Portuguese Cadastre. Actual state, case studies, projects, data infrastructure

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Summary

Evolution

Actual state

Case studies
- Albergaria - Cadastral data acquisition operation
- Lisbon - cadastral data interoperability

IS cost-benefit analysis

Projects
- Execution of Cadastre Real Property

Data infrastructure
- Project computerization of the Geometric Registration Rural Property
- SiNErGIC Information System

Evolution

1801

Royal Charter

- execution of geometric registration of urban and rural property
- mandatory registration of ownership of the property right

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Evolution

1801 1848

José António D'Ávila concluded that the register should be:

- the map of the country
- the description of the real property
- inventory of the value of the country
- the repository of the titles of their owners

Letter of the Law of August 26, 1848

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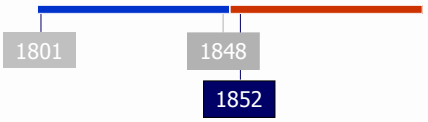
Evolution



Creation of property tax

Government Gazette. n.º 225, of October 28

- execute the Charter Corográfica 1:100 000 mapping (to obtain support planning of roads)

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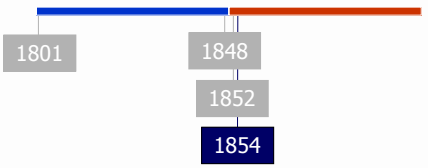
Evolution



Starts the collection of taxes based on the information of Department of Finance

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Evolution

1801 | 1848 | 1852 | 1854 | 1904

Publication of the Charter Corográfica 1:100 000

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Evolution

1801 | 1848 | 1852 | 1854 | 1904 | 1921

It is created a finances service of Geometric Register

- registration tax purposes
- composed of discontinuous and unrelated plants

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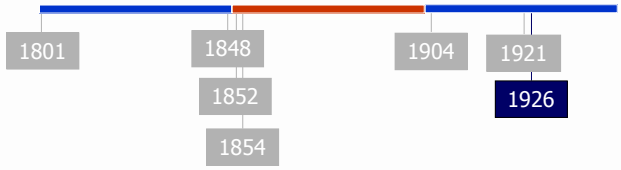
Evolution



Decree law n.º 11 859

- Determines that the General Services Administration Geodetic, Topographic and Cadastral proceed to the **organization of geometric registration of rural property** of the continent and adjacent islands
- this register **should be the basis for**
  - identification of rural property
  - calculation of property tax rustic
  - remodeling of the system of rural property
  - large-scale survey of the country chart

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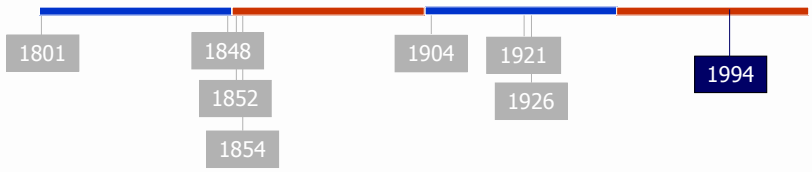
Evolution



Creation of Cadastral and Geographic Institute

- Remodeling Services Geodetic, Topographic and Cadastral
- National authority in cartography, geodesy and cadastre

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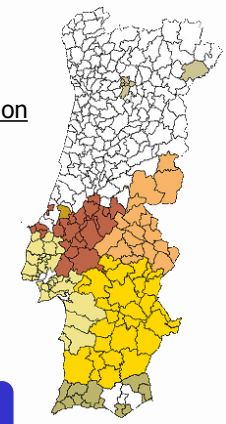
Evolution

1801 | 1848 | 1852 | 1854 | 1904 | 1921 | 1926 | 1995



From 1926 to 1995 was executed the Geometric Registration Rural Property

- 12 districts
- 8 municipalities in the Autonomous Regions
- Without recourse to documentary evidence
- Tax purposes
- Only rustic property

11

Evolution

1801 | 1848 | 1852 | 1854 | 1904 | 1921 | 1926 | 1995 | 2006

In 1995 was regulated the Cadastre of Real Property

(Decree-Law n.º 172/95, of July 18)

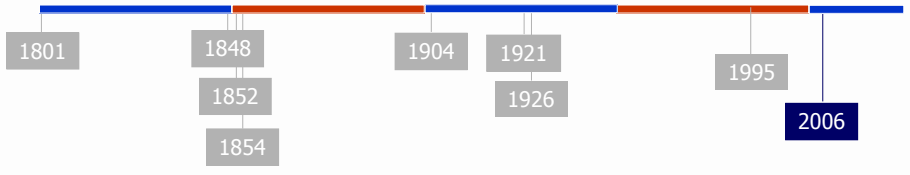
Cadastre of Real Property was changed:

- from tax purpose to **multipurpose**
- beyond the acquisition of rustic property **has also acquisition of Real property cadastre**

Were executed more 9 municipalities

12

Evolution



Creation of the **National System Operation and Management of Cadastral Information (SiNErGIC)**

Acquiring and managing cadastral data with a global purpose, involving it in the legal real property market:

- Who needs this information?
- How is this information needed?
- When is this information needed?

