids analysis within GIS environment. Comparable evidence can be entered and ranked in terms of relevance and importance along with the spatial reference allowing efficient analysis of what is often a large and complex body of data.

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ANALYSIS PHASE

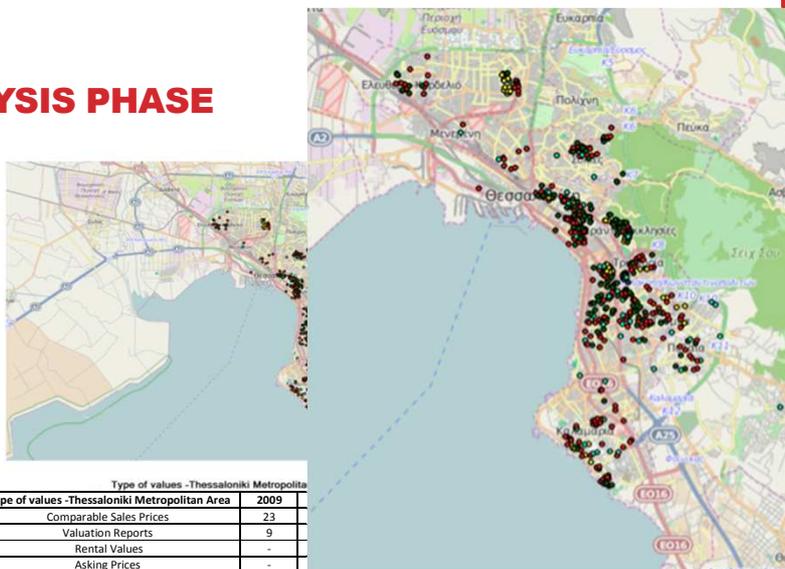
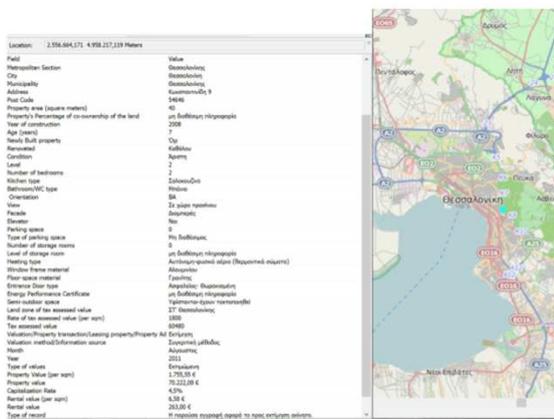


Figure 1. The synthesis and the spatial allocation of the available data after the quality control at the Metropolitan Area of Thessaloniki.

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ANALYSIS PHASE



Information provided for the selected record through GIS environment.

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ANALYSIS PHASE



- Using in ArcGIS the inverse distance weighted (IDW) technique through interpolation to map Real Estate Market Analysis
- The variation of market values along with the spatial reference for the Metropolitan area of Thessaloniki by integrating and the latest data from the first half of 2015

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RESULTS

Creation of geodatabase that provides technical - structural data for each residential property record

Geoinformation system with market values, rental values, valuation reports and asking prices for residential properties along with time and spatial reference

Server

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RESULTS (2)

Link

- <http://155.207.21.1/fmaps/vamos/>

Name

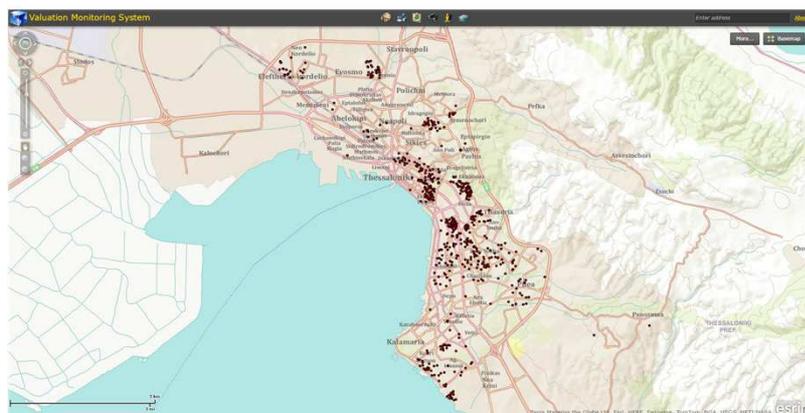
- Valuation Monitoring System (VAMOS)

Tools

- Choose the features
- Choose a basemap
- Legend
- Draw
- Print

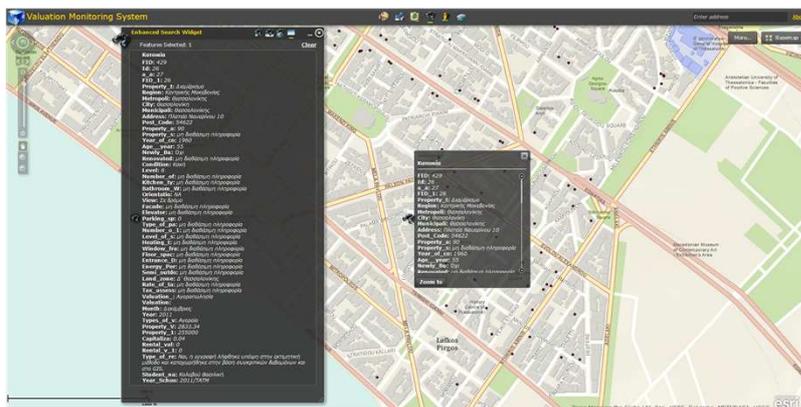
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RESULTS (3)



