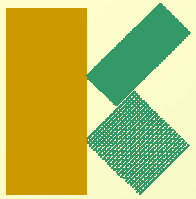


# **New Developments in the Hellenic Cadastre**

**Prof. M. Kavouras**

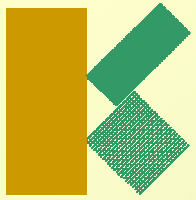
Vice-president

Ktimatologio S.A. (Hellenic Cadastre)



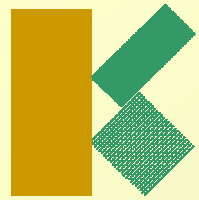
# The Hellenic Cadastre

- ◆ Background
- ◆ The Hellenic National Cadastre
- ◆ Organizational and institutional infrastructure
- ◆ Current state
- ◆ New developments in the Hellenic Cadastre



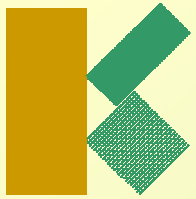
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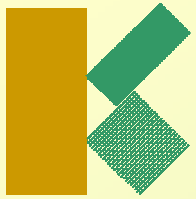
# **The Registrations and Mortgages System**

- ◆ **Greece is operating under the French-originated system of registrations and mortgages.**
- ◆ **Each personal record lists all the real property transactions performed by a single person in a given area (person-centered system).**
- ◆ **The institution of the registrations and mortgages system ensures the publicity of the registrations, but it does not provide legal security of the registered ownership rights**
- ◆ **Because the system is organized around the persons, it does not offer the capability of identifying the owner of a particular real property which is observed in the field.**



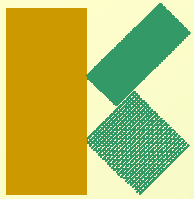
## **Problems of the existing system**

- ◆ **The lack of legal titles of a great number of real properties**
- ◆ **The State does not know its real estate assets**
- ◆ **The lack of legal security in real estate transactions**
- ◆ **The intense migration from the rural and mountainous areas which caused many properties to be abandoned, forgotten, encroached or disputed**
- ◆ **The difficulty to locate land parcels in rural areas**
- ◆ **The existence of customary ownership rights in specific areas of the country**



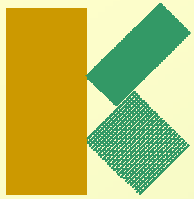
# The Hellenic Cadastre

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- ◆ **The Hellenic National Cadastre**
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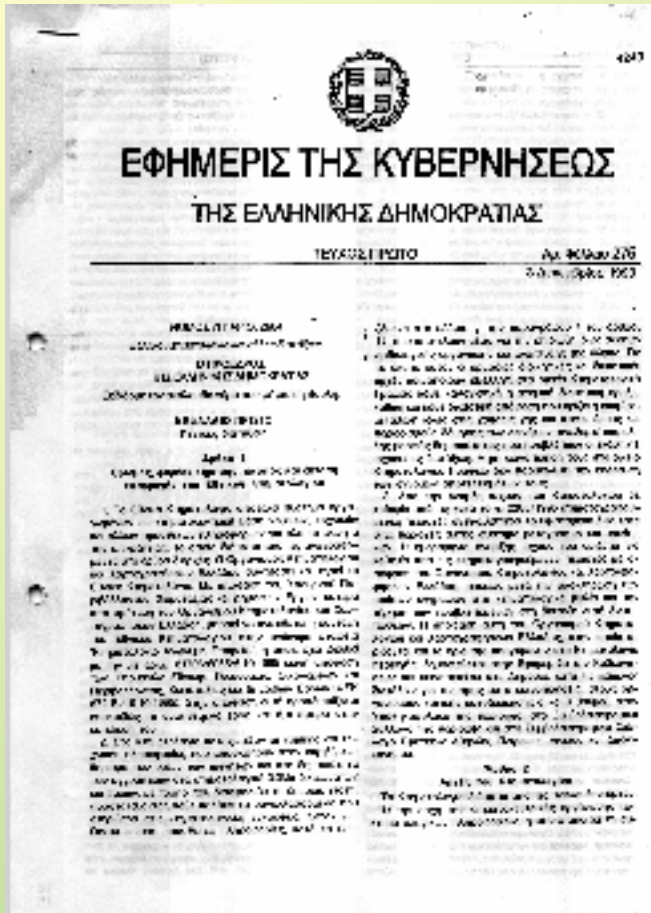


## **Mission**

- ◆ **Develop a uniform, systematic and always up-to-date collection of registrations, which consist of the geometric description and the ownership status of all the real properties of the country, overseen and guaranteed by the State.**
- ◆ **In addition, the Hellenic Cadastre may serve as a source of valuable information that can be used for the development of the country.**

