

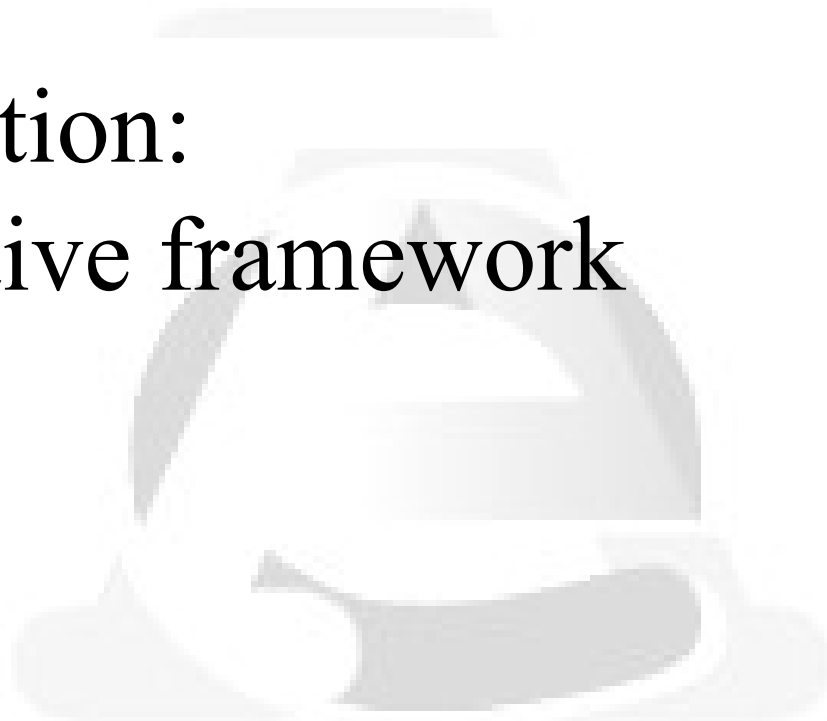
33. Fachtagung der Vermessungsverwaltungen von Croatien, Österreich, Slowenien, Sudtirol, Trentino, der Tschechischen Republik, Ungarn, Slowakei und Friaul-Julisch Venetien

Providing data from the Real Estate Cadastre (REC)

What is the correcting mechanism of incorrect data in REC like?

Paolo Daniele Viviani

Introduction: The Italian legislative framework



The Italian legislative framework

To properly address the open data topic according to the current Italian legislative framework, it is a mandatory overview of three related topics:

- Data protection;
- Public sector data interoperability
- Open data

Article 9 of decree-law no. 179/2012 defines a legislative framework that enhances access to and reuse of **Public Sector Information (PSI)** by introducing a clear definition of “open data” and a general principle of openness, by default.

Agency to Digitalize Italy [AgID] is identified as the Italian PSI enabler.

In this context, AgID publishes three key documents annually about PSI:

- an Agenda including the national policies and strategies
- a set of Guidelines to support the public administration in the implementation of the strategies included in the Agenda
- a Report assessing the status of development of PSI in Italy with respect to the strategies defined in the Agenda

In the Italian regulatory scenario **interoperability** plays a crucial role for both Public Administration (PA) and the ICT market.

It is a pillar concept of the legal interoperability framework called:

Digital Administration Code (CAD)

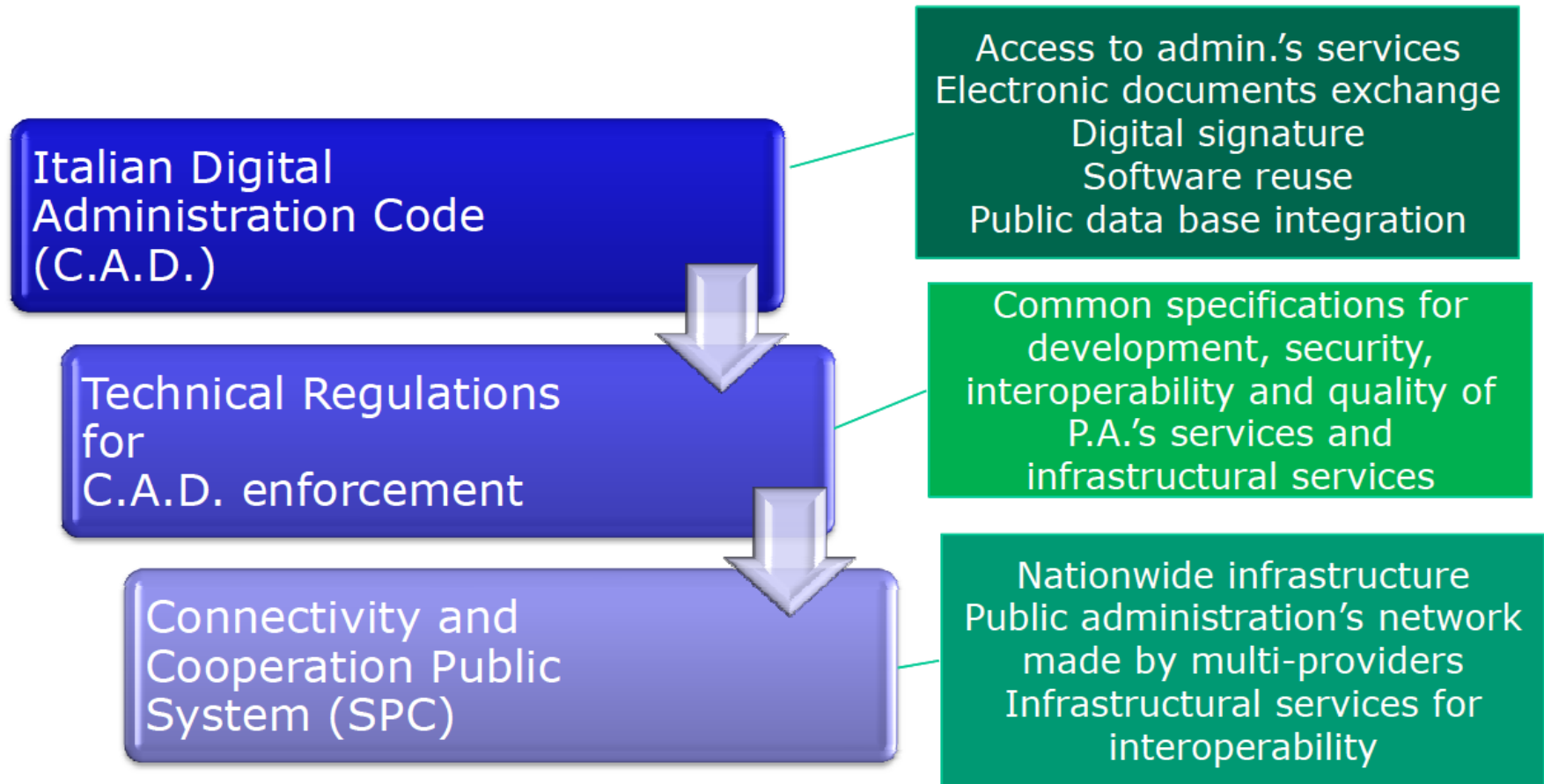
The legal framework is enforced by the Italian ICT interoperability framework SPC -