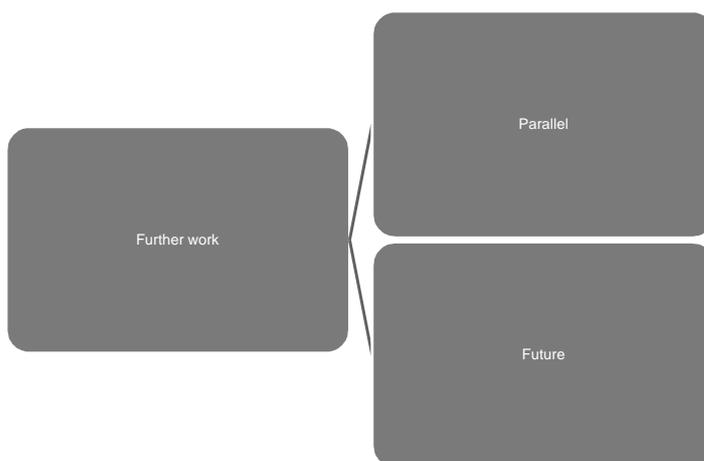
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RESULTS (4)



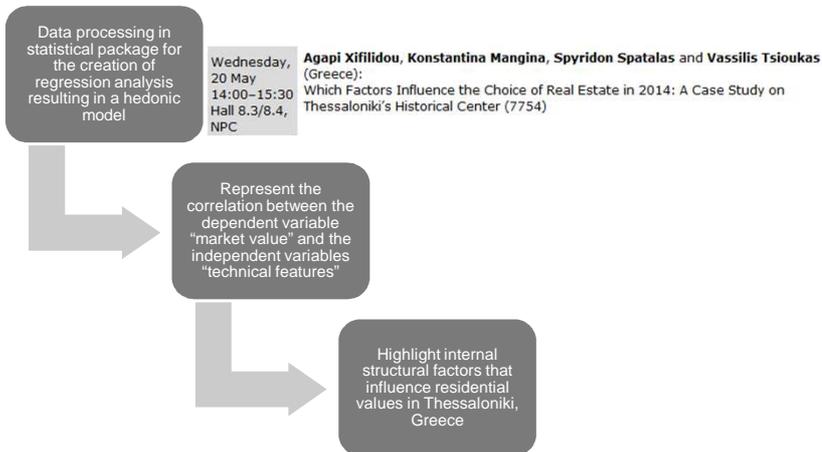
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FURTHER WORK



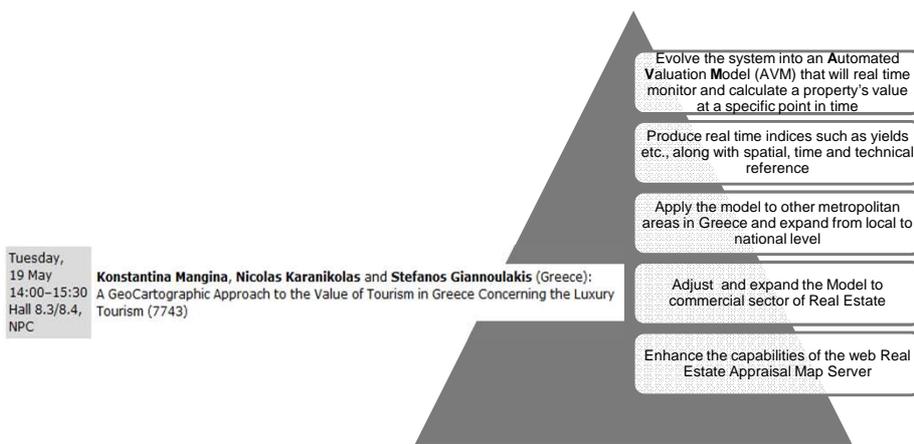
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PARALLEL WORK



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FUTURE WORK



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CONCLUSIONS

For the first time in GREM, a thorough Geoinformation system by integrating and taking into account

- market values, rental prices along with capitalization rates, former valuations reports, asking prices, tax assessed values, etc.
- all pertinent information on the individual property in question (e.g. number of bedrooms, property improvements, etc.),
- historical house price movements
- sales and leases of like-kind properties
- along with the spatial and time reference

gives through a friendly Web GIS environment to all Real Estate experts the ability in an easy-to-read, attractive format:

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CONCLUSIONS

prepare a reasoned in detail market analysis



uncover market drivers and patterns



identify market gaps, investment properties, and underperforming assets



conduct their valuations through real time robust evidence



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CONCLUSIONS

Thank you for your time!!!



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