SiNErGIC

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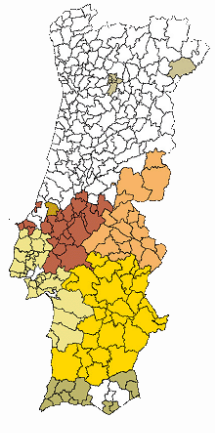
Actual State

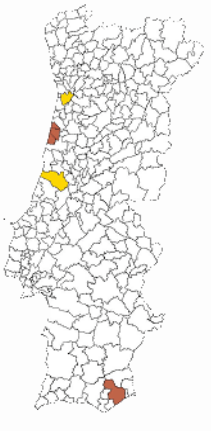
Rural property cadastre



Area: 50%

from tax purpose to multipurpose

Cadastre of real property



Area: 1,5%

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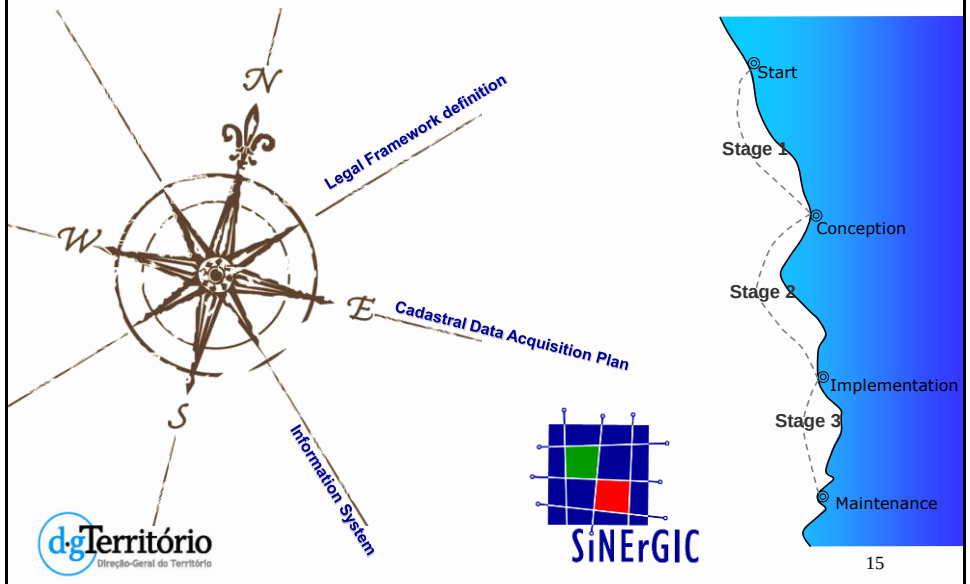
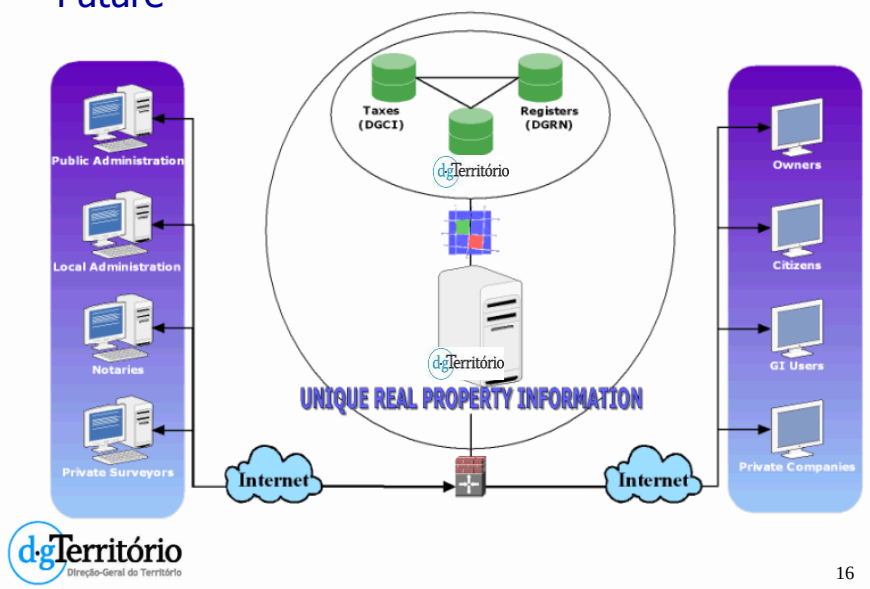
Promote Unique Parcel Identification



Future



Understand the reality

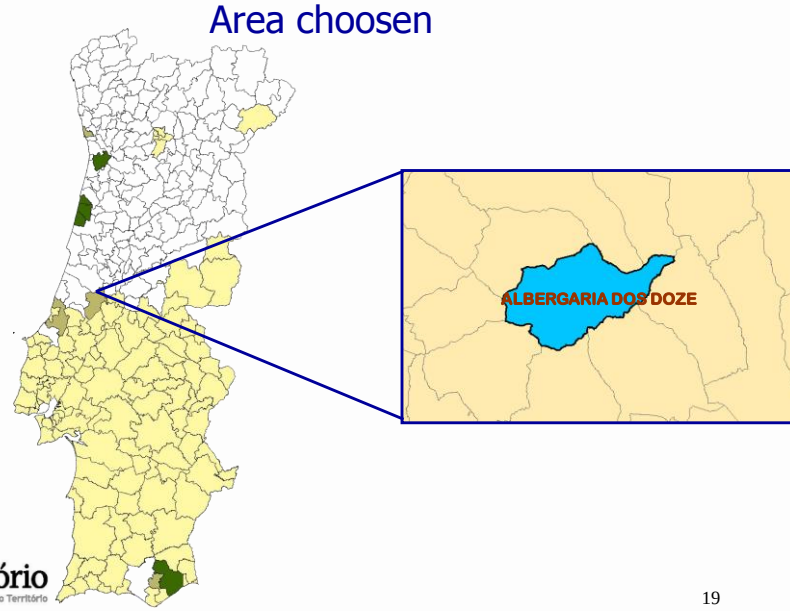
Case studies:

- Albergaria's cadastral **data acquisition operation**
- Lisbon's cadastral **data interoperability operation**

IS cost-benefit analysis

Albergaria case study - Cadastral data acquisition operation

Area choosen



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Choice criteria

- Inexisting Geometric Registration of rural Property data for that area
- Parcel and Owner Registry data is integrated in database
- Fragmented land structure area
- Parish with less then 2 500 ha
- Suitable to move human ressources and equipment

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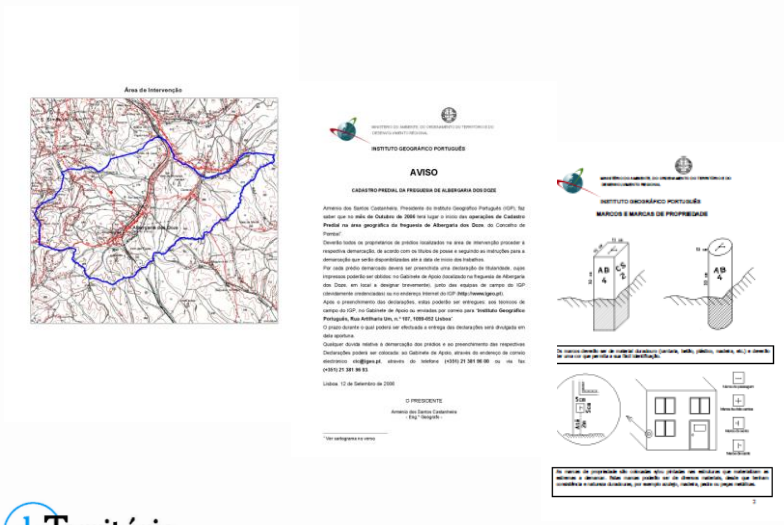
Newspaper advertising

Public announcement



Public presentation of the cadastral operation

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Planning

Reference system

PT-TM06/ETRS89 - European Terrestrial Reference System 1989		
Reference ellipsoid	**GRS80**	**Semi-Major Axis: a = 6 378 137 m Semi-Minor Axis: b = 6 356 752,314 m Flattening: f = 1 / 298,257 222 101**
Cartographic projection	**Gauss-Krüger**	
Latitude of the origin of rectangular coordinates	**39º 40′ 05″,73 N**	
Longitude of the origin of rectangular coordinates	**08º 07′ 59″, 19 W**	
False Origin coordinates	**Easting: 0 m Northing: 0 m**	
Reduction coefficient	**1,0**	

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Planning

Base Map

Digital orthophotomaps	
Geometric resolution	**0,1 m**
Color model	**RGB**
Radiometric resolution	**24 bit**

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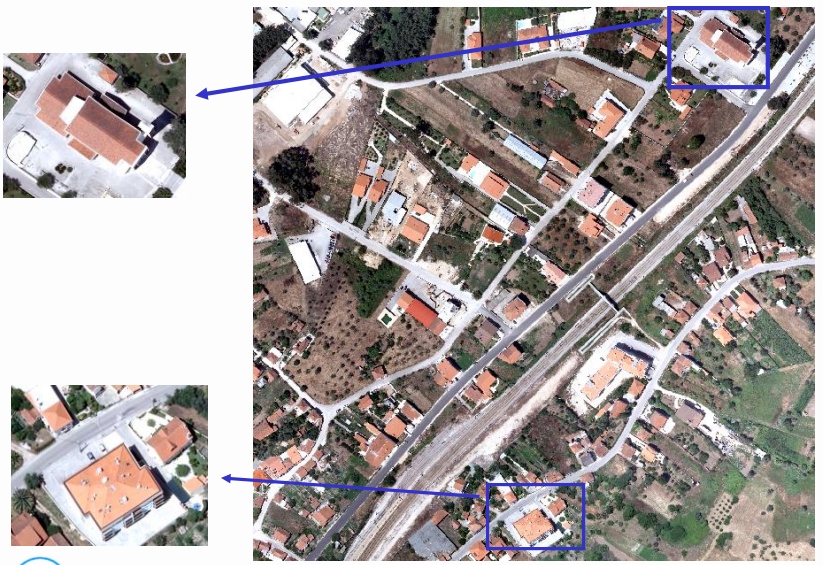

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Planning

Addicional GNSS base station instalation

- Location: Field office headquarters (Fire Department building)
- ADSL connection with DGT headquarters
- Integration of ground station with National GNSS Network
- Used only by survey project team
- Installation limited to the duration of the project

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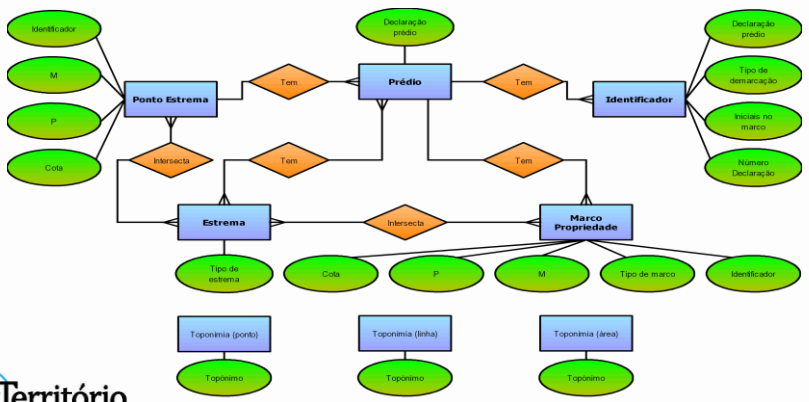
Planning