*Sistema Pubblico di Connettività e Cooperazione
(Public System of Connectivity and Cooperation)*

It consists of two principal building blocks:

the application services and the
national interoperability infrastructures

The national interoperability infrastructures include **the catalogue of ontologies and metadata** as well as a number of **base registers** (e.g., Public Administration Registry, National Catalogue of Geographical Metadata)



Right to privacy

- The rights of personal status include
 - Privacy or the *right to be left alone*, personal identity, personal data protection
- Right to privacy:
 1. protects intimate, private and family life from interference from others
 2. differs from protection of honor, dignity, reputation and image
 3. must balance with the right of community information (when leading public interest)

Information and Personal Data

Information = economic and strategic relevance

Information includes personal data

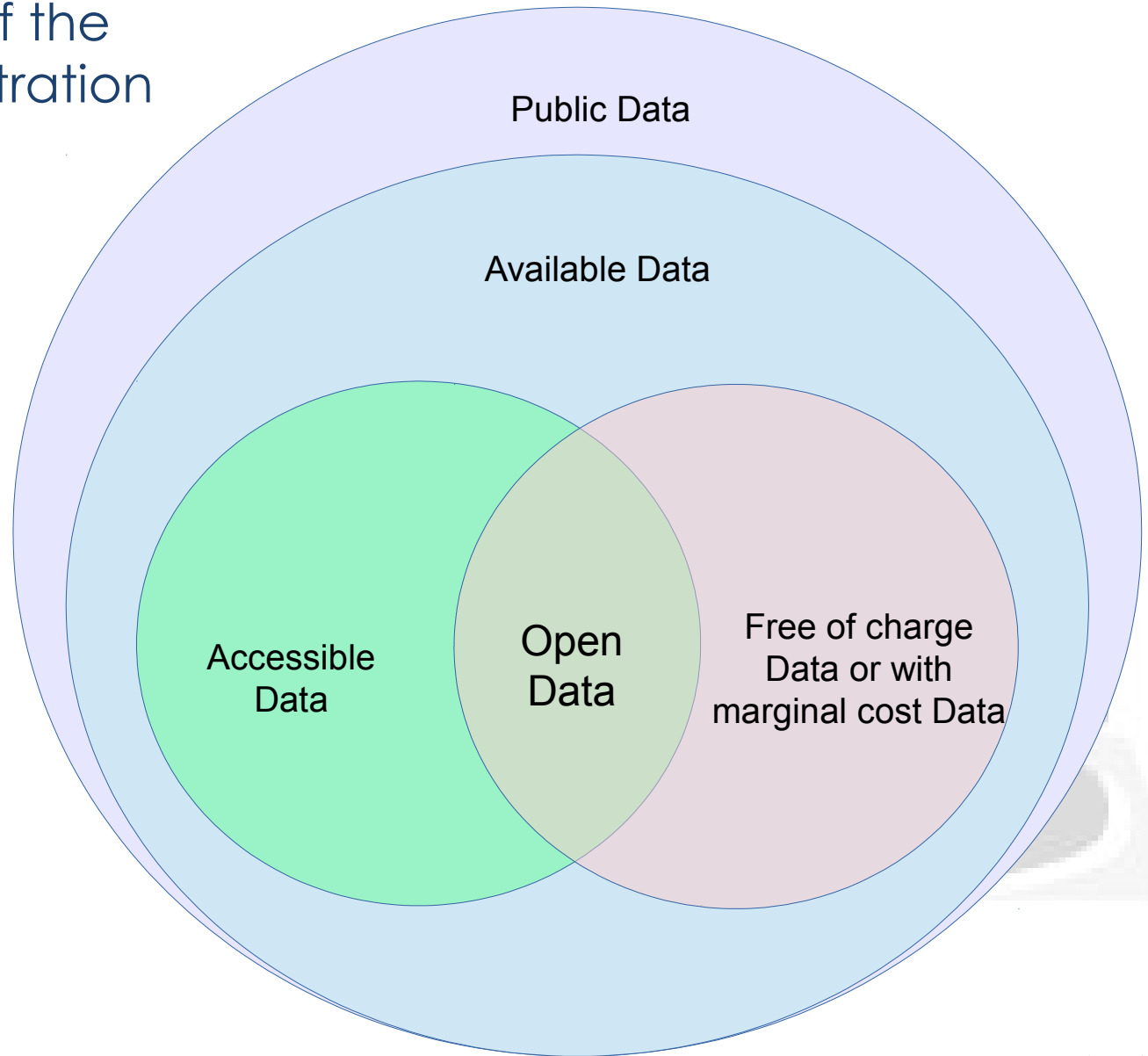
Relevance of personal data processing

Need for a high level of protection for:

- fundamental rights and freedoms, as well as for dignity, particularly with regard to confidentiality, personal identity;
- right to personal data protection