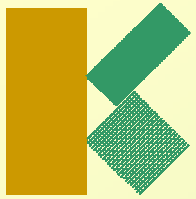


# Legal framework



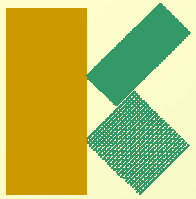
- ◆ Constitution (amendment)
- ◆ Law 2308/1995 (Cadastral surveys)
- ◆ Law 2508/1997
- ◆ Law 2664/1998 (Operation of the cadastre, forest maps)
- ◆ Law 2971/2001 (Coastal zones)
- ◆ Law 3127/2003





# **The Hellenic Cadastre**

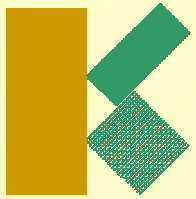
- ◆ Background
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- ◆ **Organizational and institutional infrastructure**
- ◆ Current state
- ◆ New developments in the Hellenic Cadastre



## **Hellenic Mapping and Cadastral Organization (Law 1647/86)**

### **The Purpose of HEMCO:**

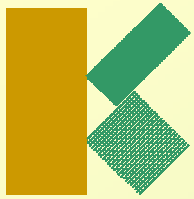
- ◆ **The development, maintenance and update of a cadastre in Greece.**
- ◆ **The geodetic and mapping coverage of the country.**
- ◆ **The inventory and mapping of the natural resources.**
- ◆ **The creation of a land and environment data repository.**



# Organizational infrastructure

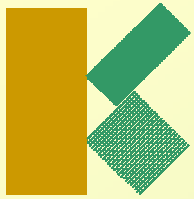
## Ktimatologio S.A. (Hellenic Cadastre)



