

Fifth Plenary Meeting of the European Region of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM: Europe)

Brussels, Belgium, 7th June 2018



ITALIAN CADASTRAL SYSTEM

Innovative ways in the management and use of the Italian Cadastral Cartography

> Eng. Franco MAGGIO Central Director

for Cadastral, Cartographic and Land Registration Services





ITALIAN CADASTRAL SYSTEM

Innovative ways in the management and use of the Italian Cadastral Cartography

Agenda

Structure and Contents of the Italian Cadastral System



The Italian Cadastral Cartography











ITALIAN CADASTRAL SYSTEM

Innovative ways in the management and use of the Italian Cadastral Cartography

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Structure and Contents of the Italian Cadastral System



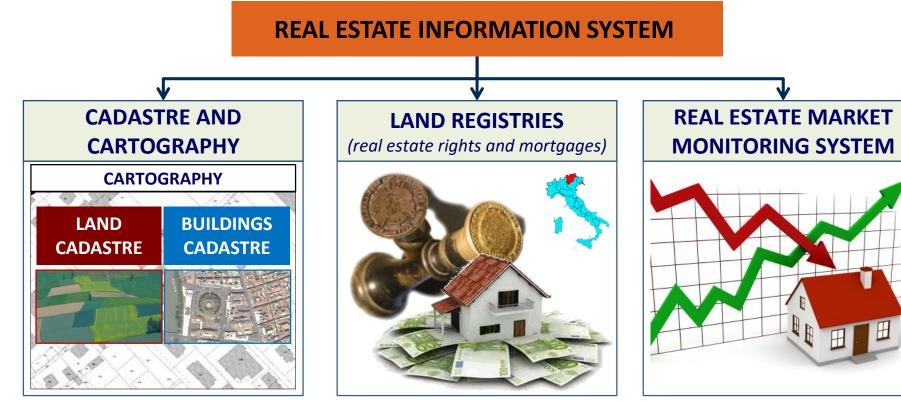












It shows the technical characteristics of the objects and the holders of real estate rights (not for legal evidence).

It gives the land and R.E. units values used for taxation purposes

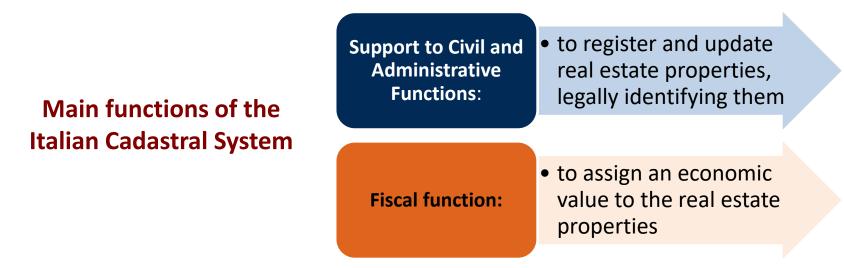
By registering real estate deeds, it manages the information about the transfer of real estate rights and about the mortgage enrolments

It collects and processes information from real estate market and continuously shows the real estate values trend





• The Italian Cadastral System, managed by the "Agenzia delle Entrate", is the inventory of all the Real Estate Properties (both public and private) in the national territory



• The cadastral system guarantees the **historical traceability of any data change** related both to the rural parcels and urban units, since their first cadastral registration

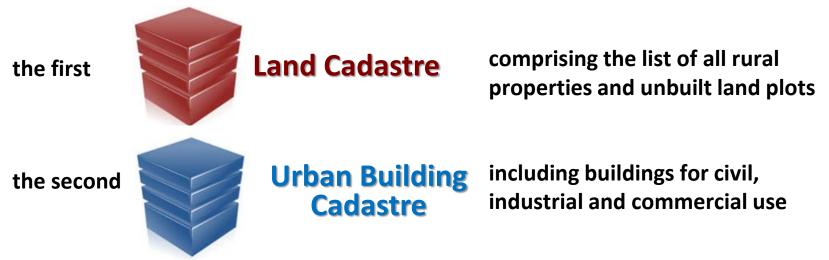




ORIGIN OF THE ITALIAN CADASTRAL SYSTEM

The ITALIAN CADASTRE was implemented through

the <u>subsequent</u> establishment of <u>two distinct archives</u>:

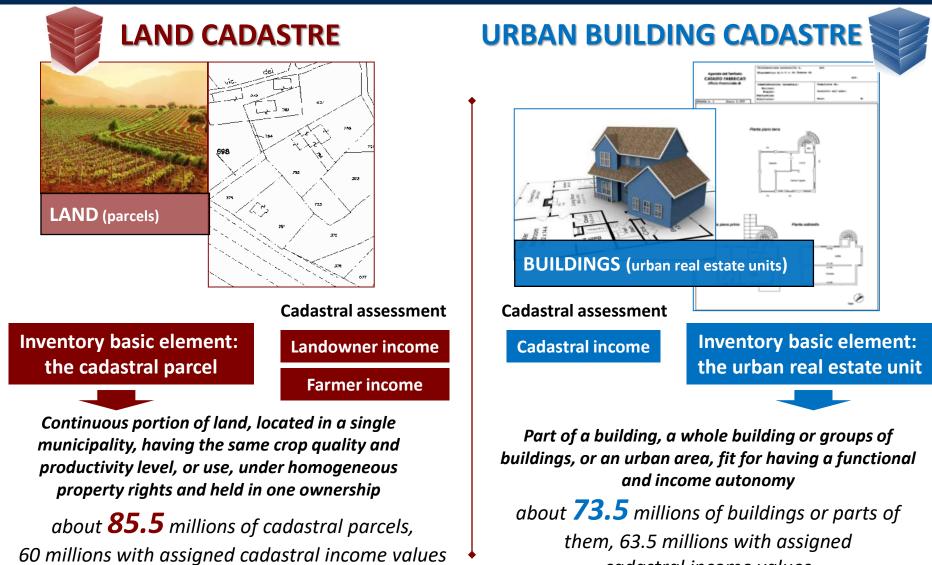


in order to:

- survey and register real properties and track their changes;
- prepare the ground for a fair real estate taxation.







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cadastral income values





LAND CADASTRE

URBAN BUILDING CADASTRE



CENSUS ARCHIVE



includes technical and descriptive data related to the rural parcels

CARTOGRAPHIC ARCHIVE



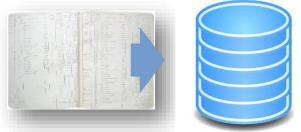
includes about **300,000 maps** in vector format

(344,000 cartographic files)

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CENSUS ARCHIVE

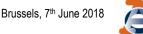


includes **technical and descriptive data** related to the **real estate urban units**

PLANS ARCHIVE



includes graphic information (plans) related to each real estate urban unit



kilometres



Knowledge of the objects: technical and graphical description

Information geo-referenced on a large scale map



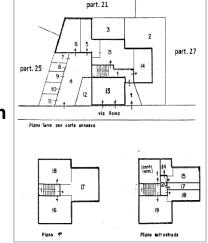


Buildings partition into independent real estate units

List of the units and related general information

N.	_			Categoria			
1	60	214	1	A/3	3		van
2	60	214	505	A/3	3	4	vani
3	60	214	3	A/3	3	0,5	vani
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6	60	214	6	A/3	3	5	vani
7	60	214	7	A/3	3	0,5	vani
8	60	214	8	A/3	3	0,5	van:
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17	60	214	17	A/3	3	0,5	van:
18	60	214	18	A/3	3	7	van:
19	60	214	19	A/3	3	0,5	van:
20	60	214	20	A/3	3	5	van:
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26	60	214	26	A/3	3	0,5	van:

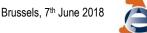




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URBAN BUILDING

CADASTRE

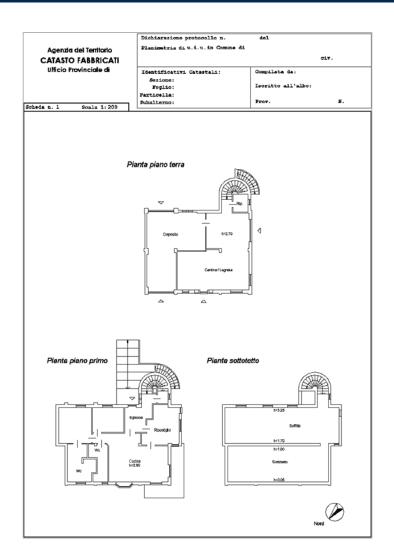






Example of REAL ESTATE URBAN PLANS

- Cadastral identification code
- ✓ Address
- Typology (permitted use)
- ✓ Class (level) of productivity
- ✓ Size (number of rooms, area or volume)
- ✓ Cadastral income
- ✓ Floor level
- ✓ Other technical data (since 1985)
- ✓ Owner personal data
- ✓ Type of right and share







THE UPDATING SYSTEM: involved players and related roles

According to Italian cadastral rules, **owners are obliged to declare** to the «Agenzia delle Entrate»:

- the construction of new Real Estate Urban units and any change subsequently brought to them
- division of land parcels or constructions on them

Due to the technical complexity of the information to be declared, the updating document can be submitted to the "Agenzia delle Entrate" only by private chartered surveyors, on behalf of the owners

The landowners are also **obliged to declare crop changes** on their land parcels