Data model definition



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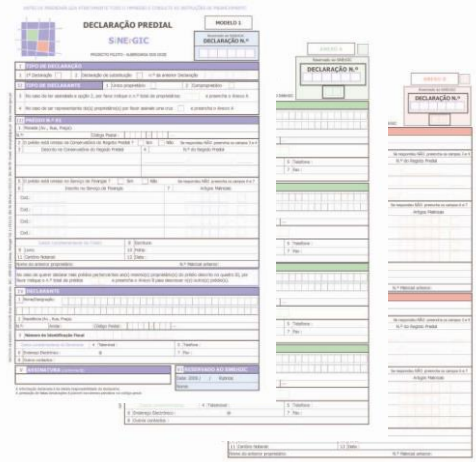
Planning

Ownership declarations



Execution - office

Main goals

- Support in completing ownership declarations
- Clarify the real property demarcation instructions
- Receive declarations acording the established rules
- Management declarations

Execution - office

Main goals (continuation)

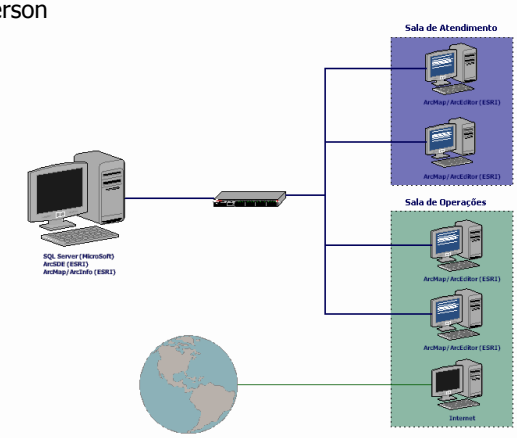
- Support the mapping approximate location of the property (by base map use)
- Management of data quality control procedures
- Support of survey team

Execution - office

Human resources

- Coordination by one person (Surveying Engineer)
- Two persons (survey experts)

Equipment



Execution - office

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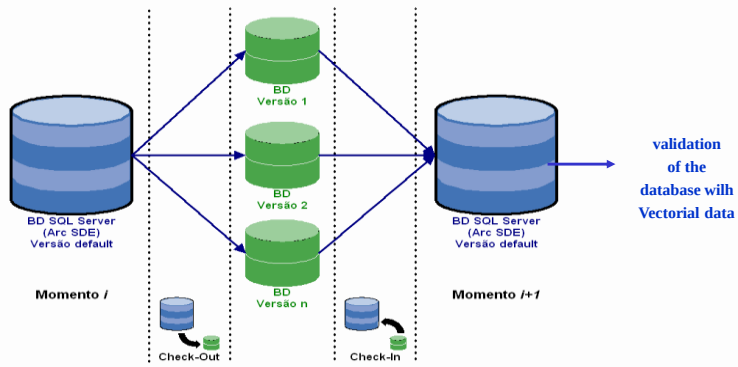
Execution - office

Dataflow



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Execution - office

Coordination of the survey team

- Continuous monitoring of survey team
- Daily briefing with survey experts

Participation and collaboration of the population

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Execution - office

Documents submitted by the owners

- Ownership Registry documents
- Certificates of notarial acts

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Execution – survey work

Main goals

- Collect cadastral data using new technologies and innovative methodologies
- Interpret the **existing boundary marks**, set the **geometric configuration** of each real property and, if possible, establish a **link with a ownership declaration**

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Execution – survey work

Human resources

- Coordination by one person
  (Surveying Engineer)
- Six survey teams
  (Two survey experts each)

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Execution – survey work

Equipment (Per team survey)

- A tablet PC
- A total station
- A RTK GNSS receiver
- A mobile phone

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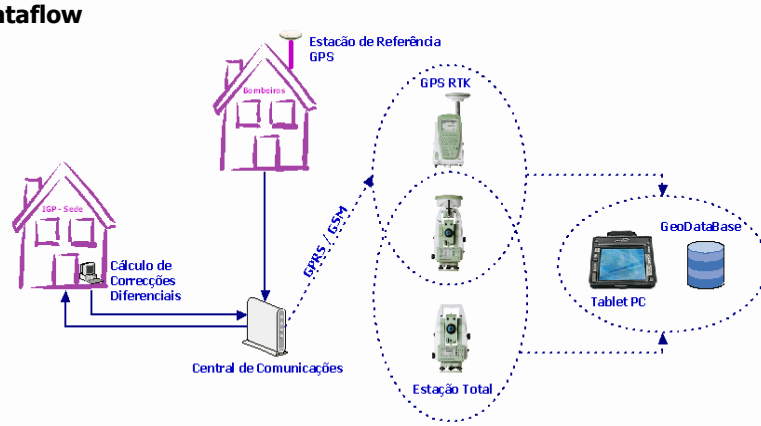
Execution – survey work

Dataflow



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Execution – survey work

Boundary marks

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Execution – survey work

Coordination of the survey team in the back-office

- From the data ownership declaration analysis resulted a list of undentified real properties
- The list was further distributed by the survey team

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Execution – survey work

Participation and collaboration of the population

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Public Consultation

Participation and collaboration of the population

Public
Consultation Offices

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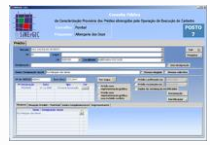
Public Consultation

Consultation

- supervised by a team constituted by a **cadastral specialist**, a **tax issues specialist**, an **ownership property specialist** and a **local authorities delegate**