Data types of the Public Administration

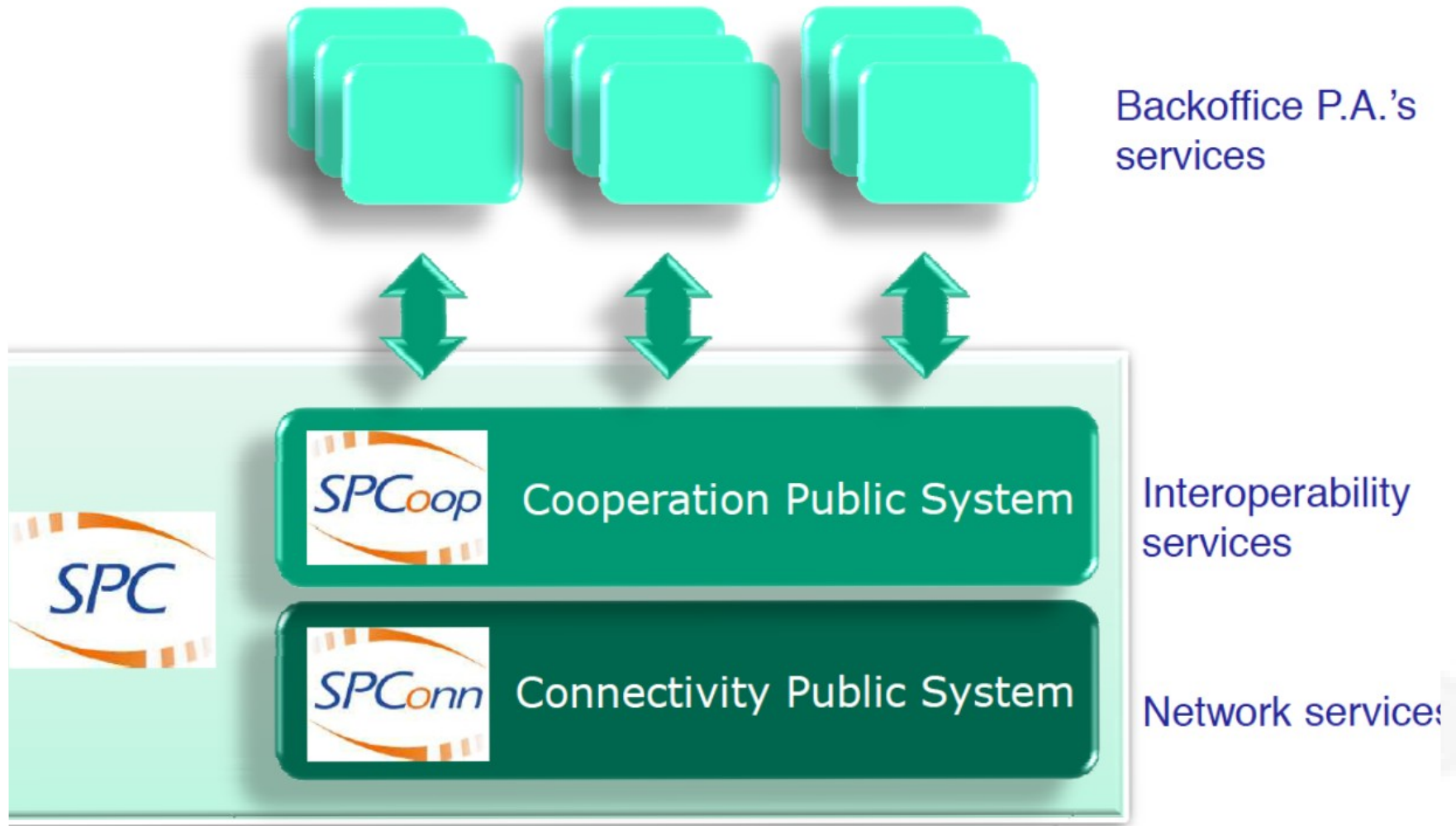


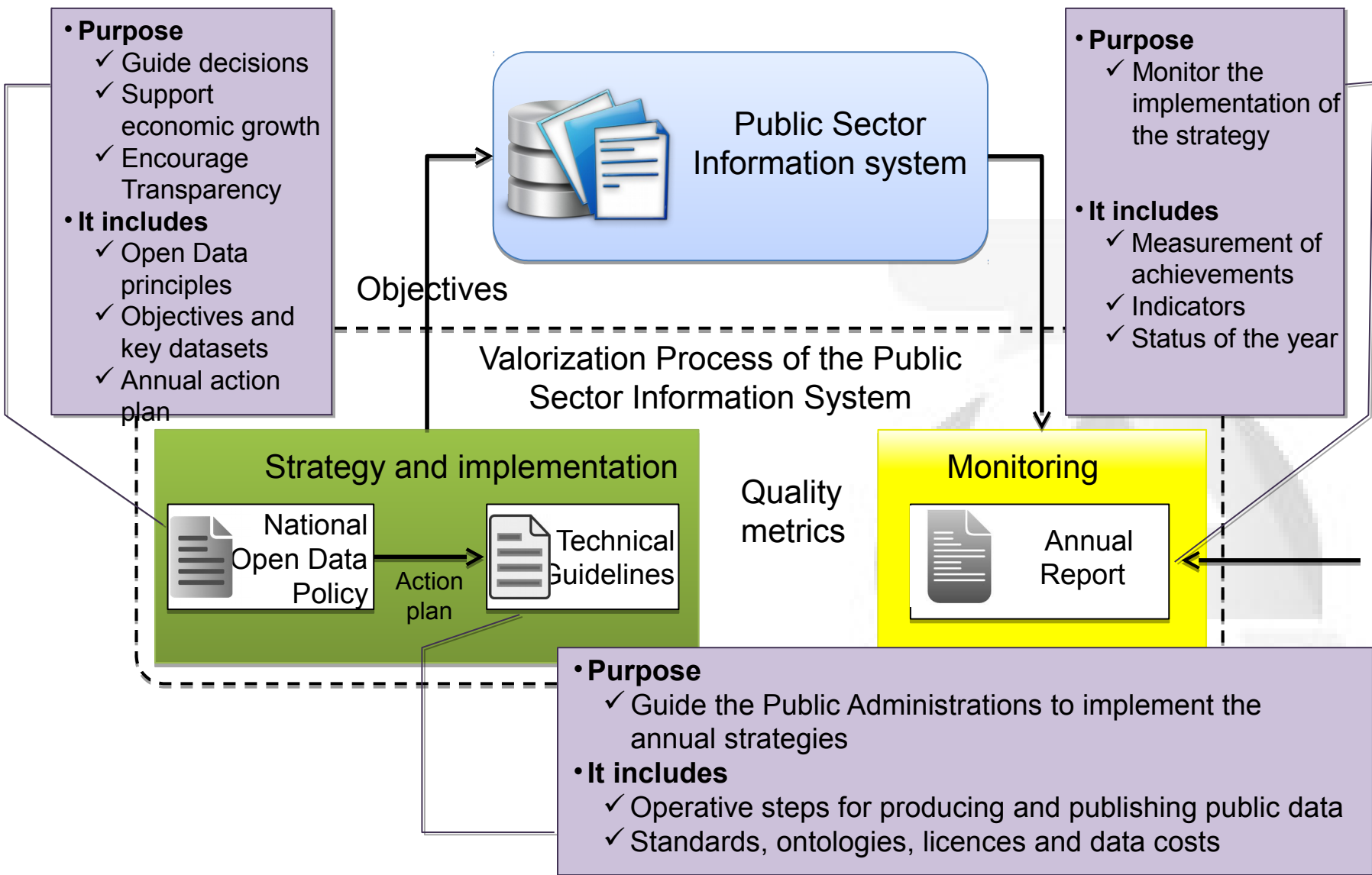
Open data: what are they?

- The evaluation is based on five main criteria:
 - “principles”,
 - “governance”,
 - “conceptual model”,
 - “interoperability agreements”
 - “interoperability levels”.



SPC as a stack of services





Providing data from the Real Estate Cadastre (REC)



REAL ESTATE INFORMATION SYSTEM

CADASTRE AND CARTOGRAPHY

CARTOGRAPHY

LAND
CADASTRE

BUILDING
CADASTRE



It shows the technical characteristics of the objects and the holders of real estate rights (not for legal evidence). It gives the values used for taxation purposes.