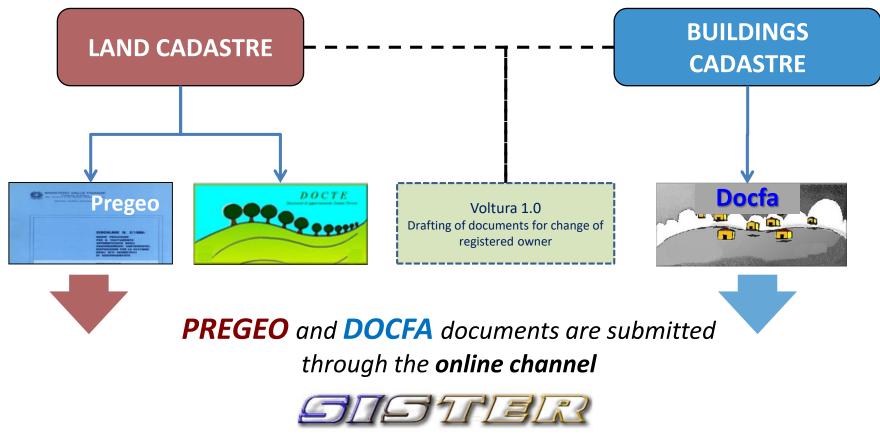
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THE UPDATING SYSTEM: IT applications

Updating services: IT applications



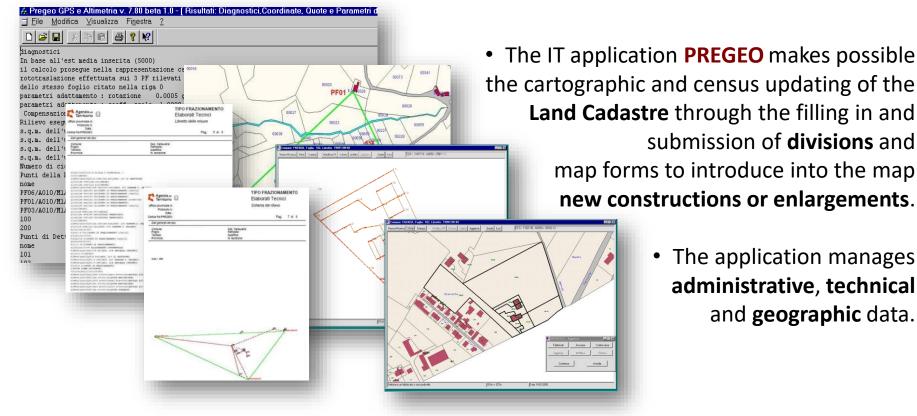
Since June 2015 the use of online channel is mandatory for the chartered surveyors

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THE UPDATING SYSTEM - PREGEO is a software application for the updating of land cadastre



More than **0.4 million** documents registered each YEAR

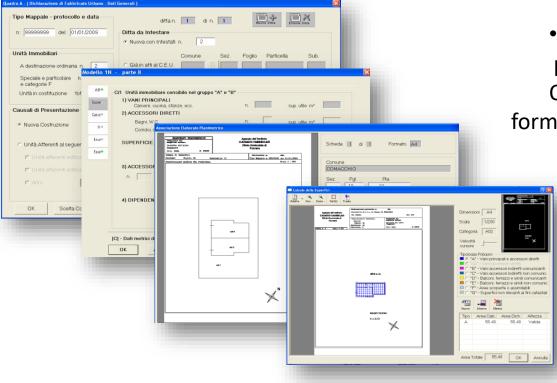
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THE UPDATING SYSTEM - DOCFA is a software application for the updating of buildings cadastre



 The IT application DOCFA makes possible to fill in and submit to the Offices of Agenzia delle Entrate the form "Declaration of urban real estate property".
 This form is meant to submit

to Cadastre declarations of **new constructions** and **changes**.

 The application manages administrative, technical and graphic data.

More than **1.4 million** urban units registered each YEAR

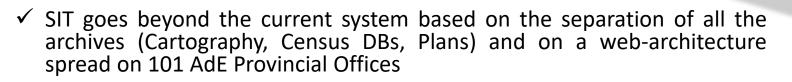
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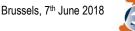


SIT - INTEGRATED SYSTEM OF TERRITORY Z Index

- ✓ SIT is an evolution of the current cadastral cartographic system, a modern web GIS
- ✓ SIT is part of a wider project for the implementation of the Integrated Real Estate Register (A.I.I.). The data managed historically in different systems are integrated in this system
- In the Integrated Real Estate Register the whole AdE information asset is unified into one national system whose elements are conveniently integrated each other



✓ SIT allows the geo-based data surfing and search of all the information managed by the AdE, the spatial analysis and the integration with other data external to the cadastral domain





Layer

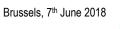




SIT – SURFING AND SEARCH

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SIT – SURFING AND SEARCH

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DETAILED DATA ON THE REAL ESTATE URBAN UNITS INCLUDED IN EACH BUILDING