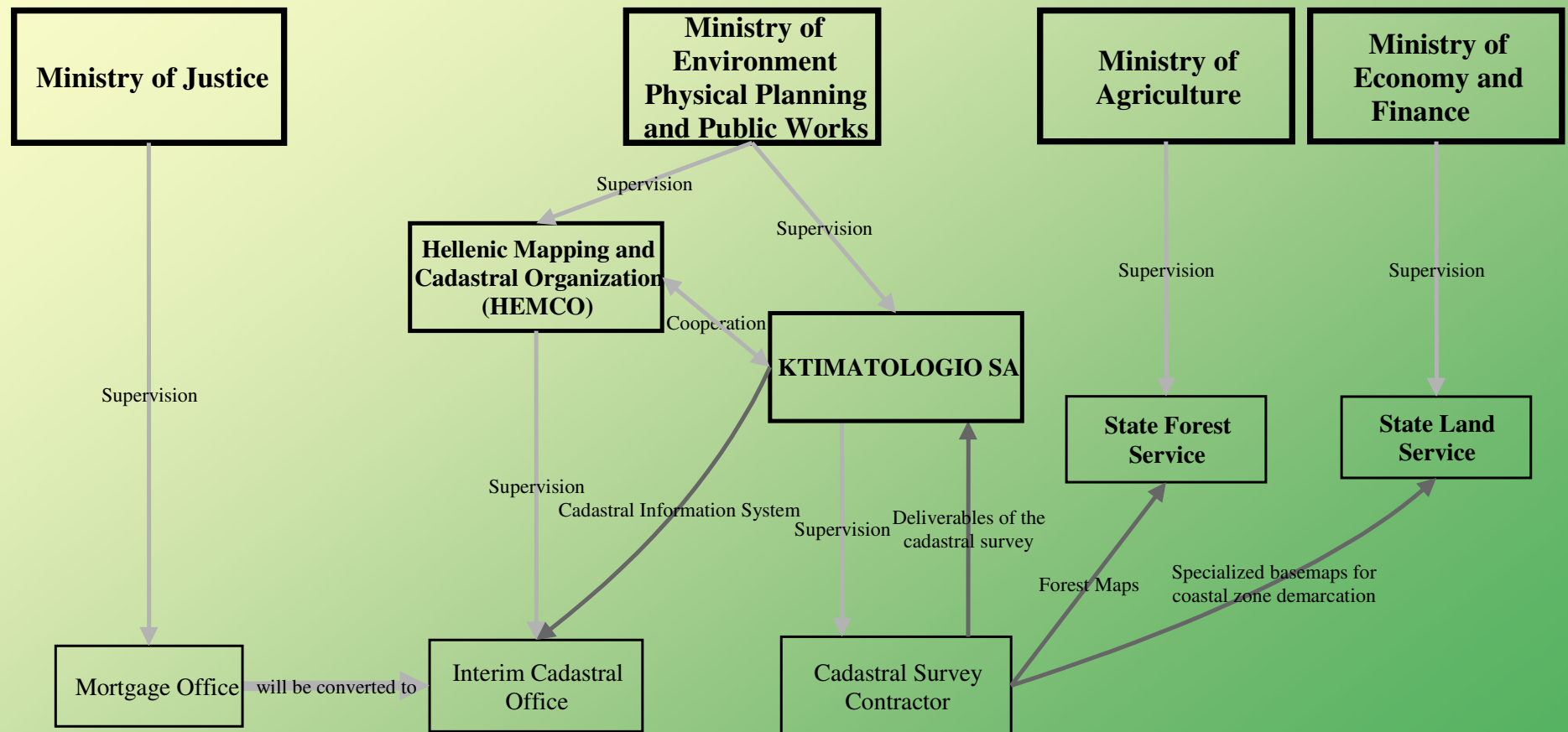


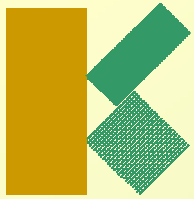
## **KTIMATOLOGIO SA**

- ◆ **KTIMATOLOGIO SA is a private company with sole shareholder the Minister of Environment, Physical Planning and Public Works.**
- ◆ **The company was established in 1996.**
- ◆ **The mission of the Company is to:**
  - ◇ **plan, develop and operate the National Cadastre**
  - ◇ **assign to third parties the planning and development as well as the extension of the National Cadastre program and the supervision and guidance of the execution of the relevant contracts, the control of the relevant studies and the necessary supplies.**
  - ◇ **undertake the execution of the contracts for the development of the Cadastre assigned by HEMCO.**
  - ◇ **proceed to administrative, financial and technical activities which are necessary for the implementation of Cadastral program.**
  - ◇ **provide counseling to HEMCO and propositions on issues related to the above.**



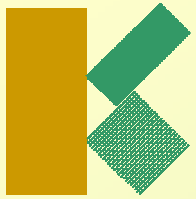
# Organizational Schema for the Establishment of the Hellenic Cadastre





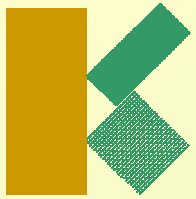
## **Current state (1)**

- ◆ Since the beginning of the project, cadastral surveys have started for 340 municipalities covering about 8.500 km<sup>2</sup>.
- ◆ The cadastral surveys have been completed for 165 municipalities out of 340 (reference date 23.05.2005).
- ◆ For the majority of the remaining municipalities over 90% of the work has been completed.
- ◆ By the first semester of 2006, the remaining cadastral surveys will be completed.