LAND REGISTRATION *(real estate rights and mortgages)*



By registering real estate deeds, it manages the information about the transfer of real estate rights and about the mortgages enrolment.
Not in Trento, Südtirol, Trieste, Gorizia and some municipalities of Udine and Belluno

REAL ESTATE MARKET OBSERVATORY



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



"DOCFA"
UPDATING DOCUMENTS
(Buildings Cadastre)



100%



100%



"PREGEO"
UPDATING DOCUMENTS
(Land Cadastre)

Mandatory Online Submission (by June 2015)

Achievable thanks to the cooperation of the Chartered Professional Organizations



Digital Preservation

- "WORM" SERVER (*Write Once Read Many*)
- "PDF/A" DOCUMENTS (*Portable Document Format/Archiving*)
(by May 2016)



CHANNEL TO ACCESS CADASTRAL DATA

- Provincial Office
(for all users) 25% of all access



- Agency Internet Site
(for all users)



- Fisco on line
(for Owners and Professionals)

www.agenziaentrate.gov.it



FISCOonline

- Telematic System "Sister" <http://telematici.agenziaentrate.gov.it>
(for Professionals – Licensed Surveyors, Notaries and Public Administrations)

- Municipalities Internet Portal
(only for Municipalities)



ACCESS THROUGH THE AGENCY WEB SITE

www.agenziaentrate.gov.it

Services without registration



OVER THE WHOLE NATIONAL TERRITORY

Free of charge for all users

Selezione Ufficio provinciale

Ufficio provinciale di: ROMA

Applica

- RAGUSA
- RAVENNA
- REGGIO CALABRIA
- REGGIO EMILIA
- RIETI
- RIMINI
- ROMA**
- ROVIGO
- SALERNO
- SASSARI
- SAVONA
- SIENA
- SIRACUSA

ONLY THROUGH CADASTRAL IDENTIFIER

Ufficio provinciale di: ROMA

Visura per cittadino

Catasto: Fabbricati Comune: ROMA scegli la sezione Sezione:

Sezione urbana: Foglio: Particella: Subalterno:

Ricerca Pulisci Indietro

Ufficio provinciale di: ROMA

Dati della ricerca

Catasto: **Fabbricati**
 Comune: **ROMA** Codice: **H501**
 Foglio: **28** Particella: **27** Subalterno: **38**

Elenco Immobili

Foglio	Particella	Sub	Indirizzo	Zona cens	Categoria	Classe	Consistenza	Rendita
28	27	38	ROMA VIA LENZI , 28 Piano 5 int. 10	6	A/3	2	4 vani	Euro:568,10 L.1.100.000

SEARCH RESULT
simplified document for fiscal duties



ACCESS THROUGH THE AGENCY WEB SITE

www.agenziaentrate.gov.it



Services without registration

Free of charge for all users

- Access Database
- Land and building cadastral income listings
- Online corrections to cadastral data (Contact Center)
- Search for undeclared buildings - Search particles
- Research *fiducial points* for *cartographic monography* (Mon)
- Cadastral practice inquiries
- Cadastral service booking appointments
- Use changes - Search particles

ACCESS THROUGH THE «FISCO ON LINE» SERVICE

<http://telematici.agenziaentrate.gov.it>



SEARCH BY FISCAL CODE

Servizi Catastali

Ricerca Immobili per codice fiscale

Scelta provincia

Provincia:

Tipo soggetto

Soggetto:

SERVICE ENABLING
through registration and issuing of
PINCODE and PASSWORD

SEARCH RESULT

Riepilogo

Data: 21/11/2007 12:57:59
Provincia: ROMA
Persona fisica
Ult.Aggiornamento: 20/11/2007
Comune: ROMA
Codice fiscale: TRGNTN69E19E634G
Catasto: Fabbricati

Titolarità	Sezione	Foglio o Tipo	Particella o Numero	Sub. o Anno	Indirizzo	Zona	Cat.	CL	Consist.	Rendita
Proprietà per 1/2	28	27	39		VIA LENZI nr. 32 sc.O piano 2 int.3	6	A/3	2	4 vani	Euro:568,10 L.1.100.000
Proprietà per 1/2	28	27	55		VIA LENZI nr. SC lotto B piano S1 int.128	6	C/2	7	5 mq	Euro:14,72 L.28.500

INTEGRATED WITH OWNERSHIP DATA

Through the «Fisco on line» service, the general public can search and view **free of charge**, information related to individual properties, by means of:

- ✓ **CADASTRAL DESCRIPTIVE DOCUMENTS** (filed by subject or object)
- ✓ **MAP** with land parcels
- ✓ Building **PLAN**
- ✓ **LAND REGISTRY DESCRIPTIVE DOCUMENTS**



ACCESS THROUGH «SISTER» PORTAL

<http://sister.agenziaentrate.gov.it/>

SISTER

Signing of an AGREEMENT to join the service
(15 Euros / year for each enabled password)



User



Over the whole national territory
Different search keys

- Owners
- Cadastral identifiers
- Addresses



MAP ABSTRACTS



Descriptive documents including the
Current and historical situation



PLANS *

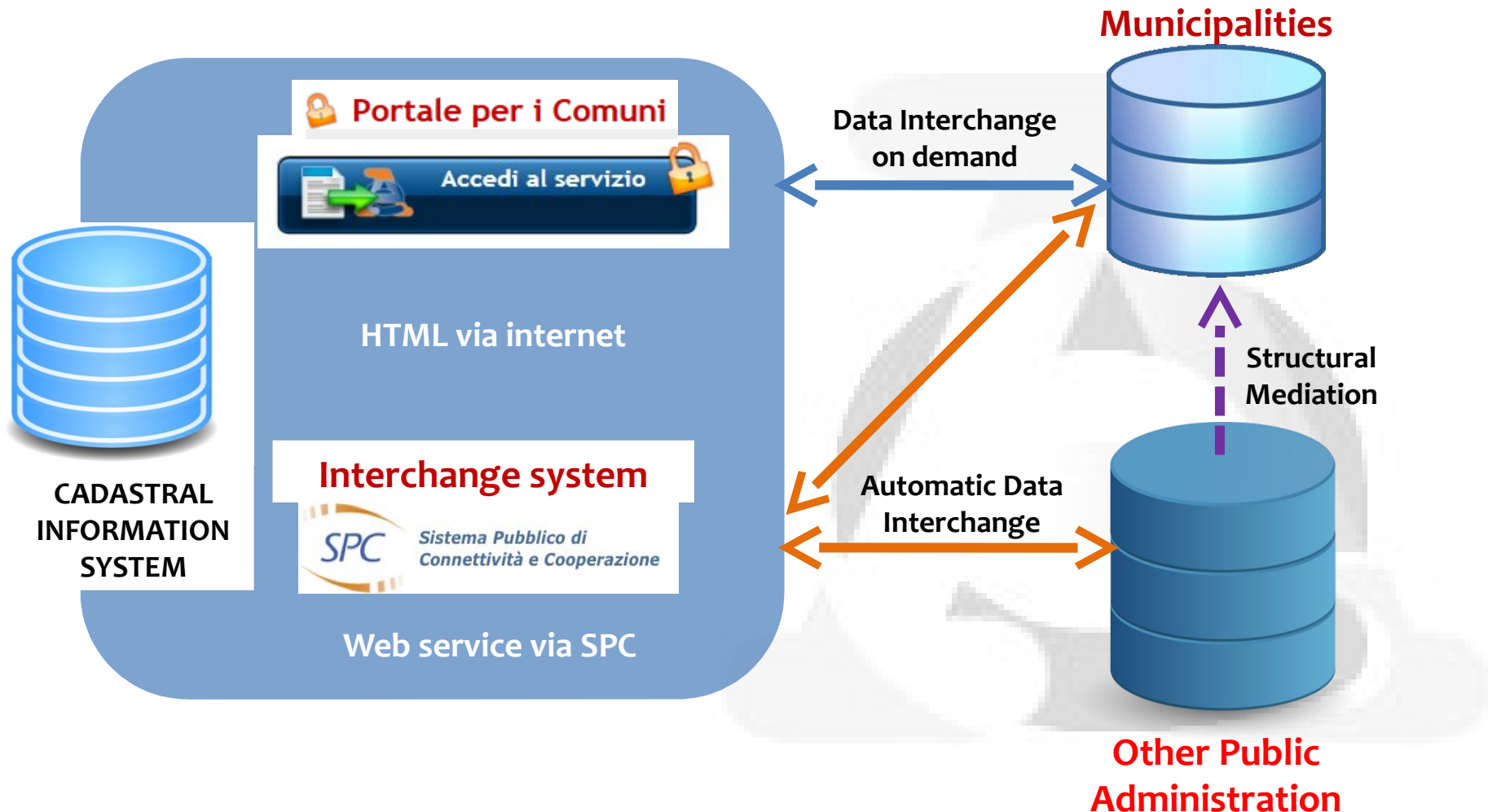
- Only for subjects enabled to the online submission of cadastral updating documents