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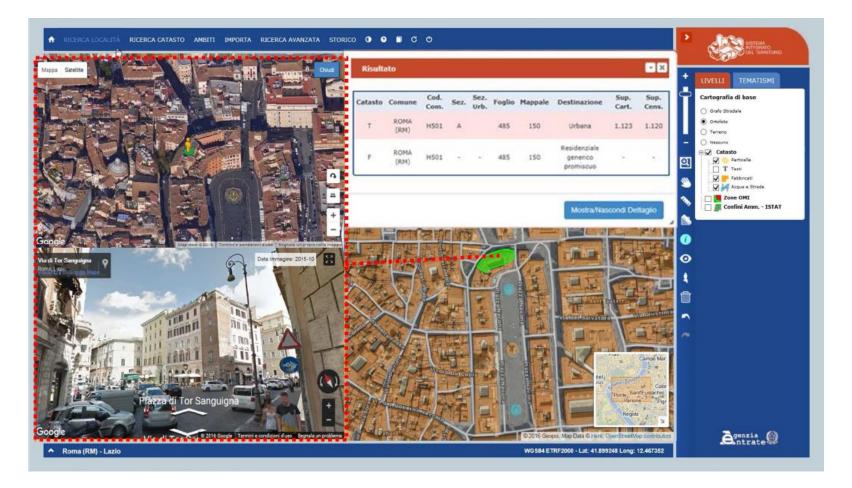


Innovative ways in the management and use of the Italian Cadastral Cartography





EXTERNAL DATA INTEGRATED IN THE " SIT "



Brussels, 7th June 2018





INFORMATION, SEARCH AND DOWNLOAD SERVICES: Online Channel

ACCESS THROUGH «SISTER» PORTAL



•Only for subjects enabled to the online submission of cadastral updating documents

Since 2014 it is possible to buy - through the «*Sister*» channel - the **descriptive documents** in a format **suitable to be processed** and the **map sheets.** This will be especially helpful for public bodies and private professionals, which will have their operational range increased

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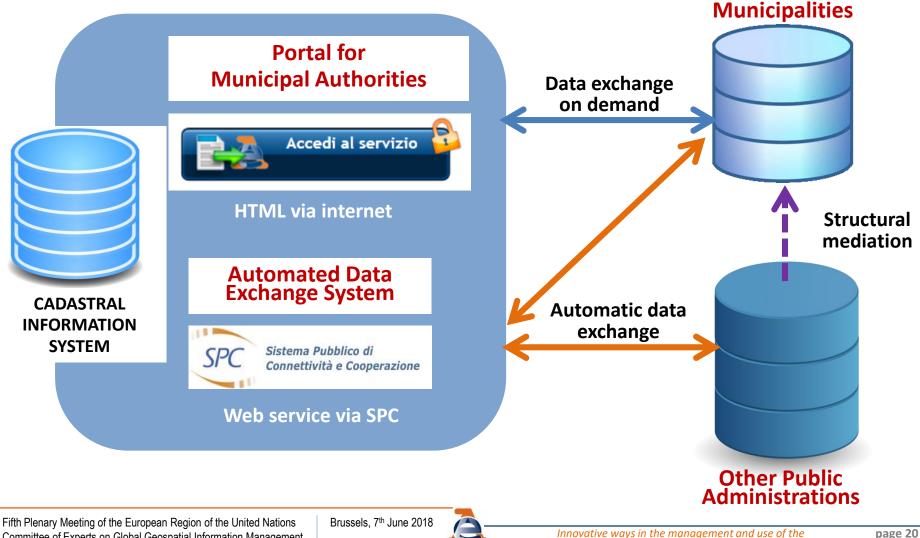




Committee of Experts on Global Geospatial Information Management

1. Structure and Contents of the Italian Cadastral System

DATA SHARING AMONG AdE - Municipalities and other Public Administration



page 20

Italian Cadastral Cartography





ITALIAN CADASTRAL SYSTEM

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Structure and Contents of the Italian Cadastral System

The Italian Cadastral Cartography

Interoperability services concerning Cadastral Cartography



Brussels, 7th June 2018









Original paper map sheet



Map in "vector" format

The cadastral cartography, today wholly available in vector format, is managed through a single GIS application, called WEGIS (Web Enable Gis), throughout the national territory, which operates in a web environment.