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Public Consultation

Complaints Analysis and Resolution

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Results

Final

Total area cadastral data collect	**1400 ha**
Total area of real properties with geometric configuration established	**1115 ha**
Deferred cadastral areas	**10 ha**
Total area data considered provisional and / or inconclusive	**275 ha**

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Availability of cadastral data in the web

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Albergaria case study conclusions

- owners collaboration is essential for real properties identification
- the use of "informants" enhances recognition of properties and boundaries (but does not solve the problem of identifying the real properties data integrated by the project partners)

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Lisbon case study - cadastral data interoperability

SiNErGIC

- Chosen **two parish** from the city of Lisbon (Prazeres and Alcantara)
- Participation of partners

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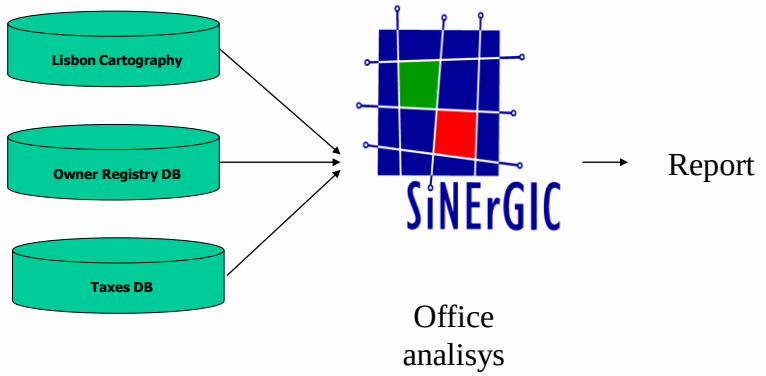
Cadastral data interoperability



Main goals

- Use municipal base map (from Lisbon) in a cadastral database analysis
- Analyze linkage between data owner registry database and data taxes database
- Collect cadastral data using the base map previously existing in Municipality of Lisbon

Metodology adopted

Association of data, using toponymic elements, without survey work, based especially on the base map 1: 2 000

Cadastral data vs base map

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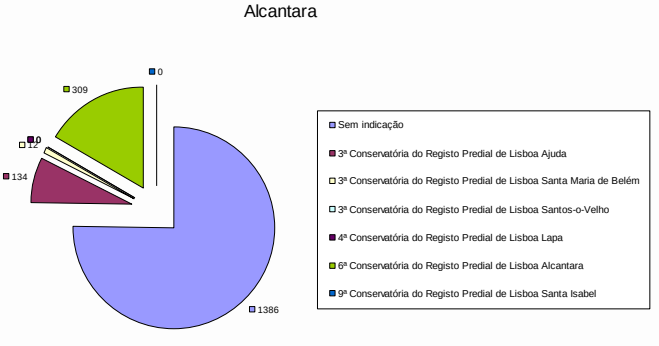
Lisbon case study results



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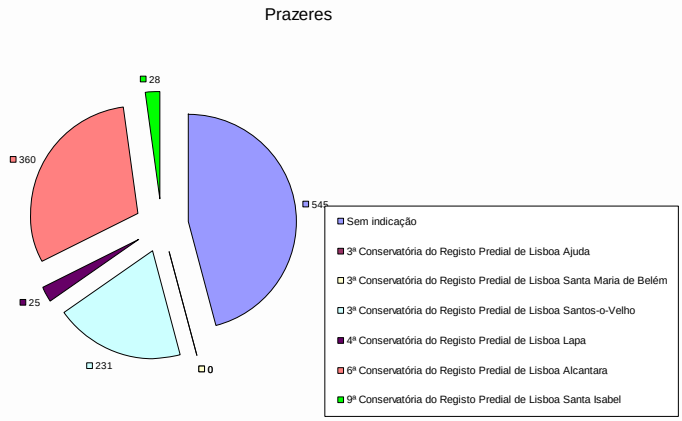
Lisbon case study results



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Lisbon case study conclusions

Real properties integrated in ownership database, but with different data in taxes database

⇓

With this methodology, the linkage between cadastral database are difficult

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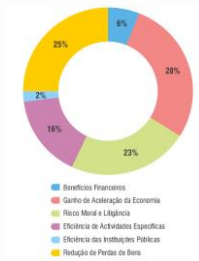
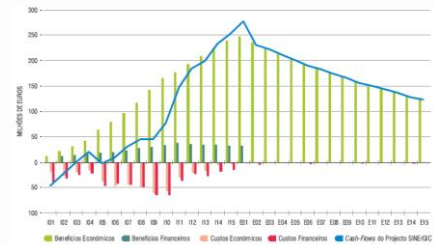
IS cost-benefit analysis

"Study and implementation of a cost-benefit analysis to SiNErGIC"

- Coordinated by Prof. Augusto Mateus
- Developed by Augusto Mateus & Associados
- Price Waterhouse & Coopers (PWC) collaboration

IS cost-benefit analysis





(Source: http://www.ordemengenheiros.pt/ingenium/ing109.pdf)

Projects – Execution of Cadastre Real Property

Running in 7 municipalities

Envolvement of strategic partners:

- Institute of land registers
- Finance Service
- City Councils

DGT is responsible for:

- monitoring of project
- quality control

Invitation to tender private company

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Projects – Goal

Characterize rural and urban real property geometrically, associating them with all the data declared by the owner and **harmonize with Institute of Land Registers and Finance Service**.