It is possible to buy - through the «Sister» channel - the **descriptive documents** and the **map sheets** (in CXF, CMF or DXF format). For professionals in the public and private sectors who utilize this bank of information, their range of tools, data and operational procedures will be greatly amplified.

Research and use is free of charge for
Municipalities and the Public Administration

Services for the public administration

Using the cadastral data



Using the cadastral data

 **Portale per i Comuni**



Portal for Municipalities

The Agency has developed the "Portal for Municipalities" that allows access to data through a connection Internet. It includes the ability to access cadastral data for Municipalities and Mountain Communities that are not in possession of the technology requirements to join the Interchange System.

Using the cadastral data

Services available to the Public Administration

[of "Portal" and "Interchange"]

Download of specific dates or incremental data regarding:

- Land Cadastre
- Buildings Cadastre
- Cadastral vector cartography

Specific services for Municipalities

[of "Portal" and "Interchange"]

surface data supply of building units to ordinary destination
(Agency Director Act 29 march 2013)

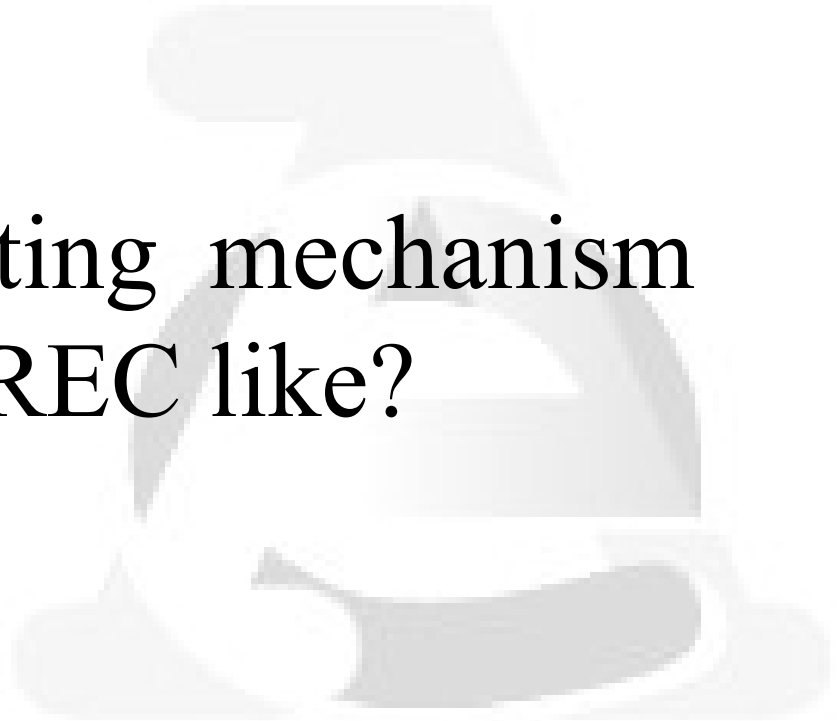
- Service that allows Municipalities to report errors relating to surface data
- Data from automatic change of ownership for Tax management

Specific services for Municipalities

[only of "Portal"]

- control activities of private property not declared in the land registry / situations may no longer be consistent with the land registry with rated for building changes occurred
- *control of cadastral update statements*
- Buildings not registered in cadastre
- Rurality statements (*verification of requirements*)
- Telematic acts of Land Cadastre update (*daily publication*)
- **Services for consultation and certification National Archives of City Plans**

What is the correcting mechanism of incorrect data in REC like?



INCONSISTENCIES IN THE CADASTRAL DATABASE

There are two categories of errors and inconsistencies in the cadastral database

- Input errors

These errors and inconsistencies are corrected by a simple request from the owner (free of charge)

- Errors made by owner and-or technical professionals

The errors and inconsistencies are corrected by submitting a new rectification document

CHANNEL FOR CORRECTING THE CADASTRAL DATA

There are two ways for owners to contact the Agency for the correction of cadastral data:

- **Provincial Offices**
(for all users)
- **Agency Internet Site**
(for all users)



www.agenziaentrate.gov.it

Contact Center





CONTACT CENTER



The service makes it possible to indicate, directly **through internet**, inconsistencies in the cadastral data and request a correction

(The applicant can be the owner of the real estate or a person interested in or delegated to make the correction)

PROCESSED CASES

- ✓ Errors regarding the registered owner
- ✓ Error concerning the real estate data
- ✓ Registration of previous non-computerized documents
- ✓ Inconsistencies related to a non-declared building
- ✓ Inconsistencies related to a former rural building

Provincial Offices



Public Relations Office



The service makes it possible to report errors and inconsistencies in cadastral data, asking for a correction
(The applicant can be the owner of the real estate or a person interested in or delegated for correction)

PROCESSED CASES

- ✓ Errors regarding the registered owner
- ✓ Error concerning the real estate data
- ✓ Registration of previous non-computerized documents
- ✓ Inconsistencies related to a non-declared building
- ✓ Inconsistencies related to a former rural building

Consistency and completeness of cadastral data in the perspective of an integrated real estate system

The Agency is currently experimenting with a new program dedicated to managing the Open Data and subsequent errors