The above mentioned application software's functions make it possible to query cartographic databases, provide users (technical professionals, citizens) with abstracts of cadastral vector maps upon request, update cadastral cartography in vector format either through its digitalization functions or by supplementing updating documents submitted by technical professionals









CADASTRAL CARTOGRAPHY in the context of the geographical data

	National authorities providing geographical data in Italy								
09	1	I.G.M.	Military Geographic Institute	Small scale cartography	1:25.000 - 1:1.000.000	odies			
68/19	2	I.I.M.	Navy Hydrographic Institute	Maritime cartography		ary b			
n°6	3	C.I.G.A.	Air Force	Airport obstacles map		<u>Z</u>			
Law	4	A.d.E.	Cadastre	Large scale map	1:2.000				
-	5	I.S.P.R.A.	Geologic Service	Geologic small scale cartography	1:25.000				

Furthermore

- Regions: provide medium scale cartography (1:5.000 1:10.000)
- A.G.E.A.: provides aerial images (GSD 20 cm) updating every 3 years over 1/3 national territory

GSD: Ground Sampling Distance







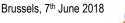
HISTORICAL INFORMATION: the system before the unification of Italy (1861)

A VERY FRAGMENTED AND DISOMOGENEOUS SITUATION

22 DIFFERENT CADASTRAL SYSTEMS

8 based on geometrical data14 based on descriptive data

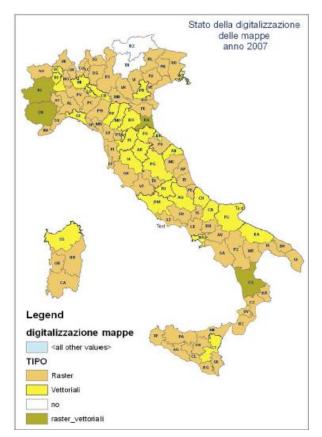






THE COMPUTERIZATION OF CADASTRAL CARTOGRAPHY

- Starting from 80's processes and rules for the digitalization of the maps were realized; precisely the digitalization of transparent plastic templates with prior updating from the paper copies
- At the end of 90's the situation was as shown in the picture beside: 30 provincial offices with vector format maps, 67 with paper maps, 4 with a mixed situation
- In 2000 the Italian Cadastre opted for using the paper copies in raster format digitized by A.G.E.A. that had used 100 dpi resolution roller scanner
- From 2000 to 2007 the cartographic system was managed in mixed format : totally vector in some offices, raster/vector in other ones
- In the years 2007/2008, for the operations related to *«Buildings not declared to the Cadastre"* operations, the digitalization of the maps, using paper copies raster images provided by A.G.E.A., was concluded



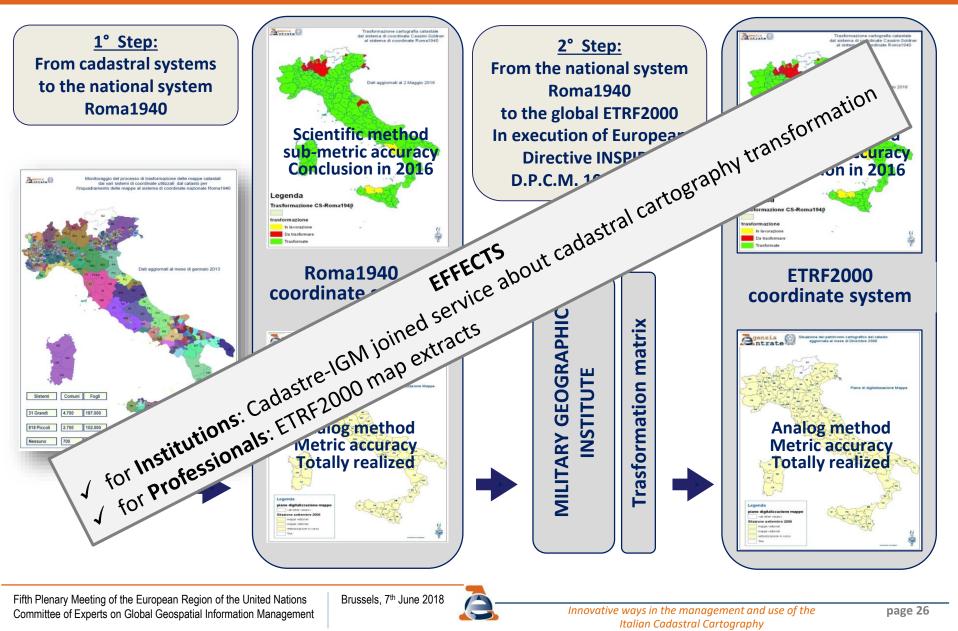




THE TRANSFORMATION of cadastral cartography in other national and global reference systems