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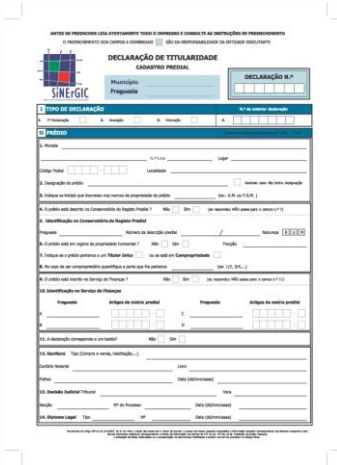
Promote Parcel Identification with all our strategic partners

Projects – Ownership declaration



Data required:

- Name of owner
- Tax Identification number
- Usual residence
- Description of the land registry
- Article number (Finances)
- Location of the property
- Property designation

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Projects – Demarcation

Main rules:

- According to documentation
- In the presence of confining
- With proper demarcation in rural and urban real property

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Projects - Cadastral Data Acquisition Process

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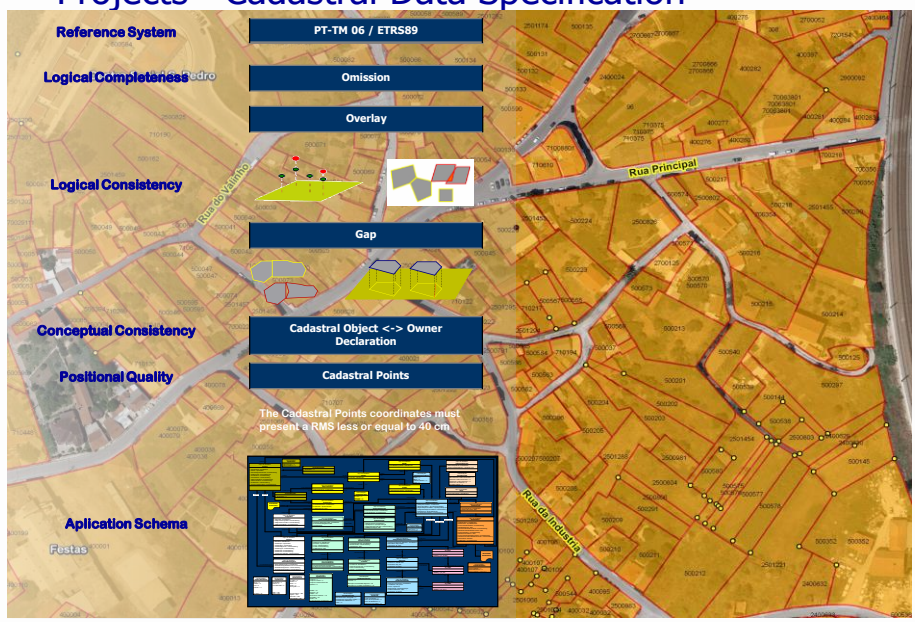
Projects - Cadastral Data Specification



Projects – Loulé

MINISTÉRIO DA AGRICULTURA, DO MAR, DO AMBIENTE E DO ORDENAMENTO DO TERRITÓRIO
DIREÇÃO-GERAL DO TERRITÓRIO
NOTICE

REAL ESTATE CADASTRE IN THE MUNICIPALITY OF LOULÉ

JULY 1, 2013 TO SEPTEMBER 28, 2014

Mark out your property — Declare your ownership

On **July 1, 2013** began the **cadastral operations in the geographical area of the municipality of Loulé**. The properties located in this geographical area should be demarcated and declared by completing the "Ownership Declaration" (Declaração de Titularidade).

The Ownership Declarations can be obtained and delivered to the Service Offices, installed in the following locations:

ALMANCIL - Fire Station	QUERENÇA - Parish Council
ALTE - Parish Council	SALIR - Parish Council
AMEIXIAL - Parish Council	SALIR - Association of Forest Producers of Serra do Caldeirão
BENAFIM - Parish Council	LOULÉ (S. CLEMENTE) - Parish Council
BOLIQUEIME - Parish Council	LOULÉ (S. SEBASTIÃO) - Parish Council
QUARTERA - Fire Station of Loulé - Quarterra Division	TÔR - Parish Council

In Service Offices are also available instructions for the demarcation of the properties and mapping support that will allow the approximate location of the property.

All documents related to this operation can be obtained through the address http://www.dgterritorio.pt, including the Ownership Declarations and respective filling instructions.

Any questions concerning the cadastral operations in the municipality of Loulé can be submitted through the email address sinergic@dgterritorio.pt, the page http://www.dgterritorio.pt, the phone (+351) 21 381 96 00, the fax (+351) 21 381 96 93 or in your local Service Office.

The information collected will be subject to a public consultation.

CALENDAR:

ANNOUNCEMENT OF THE OPERATION	ACQUISITION OF CADASTRAL DATA	PUBLIC CONSULTATION
July 1 to august 28, 2013	august 30, 2013 to june 16, 2014	july 21 to september 28, 2014

DEADLINE FOR SUBMISSION OF OWNERSHIP DECLARATIONS: June 16, 2014

EXECUTANT ENTITY: Business Consortium Sulcad

Implementation of land registration in the municipality of Loulé began 2013, july 1

Awareness actions have been done in all parishes

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Projects – Loulé

The awareness actions took place as planned with more people in rural areas and with less people in urban areas.