The finish line for an integrated real estate system

The requirements for quality of real estate data

The development route of the Agency's cadastral databases

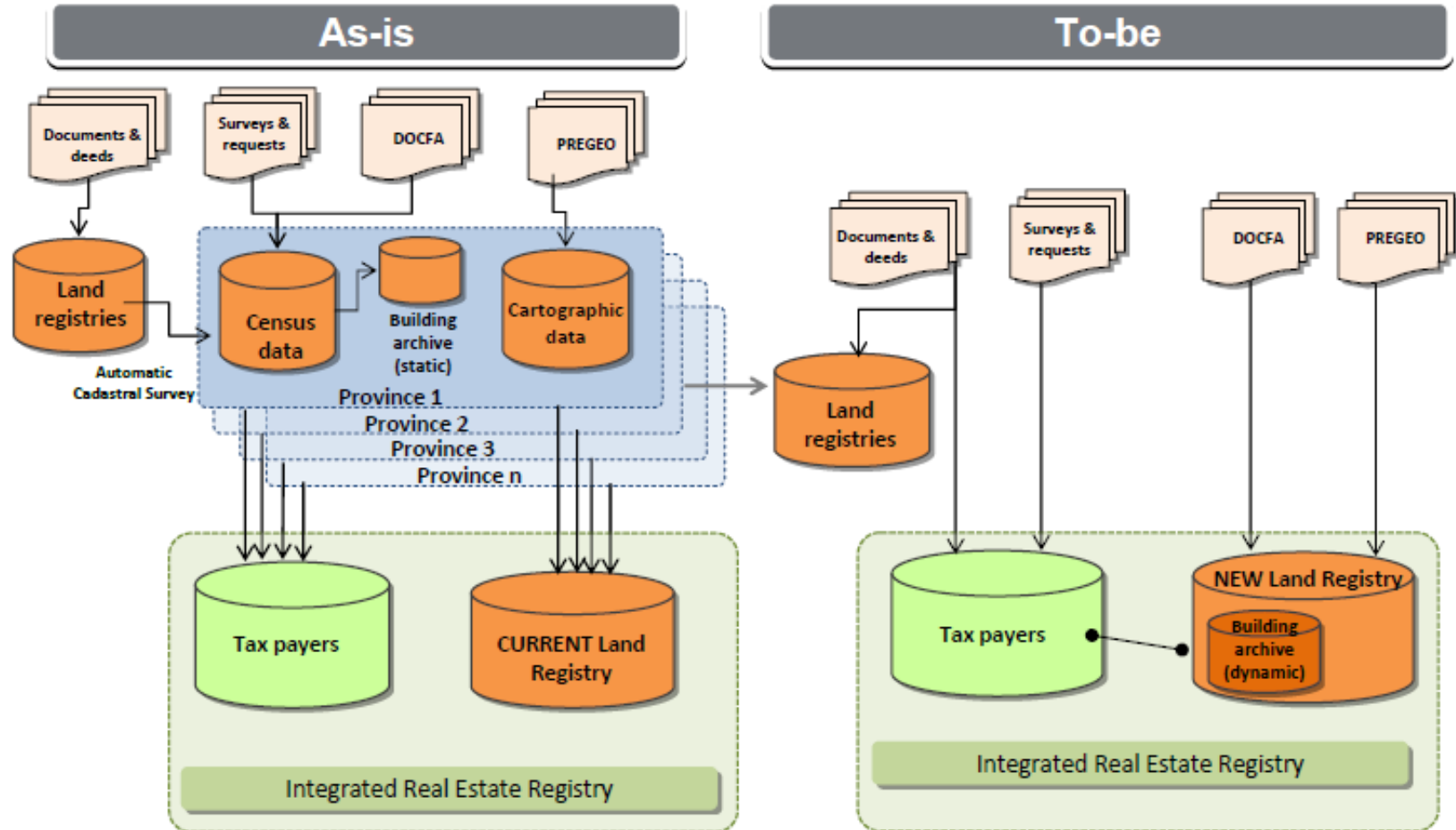
The databases completion and their correlation

The cadastral databases monitoring and maintenance



To set up a complex information data base for the integrated management of data related to the Italian real estate assets.

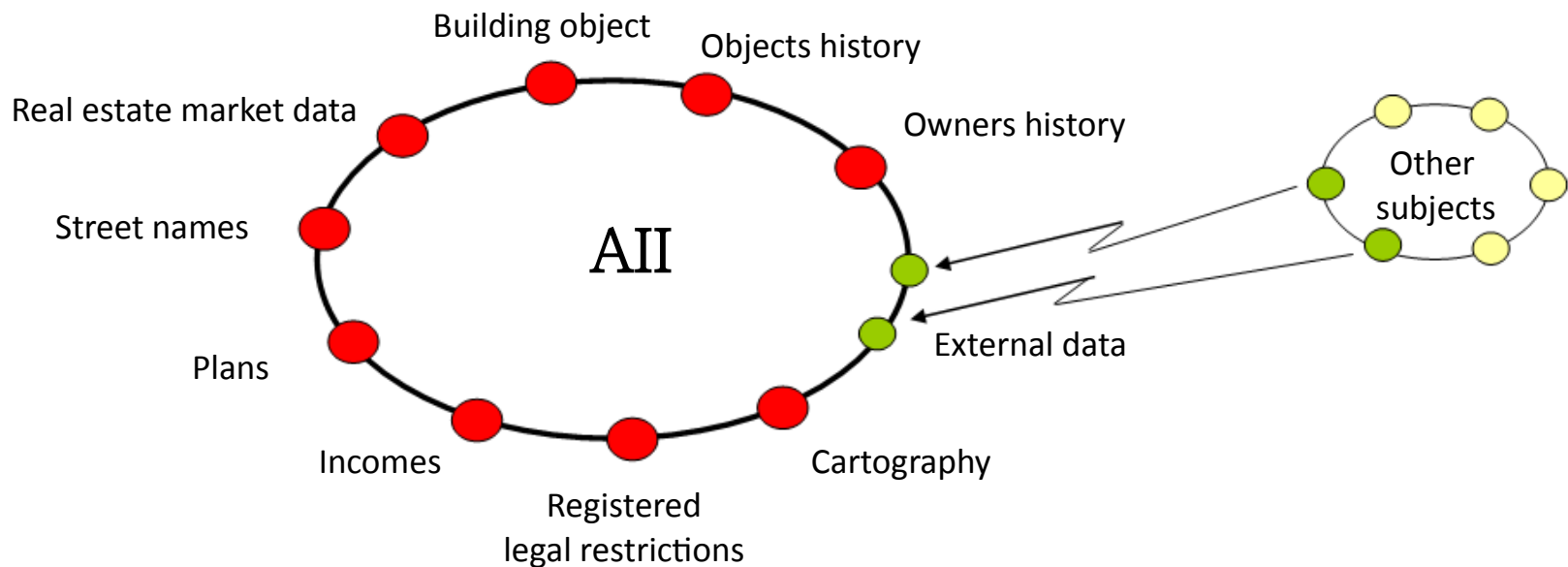
Revenue Agency- Land Division - Information System Evolution



«From distributed to centralized»



To set up a complex information data base for the integrated management of data related to the Italian real estate assets.