UN-GGIM: EUROPE LUNITED NATIONS COMMITTEE OF EXPERTS ON

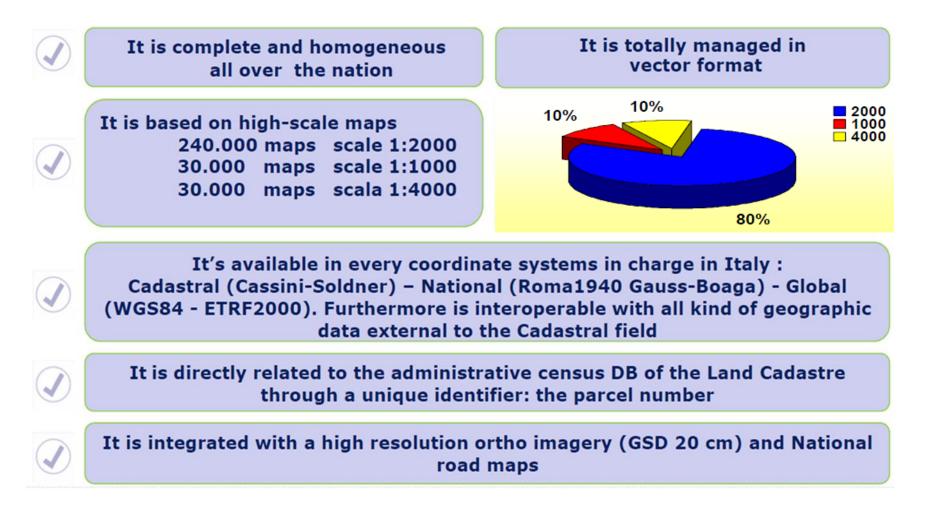
2. The Italian Cadastral Cartography

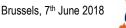






THE CARTOGRAPHIC SYSTEM OF ITALIAN CADASTRE TODAY



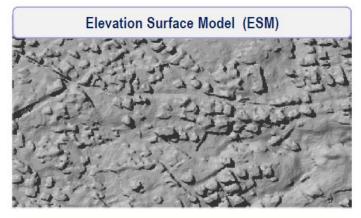




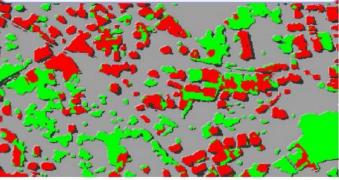


STRATEGICAL PROJECT BASED ON CADASTRAL CARTOGRAPHY FOR THE FIGHT AGAINST TAX EVASION

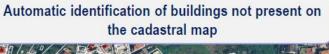
Automatic identification of buildings not declared to cadastre













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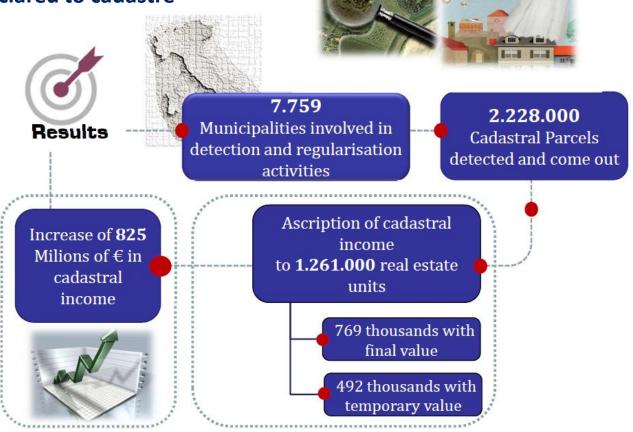




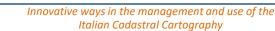


STRATEGICAL PROJECT BASED ON CADASTRAL CARTOGRAPHY FOR THE FIGHT AGAINST TAX EVASION

Automatic identification of buildings not declared to cadastre



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essun immobile o visibile al Catasti





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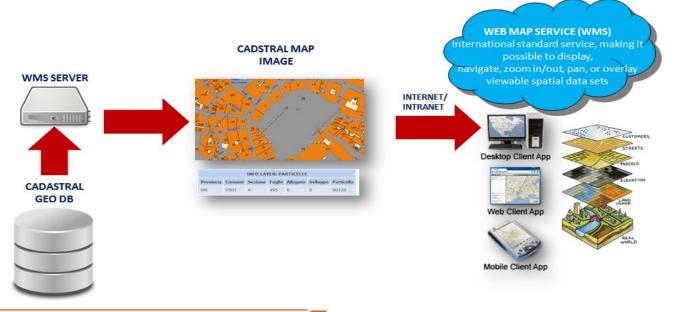


Evolution of the Italian Cadastral Cartographic System: WMS Service

Disposition of the General Director of AdE 23th November 2017 n. 271542



Implementation of the Italian Legislative Decree 27th January 2010 n. 32, concerning the establishment of an Infrastructure for Spatial Information in the European Community (INSPIRE). View services of parcels data sets.