Main issues :

- How to fill ownership declaration
- How to present the data declared according to the physical reality of the real properties
- How to find some of the real properties
- How to get to the rural properties

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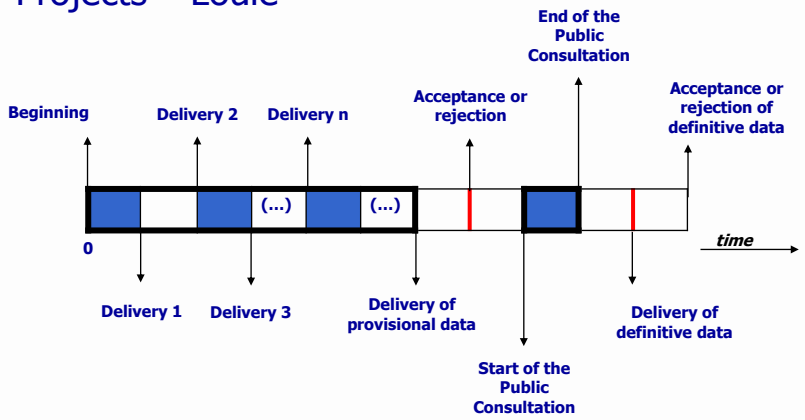
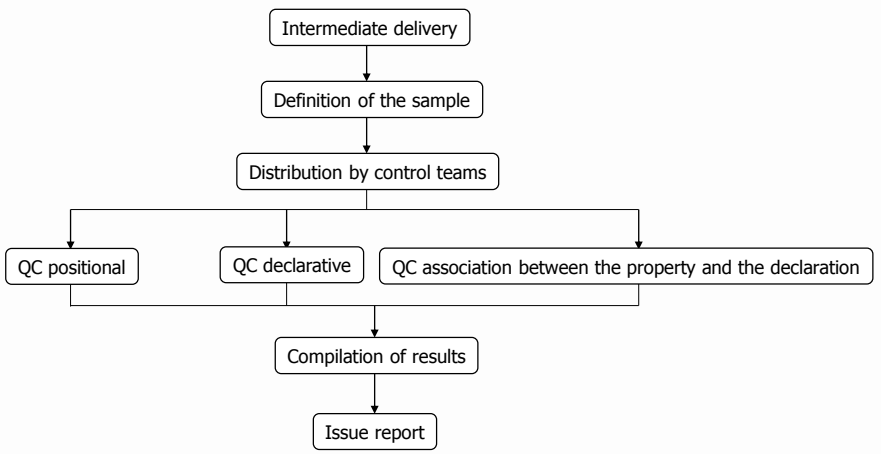
Projects – Loulé



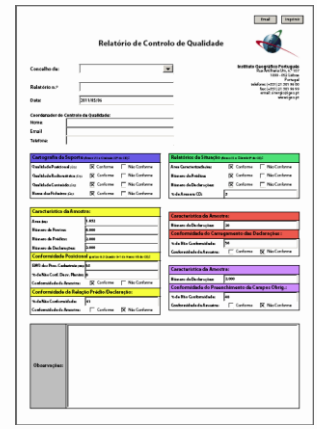
Projects – Loulé / Methodology QC



Projects – Loulé / Methodology QC

Issue report of QC and Supervision:

- Awareness of the company's mistakes
- Decision support for the acceptance or rejection of the data collected in the operations of running the cadastre



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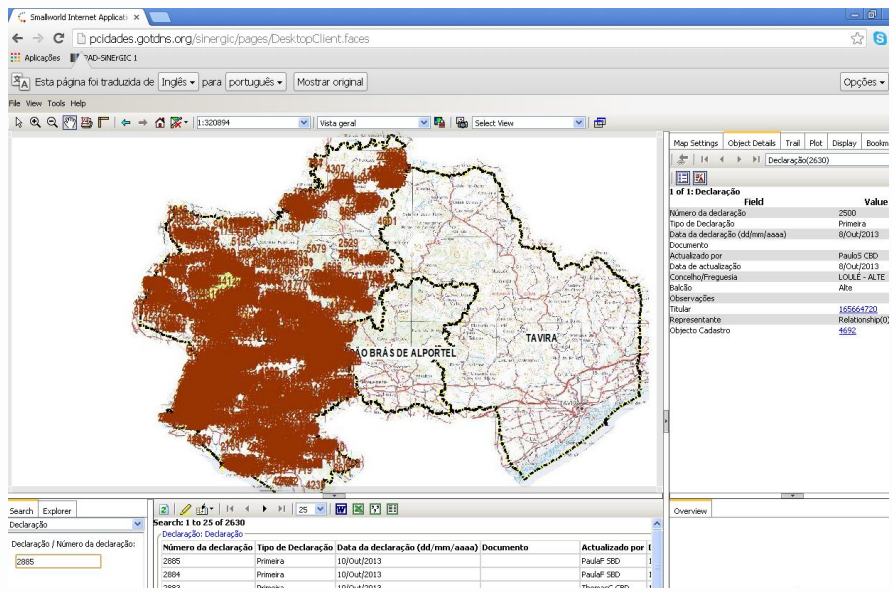
Projects – Loulé / Application of private company



Projects – Loulé / in conclusion

Main difficulties of the projets are:

- orography (high mountains)
- population decrease (desertification)