The A.I.I. (Anagrafe Immobiliare Integrata) is a new integrated information infrastructure that, in compliance with the current legislation, uses and integrates data managed by the Agency (cadastral and land registries), created and originally maintained separately. Its goal is to certify, for fiscal purposes, the situation of the integration between the two data bases, aiming at identifying, for each real estate unit, the person holder of real estate rights.



Digital data **completeness**

Digital data **coherence** with the original documents

Relationships between various archives (indice relationships)

Coherence between data recorded in each archive (attribute coherence)

Consistency of stored information with the existing **situation on the territory**

A **better data quality** will make it possible to provide new integrated **search and view services** and their **spatial representation**

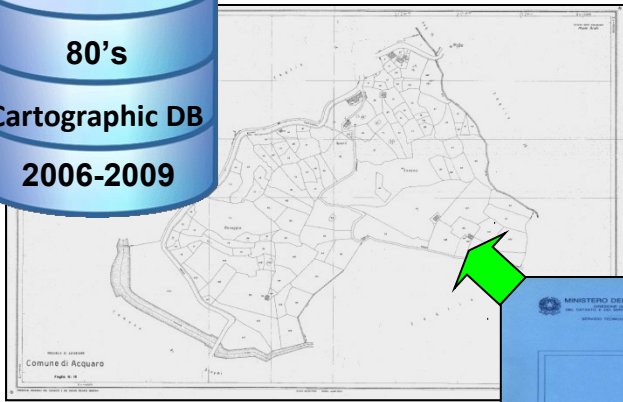
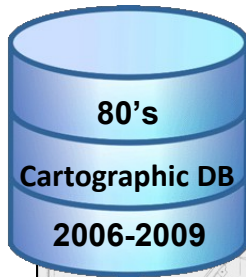
This spatial representation (in the SIT) will in turn make it possible for:

- **Geographic surfing** through stored data
- A deeper **territorial analysis** of real estate properties (fiscal policies, statistical surveys, assessment reviews)
- A better **control of the territory** (real estate properties verifications)

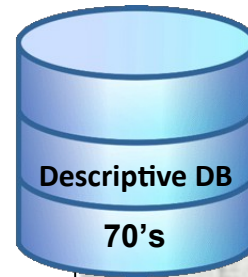


The development route of the Agency's cadastral databases

Land
Cadastr
(LC)



1900

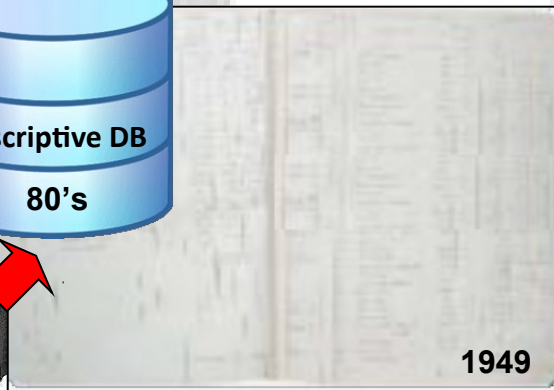
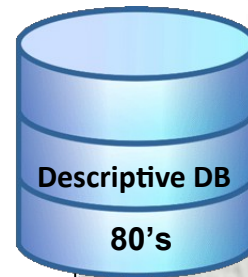
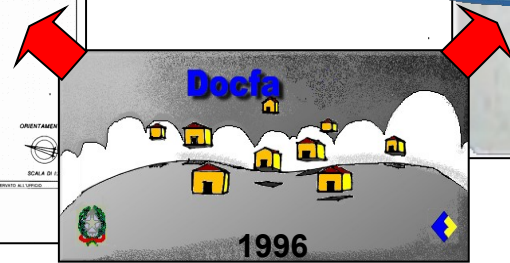
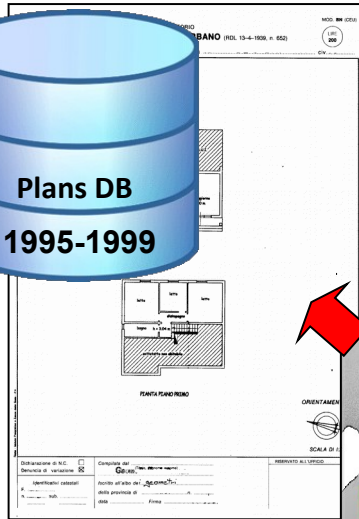


1886



- Born Land Cadastre
- Born BC
- Automation LC
- Automation BC
- Autom. update LC
- Autom. update BC
- Automation DB plans
- Autom. Mapping LC

Buildings
Cadastr
(BC)