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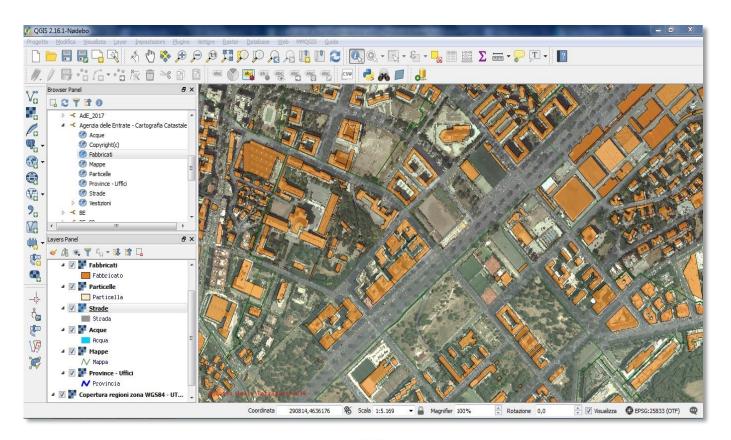




INTEGRATED VIEW

Cadastral Maps (WMS Service – Agenzia delle Entrate)

Ortho-Images (WMS Services - Ministry of the Environment and Protection of Land and Sea)



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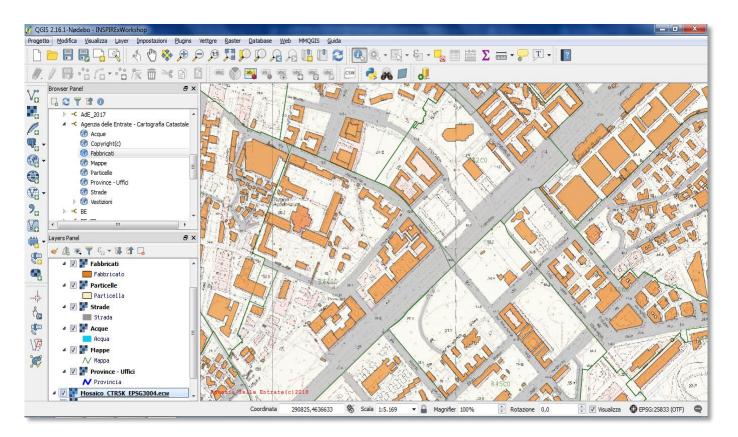




INTEGRATED VIEW

Cadastral Maps (WMS Service – Agenzia delle Entrate)

Regional Technical Maps (WMS Services – Lazio Region)



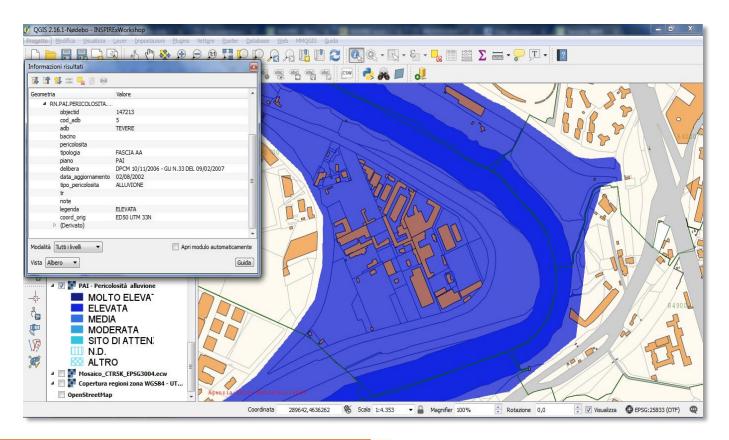




INTEGRATED VIEW

Cadastral Maps (WMS Service – Agenzia delle Entrate)

Flood dangerousness Maps (WMS Services - Ministry of the Environment and Protection of Land and Sea)







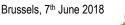
SEARCH AND SURFING SERVICES REGARDING CADASTRAL CARTOGRAPHY - WMS

Possibility of using the WMS service through mobile devices with satellite positioning on the cadastral map



Link to copy in the GIS software https://wms.cartografia.agenziaentrate.gov.it/inspire/wms /ows01.php

The WMS service is available for the whole national territory, except for the municipalities in which the cadastre is managed, by delegation of the State, by the autonomous provinces of Trento and Bolzano





0,00 km (317*)





WMS SERVICES OF OTHER ADMINISTRATIONS IN THE "*SIT*" Thematic representation of damages caused by the earthquake

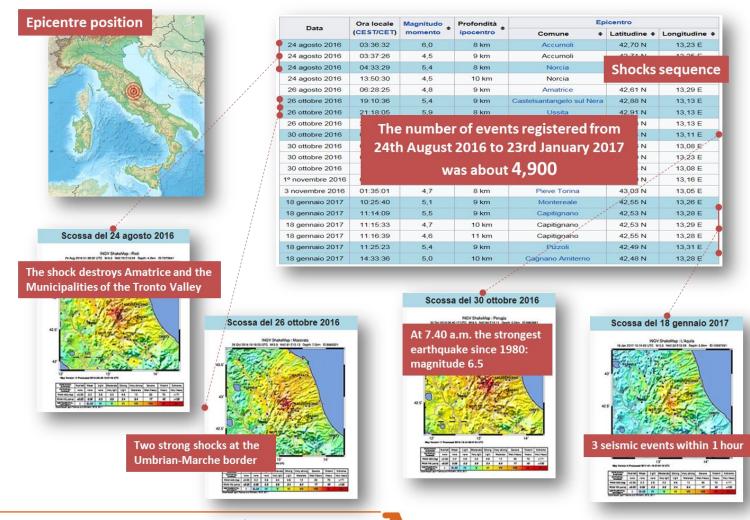
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Brussels, 7th June 2018