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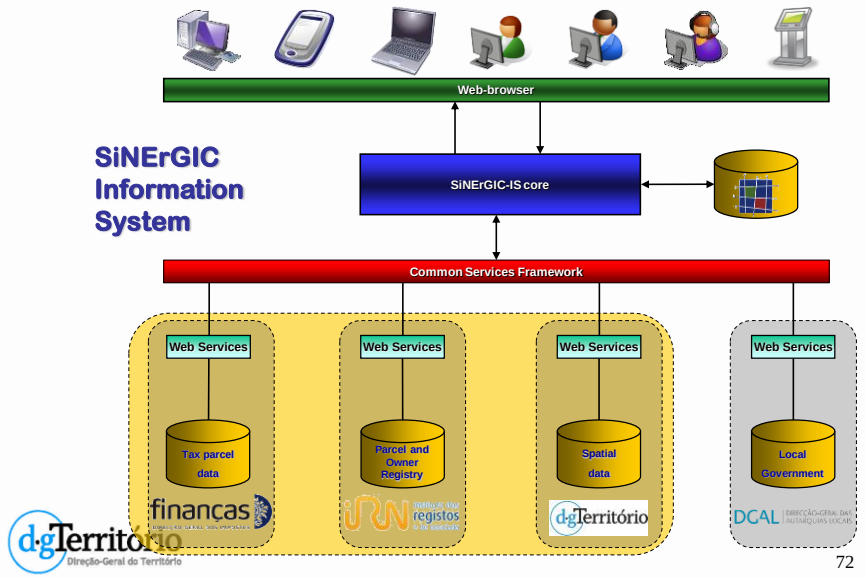
Data infrastructure



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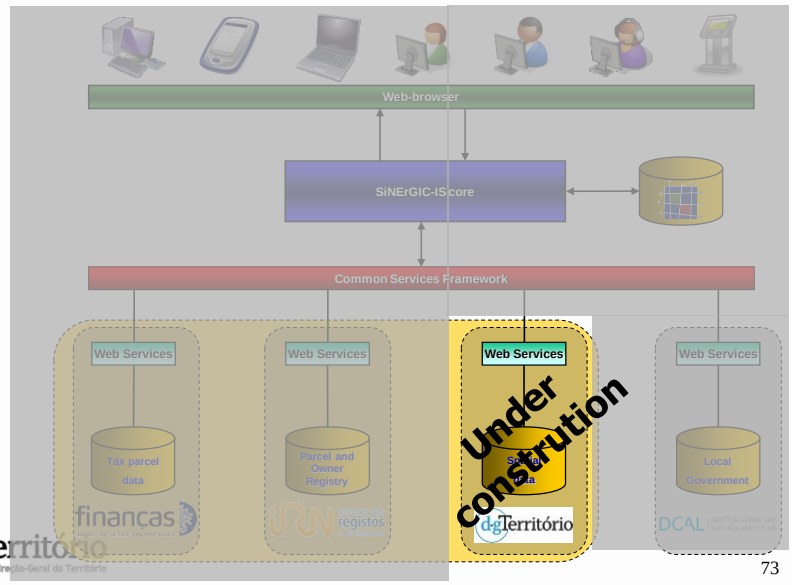
Data infrastructure



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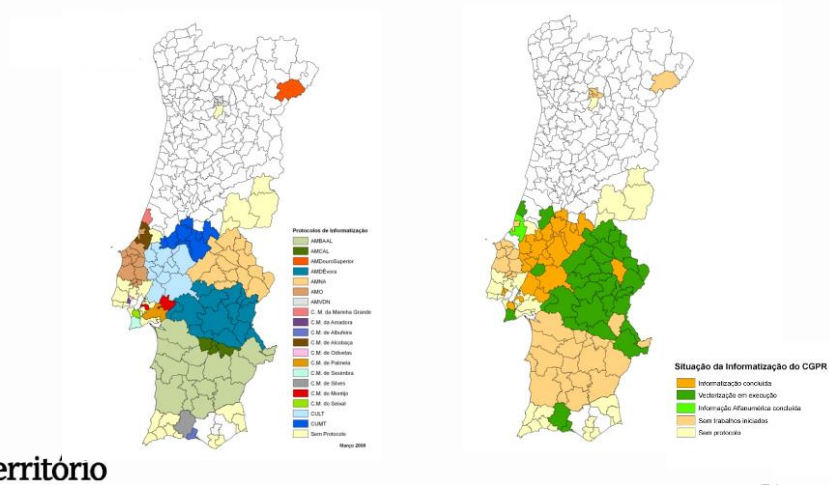
Computerization project of the Geometric Registration Rural Property



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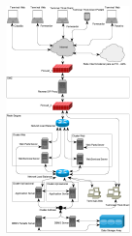
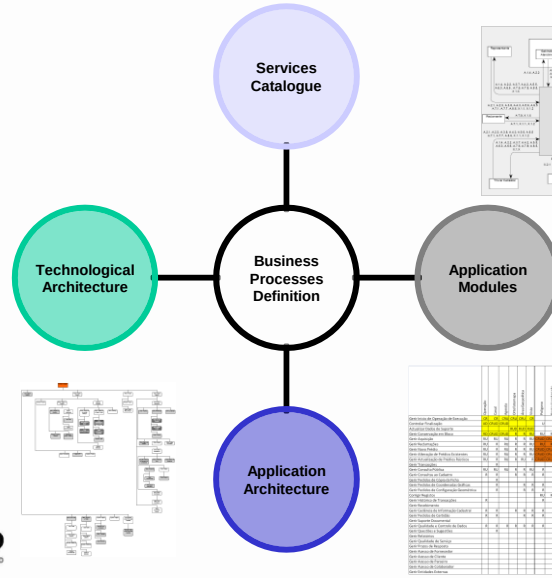
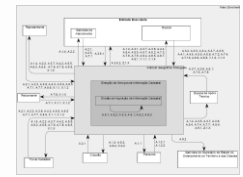
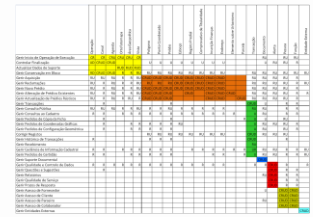
SiNErGIC Information System - Conception







Business Process Management



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Future Actions

Cadastre Business Model Definition

Cadastre Acquisition Operations Nation-wide

IS implementation completed

New challenges

New demands

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