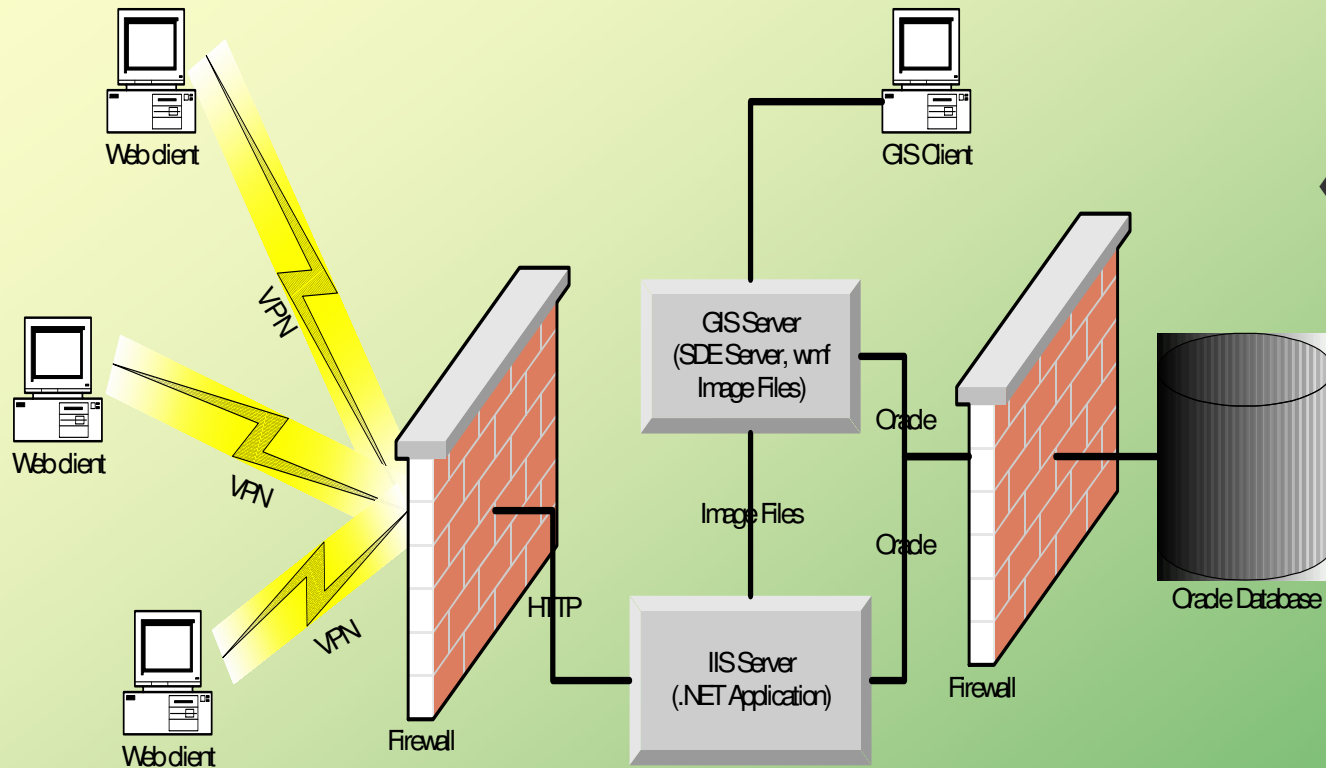


## **Current state (2)**

- ◆ Establish, coordinate and manage the interim cadastral offices
- ◆ So far 62 interim cadastral offices have been established which are serving 165 municipalities (reference date 23.05.2005)
- ◆ Operating through “ΣΠΕΚ” (Information System for the Hellenic Cadastre)

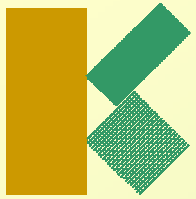


# Information System of the Hellenic Cadastre



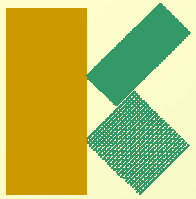
- ◆ Central management
  - ◆ Relational DBMS (Oracle 9.2i, Unix,)
  - ◆ GIS (Arc/Info)
- ◆ Middle tier:
  - ◆ (IIS - Internet Information Server Windows 2000
  - ◆ Framework IIS: .net)
- Client: Internet Explorer 6.0
- Virtual Private Network (VPN) connection with cadastral offices





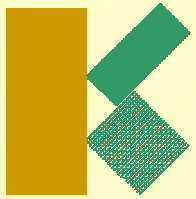
# **New developments in the Hellenic Cadastre**

- ◆ **3rd Community Support Framework**
  - ◇ Experience from the cadastral pilot projects
  - ◇ Ways to address the identified problems
  - ◇ Goals of the proposed OP
  - ◇ Basic Choices
  - ◇ Actions included in the OP
  - ◇ Budget of the Operational Plan
  - ◇ Summary
- ◆ **Long term planning**
- ◆ **Conclusions**



## 3rd Community Support Framework

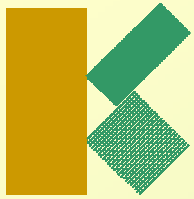
- ◆ The operational plan “***Data and IT Infrastructure for a Modern Cadastre***” has been included for funding in the Operational Program «***Information Society***» of the 3rd CSF
- ◆ It does not include activities of cadastral survey
- ◆ It has a budget of about 80.000.000 euros (without the VAT)
- ◆ The actions will be cofinanced by the European Commission and the Greek State at a rate of 50%-50%



## Experience from the cadastral pilot projects

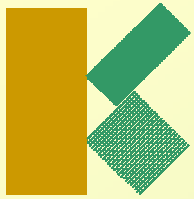
The pilot cadastral projects faced considerable delay in their implementation and overruns in their budgets among other reasons for the following:

- ◆ **External data** had to be incorporated in the main process of the cadastral survey.
- ◆ Our contractors had to execute a **wide range of activities** for a relatively **small area**.
- ◆ The technology that was used did not allow for considerable **economies of scale** to be achieved.
- ◆ The amount of work that had to be conducted in the context of a cadastral survey could not be accurately estimated in advance since considerable parameters of the work (e.g. number of rights to be registered) could not be reliably estimated.



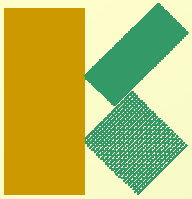
## Ways to address the identified problems

- ◆ The activities that have to be completed in the context of a cadastral survey can be classified into three main categories:
  - ◆ Activities that must be performed at a **local level** which mainly pertain the collection and processing from a technical and a legal standpoint of the real estate rights to be registered in the cadastre.
  - ◆ The activities that can be performed **horizontally at a national level** in order to achieve economies of scale.
  - ◆ The activities that must be performed **before the cadastral survey** in order to reduce the uncertainties and facilitate the works of the cadastral survey.
- ◆ This OP addresses activities that fall in the last two categories.



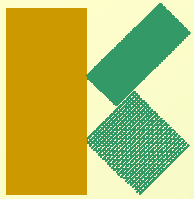
## Goals of the proposed OP

- ◆ This Operational Plan aims at:
  - ◆ overcoming the difficulties that arose during the implementation of the pilot programs by providing **in time, reliable and directly usable** information in order to reduce the risk and simplify the main work of the cadastral survey.
  - ◆ creating the **data and IT infrastructure** which will enable the **interoperability** and the **data exchange** between Ktimatologio and all parties involved in the development and operation of the cadastre.