WMS SERVICES OF OTHER ADMINISTRATIONS IN THE "*SIT*" The damages caused by the earthquake in Central Italy – The 2016 and 2017



Fifth Plenary Meeting of the European Region of the United Nations Committee of Experts on Global Geospatial Information Management Brussels, 7th June 2018

Innovative ways in the management and use of the Italian Cadastral Cartography





WMS SERVICES OF OTHER ADMINISTRATIONS IN THE "SIT"

The damages caused by the earthquake in Central Italy – The 2016 and 2017



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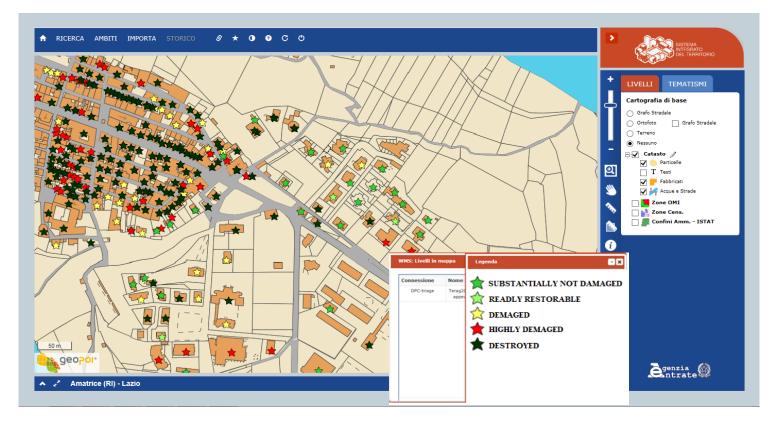


Innovative ways in the management and use of the Italian Cadastral Cartography



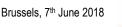
WMS SERVICES OF OTHER ADMINISTRATIONS IN THE "SIT"

Thematic representation of damages caused by the earthquake in Central Italy –The 2016 and 2017 data coming from the Civil Protection



Service used to make more efficient the AdE cadastral activities

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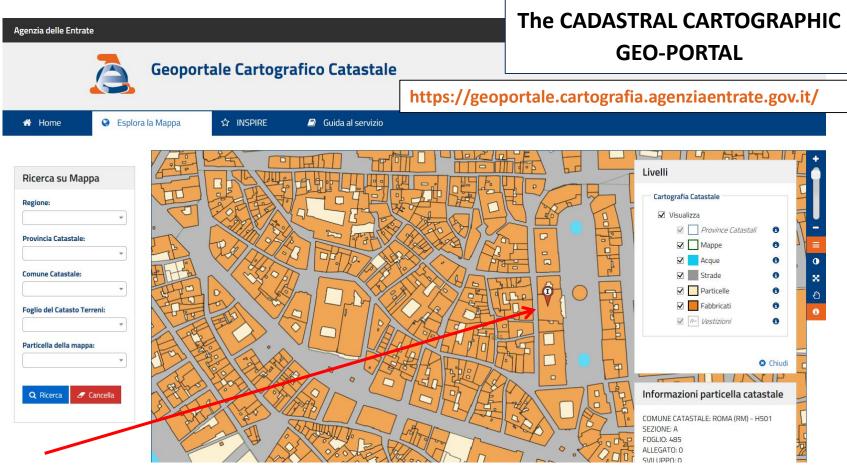
SEARCH AND SURFING SERVICES REGARDING CADASTRAL CARTOGRAPHY

Contatti e assistenza Contatti e assistenza A Home Esplora la Mappa A INSPIRE Guida al servizio Contatti e assistenza	The CADASTRAL CARTOGRAPHIC GEO-PORTAL
La guida al servizio e stata predisposta per agevol versiotanone) rescuritati divante la reacere al nanave Provincia Catastale: • Interrogazione e ricerca delle particelle sull • Interrogazione e ricerca delle particelle sull • Morne • Despiora la Mappa • INSPIRE ■ Guida al servizio	portale.cartografia.agenziaentrate.gov.it/
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<complex-block><complex-block></complex-block></complex-block>	euno del casi, poro fre precedenti, selezionando il bottone apparirà il seguente pannello



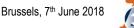


SEARCH AND SURFING SERVICES REGARDING CADASTRAL CARTOGRAPHY



The geo-portal allows, for the whole national territory*, the search of a single cadastral parcel and its view on the cadastral map (*) Except for the territory managed by the

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Eng. Franco MAGGIO

Central Director for Cadastral, Cartographic and Land Registration Services

Many thanks for your kind attention

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