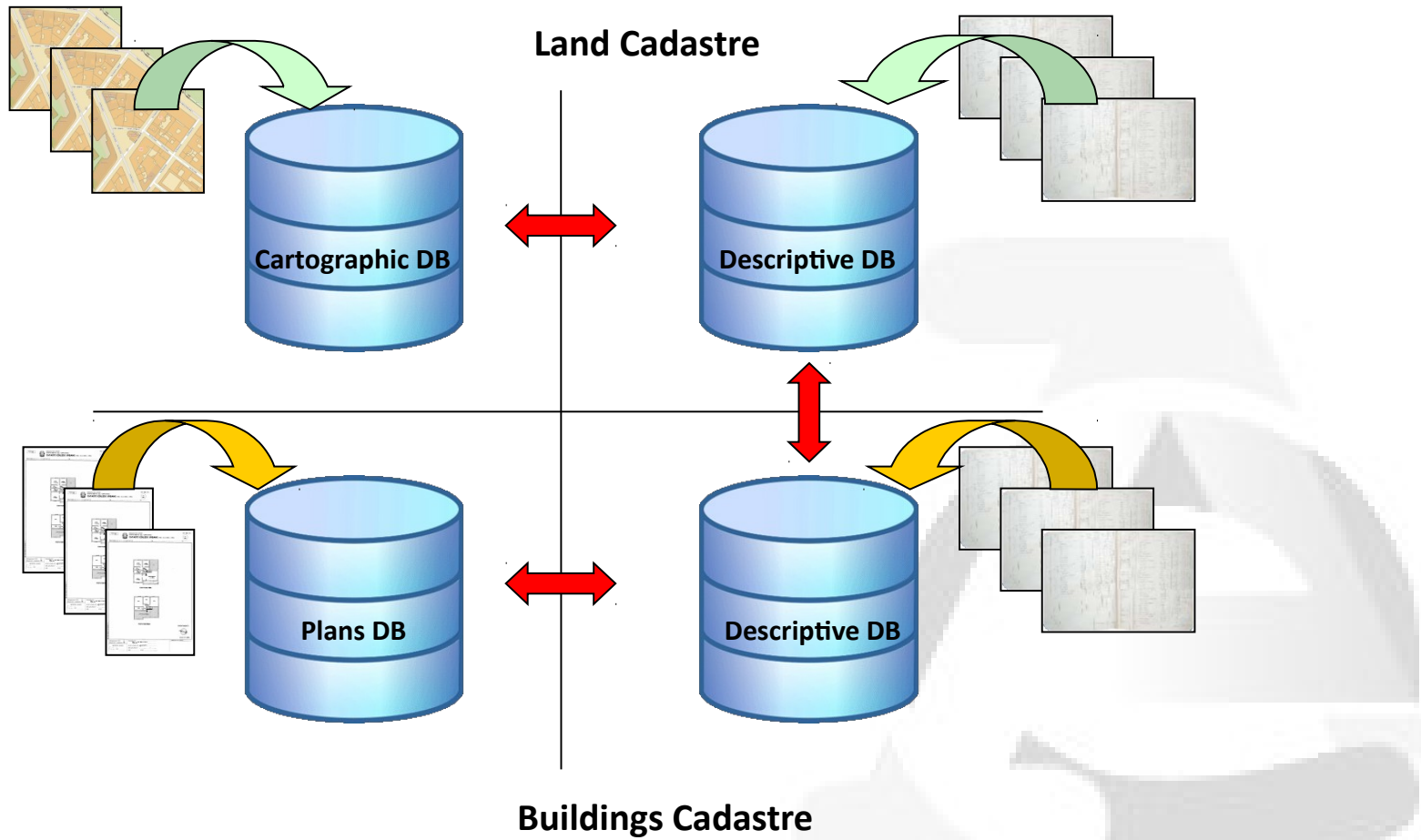


1949

The DB completion is in the final phase



The databases completion and their correlation



DB completion : 1998-2015

Correlation between DB: 2004-2016



To monitor the data quality level and assure long-term stability. To achieve maximum performance, it is necessary to have a system to alert

- existent inconsistencies;
- misalignments of correlation indices.

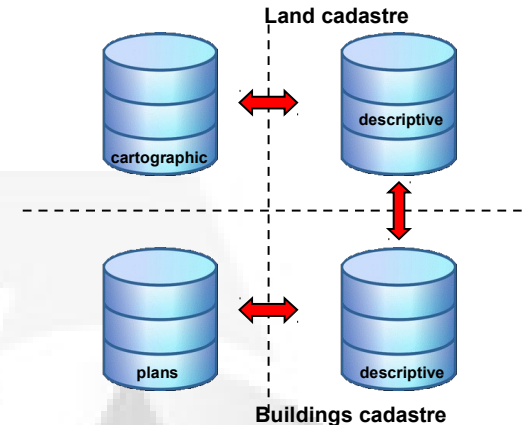
This system, created very recently, is based on two “search engines” that cyclically control the four cadastral databases, updating:

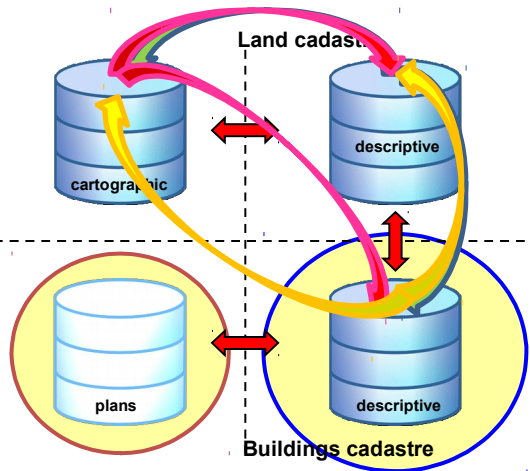
- **the list of inconsistencies**
- **the correlations table**

and make it possible for their spatial representation.

The system will make it possible to remove both anomalies through software interventions, and through periodical recovery actions.

Finally, it will be possible to measure and map the level of one or more quality indices, through the aggregation of elementary data.

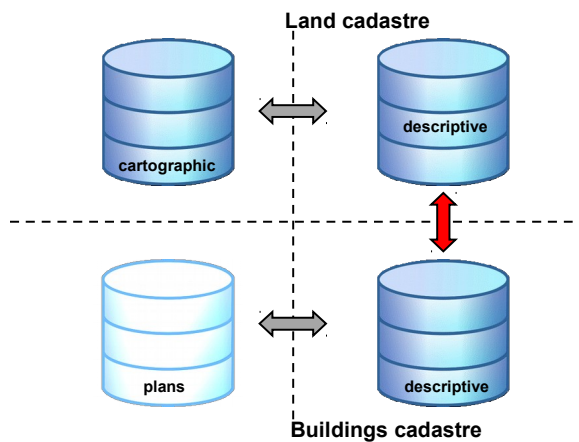




The **list of inconsistencies** makes it possible to discover the existing **anomalies** between the territory and the building cadastre, from the point of view of a cadastral database compared to another database.

The elements of the list are grouped in subsets according to their characteristics:

- **1° group** → elements of the LC census database with anomalies in the BC census database or in the cartographic database
- **2° group** → elements of the cartographic database with anomalies in the LC or BC census databases
- **3° group** → elements of the BC census database with anomalies in the LC census database or in the cartographic database
- **4° group** → elements of the BC census database with anomalies in the plans database or in the same BC census database (i.e. address, house number, floor, area, class, etc...)



The **correlations table** includes the list of all the elements with **anomalies in the «relations»** between the LC and BC identifiers.

The abnormal elements (the parcels) are grouped in subsets according to their characteristics (non correlated elements, elements with multiple or wrong correlation).

The rules used by search engines, after their implementation in the acceptance procedures for the cadastral updating documents (Pregeo and Docfa), will make it possible to identify inconsistent data (in case of declaration including wrong elements) or to recover them immediately after their input (in case of inconsistencies already existing in the cadastral archives).



The activities for recovering data quality have been carried out by the Agency staff through unusual resources, also starting up one of the first remote work experiences between local Offices of a public administration.

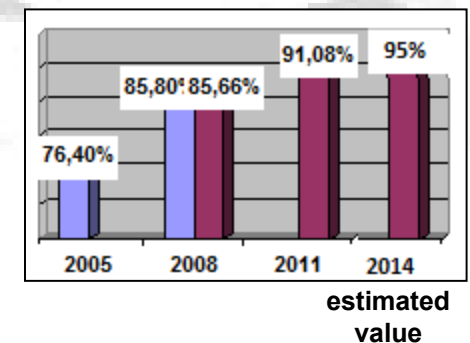
This remote work experience made it possible to redirect the progressively available resources to the activities up to Offices having a greater workload.

These activities mainly concerned

- cartographic and census updating
- updating of the holders
- collection of urban real estate units plans
- assessment of the area of urban real estate units
- correlation between land and urban cadastre parcels
- street names recovery and encoding

The mentioned recovery activity made it possible in about 10 years to increase of nearly 20 percentage points a reference index of data quality.

The current general index, as measure of cadastral databases completeness and consistency, is the result of several detailed indicators related to 5 typologies of data: cadastral identification number, owner data, valuation data, address and graphic data. It's estimated about 95%.





Example of inconsistencies in correlations. In the next future the spatial representation will be carried out in the new Integrated Territorial System (SIT) based on a GIS logic.



***MANY THANKS
FOR YOUR KIND ATTENTION***