## **Basic Choices - 1**

- ◆ **The execution of works at a national scale allows for:**
  - > **economies of scale**
  - > **application of better technological approaches**
  - > **information will be become available even for areas that will undergo cadastral survey much later in time creating an infrastructure that can significantly contribute to the protection of the environment.**
  - > **Collection of data that will enable the provision of modern information services for the whole country.**
- ◆ **Address the needs of other State Agencies without deviating from the goals of the Hellenic Cadastre.**



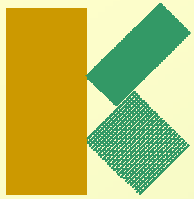
## Basic Choices - 2

Higher degree of internal standardization will be enforced which will ensure

- > better prices from our contractors
- > smoother transfer and incorporation of collected data in the cadastral databases
- > Simpler approaches in project management and control

This will be achieved by maximizing the use of common:

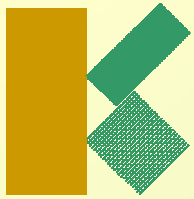
- > Concepts
- > Methods and
- > Technical specifications



## **Actions included in the OP - 1**

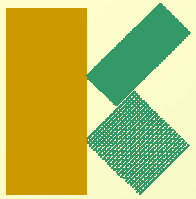
- ◆ **Priority 1. The modernization of the Geodetic Network**
  - ◇ **Measure 1 HEPOS**
- ◆ **Priority 2 Digitalization and conversion of existing registers**
  - ◇ **Measure 1 Land Redistribution and Land Consolidation**
  - ◇ **Measure 2 Special Cadastres**
  - ◇ **Measure 3 Digital database of “active titles” in Mortgage Offices of urban centers**



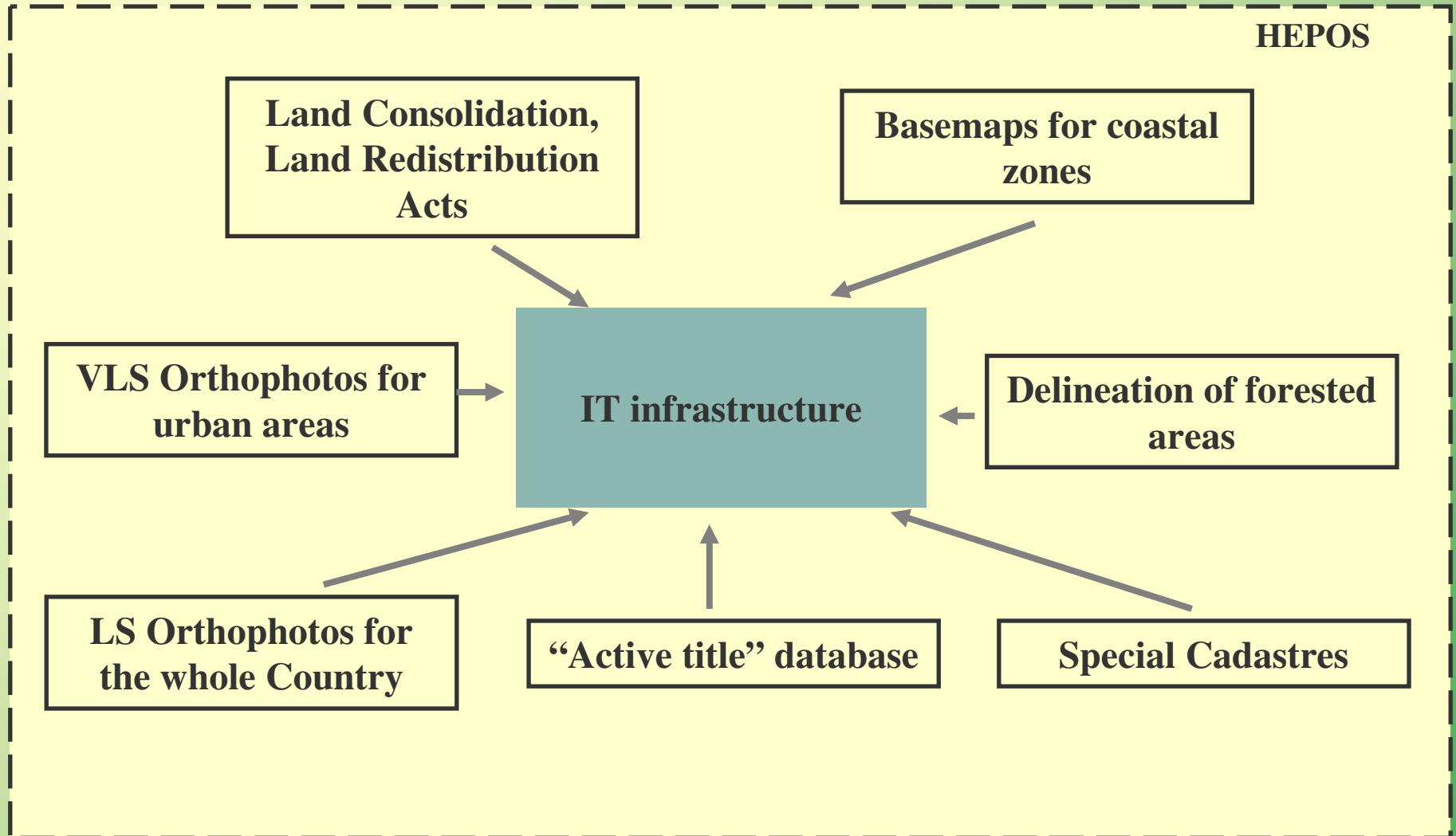


## **Actions included in the OP - 2**

- ◆ **Priority 3 Creating base data sets for the whole Country**
  - ◇ Measure 1 Urban very large scale true-ortho imagery
  - ◇ Measure 2 National 1/5000 color ortho-imagery
- ◆ **Priority 4 Collecting evidence for the land registration process**
  - ◇ Measure 1 Forest delineation
  - ◇ Measure 2 Base mapping for coastal zone delineation
- ◆ **Priority 5 Optimizing the IT system**
  - ◇ Measure 1. Modernization of Ktimatologio IT infrastructure
    - ◆ MIS
    - ◆ Data center and disaster recovery center
    - ◆ Network and security infrastructure establishment
  - ◇ Measure 2. Web Services for data sets
  - ◇ Measure 3. Web Services for new cadastral surveys

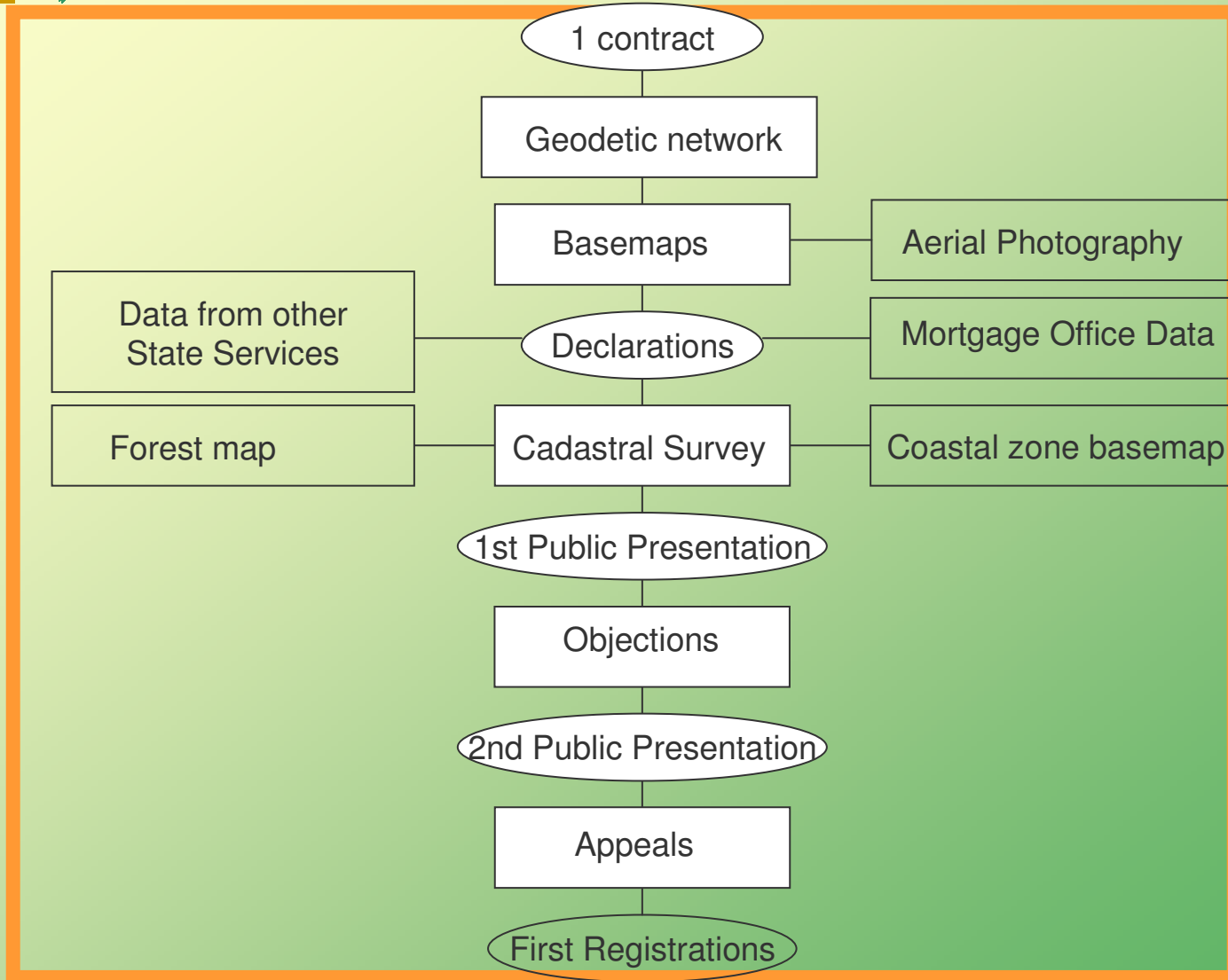


## KT's contribution to a NSDI

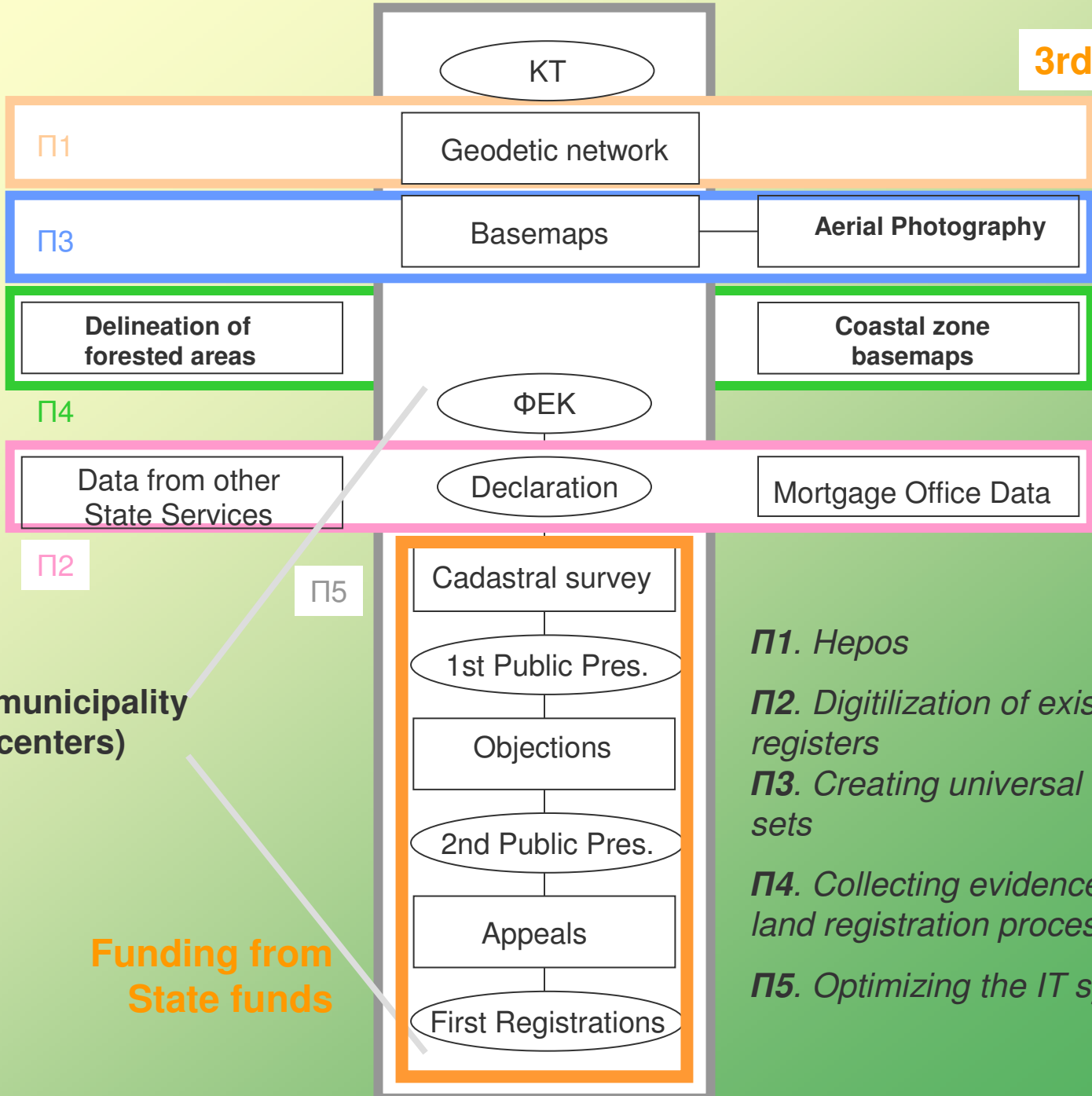
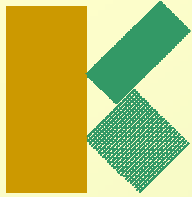


Activities per municipality

Official announcement of a municipality under cadastral survey (ΦΕΚ)



**3rd CSF**



**Works per municipality  
(urban centers)**

**Funding from  
State funds**

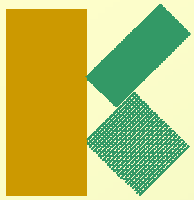
*Π1. Hepos*

*Π2. Digitilization of existing registers*

*Π3. Creating universal base data sets*

*Π4. Collecting evidence for the land registration process*

*Π5. Optimizing the IT system*



**Works not included  
in the 3rd CSF**

KT

Geodetic network

Basemaps

Aerial photography

Forest delineation

Coastal zone basemaps

ΦΕΚ

Data from other  
State Services

Declaration

Mortgage Office data

Cadastral Survey

1st Public Pres.

Objections

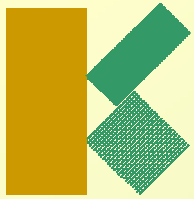
2nd Public Pres

Appeals

First Registrations

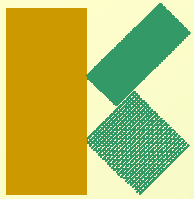
**Works per municipality  
(agricultural and other  
areas)**

**Funding from  
State funds**



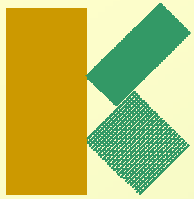
## Budget of the Operational Plan

S/N	Action	Budget (euros)
1.	HEPOS	4.500.000
4.	Land consolidation and land redistribution acts	1.900.000
5.	Digitization of existing cadastres	2.300.000
6.	Creation of a Digital database of active titles in the Mortgage Offices of urban centers	35.000.000
7.	Urban very large scale true-ortho imagery	3.200.000
8.	National 1/5000 color ortho-imagery	6.300.000
9.	Forest delineation	8.300.000
10.	Base mapping for coastal zone delineation	3.400.000
11.	Modernization of Ktimatologio IT infrastructure	10.300.000
12.	Web Services for the collected data sets	1.070.000
13	Web Services for new cadastral surveys	3.400.000
<b>Total</b>		<b>79.670.000</b>



## Summary

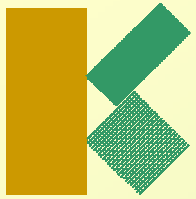
- ◆ The proposed OP does not contradict or modify the mission and the procedures of developing Cadastre in Greece as these are described in the Greek Cadastral Legislation. It introduces a new management approach in the Project which aims at overcoming the shortcomings of the past, as well as strengthening and securing the Project by taking advantage of modern technologies and economies of scale.



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- ◆ 3rd Community Support Framework
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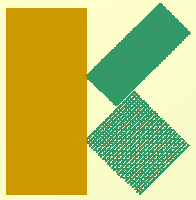
## Long term Planning

### ◆ What remains to be done:

- ◇ Develop cadastre for the rest of the Country:
  - ◆ ~123.000 sq. km
  - ◆ ~28.500.000 real property rights

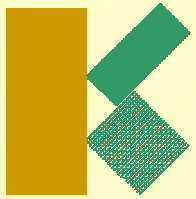
### ◆ How:

- ◇ Existing cadastral legislation (l.2308/1995 and l. 2664/1998, as they have been modified by 3127/2003) with minor adjustments if needed.
- ◇ New management approaches to incorporate new technologies and reduce the overall cost.



## Conclusions

The operating Cadastre must establish itself as an **institutionally strong, always up-to-date and always improving** system which will **guarantee real estate rights** throughout the Country and will be **fully trusted** by the Greek citizens for their **real estate transactions** as well as the Greek State for the **development of the Country**.



# Research Topics (1)

## ◆ ONTOLOGICAL

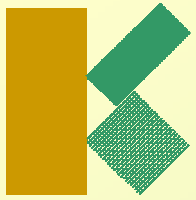
- ◆ Cadastral concepts
- ◆ What defines land property? What is guaranteed?
- ◆ Identity and spatial change
- ◆ Boundaries in cadastre

## ◆ SPATIAL REFERENCE - MOTION

- ◆ Moving parcels and boundaries
- ◆ 4D coordinates (HEPOS) – reference “without” coordinates?
- ◆ 3D cadastre

## ◆ INTEROPERABILITY – INTEGRATION

- ◆ Integration of different “cadastral” systems (Dodecanese cadastre, fiscal “cadastre”, previous specs, etc.)
- ◆ Harmonization of European cadastres – is it possible?



## **Research Topics (2)**

### **◆ DETERMINING AND RESOLVING CONFLICTS**

- ◆ Spatial conflicts
- ◆ Thematic conflicts
- ◆ Determine procedures for settling conflicts
- ◆ Formalize legal content

### **◆ VISUALISATION - SPATIALIZATION**

- ◆ 3D property
- ◆ Land parcel history
- ◆ Moving parcels and boundaries