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ASPECTS REGARDING THE CADASTRAL WORKS IN ITALY

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Abstract

This paper aims to present some aspects regarding the cadastral work in Italy. Cassini-Soldner is a afilactic projection, from the deformation point of view, that is arbitrary, usually from arbitrary was passed to equidistant (preserves the distances on a direction). The Soldner method was designed in 1809 in Germany. It uses as orientation ellipsoid the Bessel ellipsoid (1841). In terms of surface projection is a transverse cylindrical, the cylinder's axis is perpendicular to the pole's axis and the cylinder's tangent is at the origin meridian. The origin of the system is on the equator, the X axis is oriented on the north and the Y axis is oriented on the east. Unlike Cassini-Soldner projection, the Gauss-Kruger projection is a conform projection from the point of view of deformations (preserves the angles).

***Key words**: cadastral works, Cassini-Soldner, Italy, projection.*

INTRODUCTION

The Territorial Agency replaced the Planning Department regarding the central office, the land registry offices and the provincial and compartmental departments. The headquarters of the Territorial Agency is in Rome. The agency primary functions regard the land registry, geo-topo-cartographic services and the conservation of land registry.
Besides its headquarters in Rome, Territorial Agency has localized structures at regional and provincial levels.
Regional offices are located in regional capitals and have function of coordination and liaison between headquarters and local offices (Figure 1).

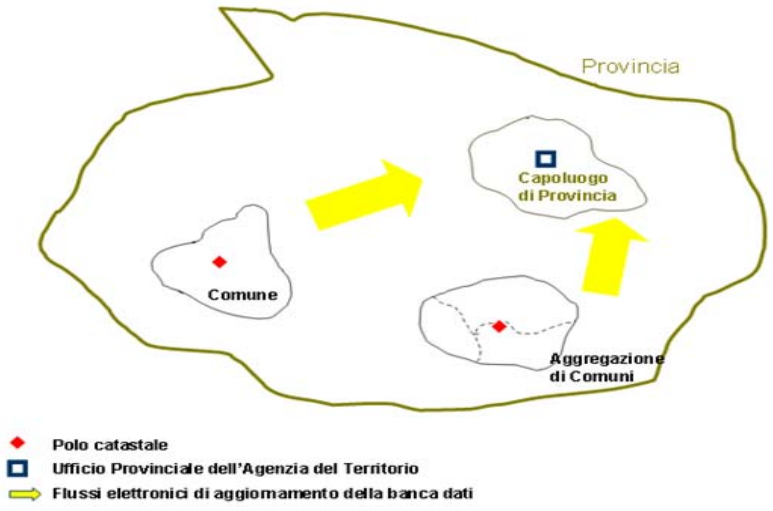


Figure 1. The organisation of cadastral offices

Provincial offices are located in all provincial capitals in regions with more than two provinces. In regions with two provinces the provincial offices are present only in the provincial capital, which is also the regional capital.

With the decentralization of municipalities and the subsequent establishment of cadastral offices, which are responsible for some of the operating functions of the cadastre, the Territorial Agency has expanded its operation also at the municipal level (Figure 2).

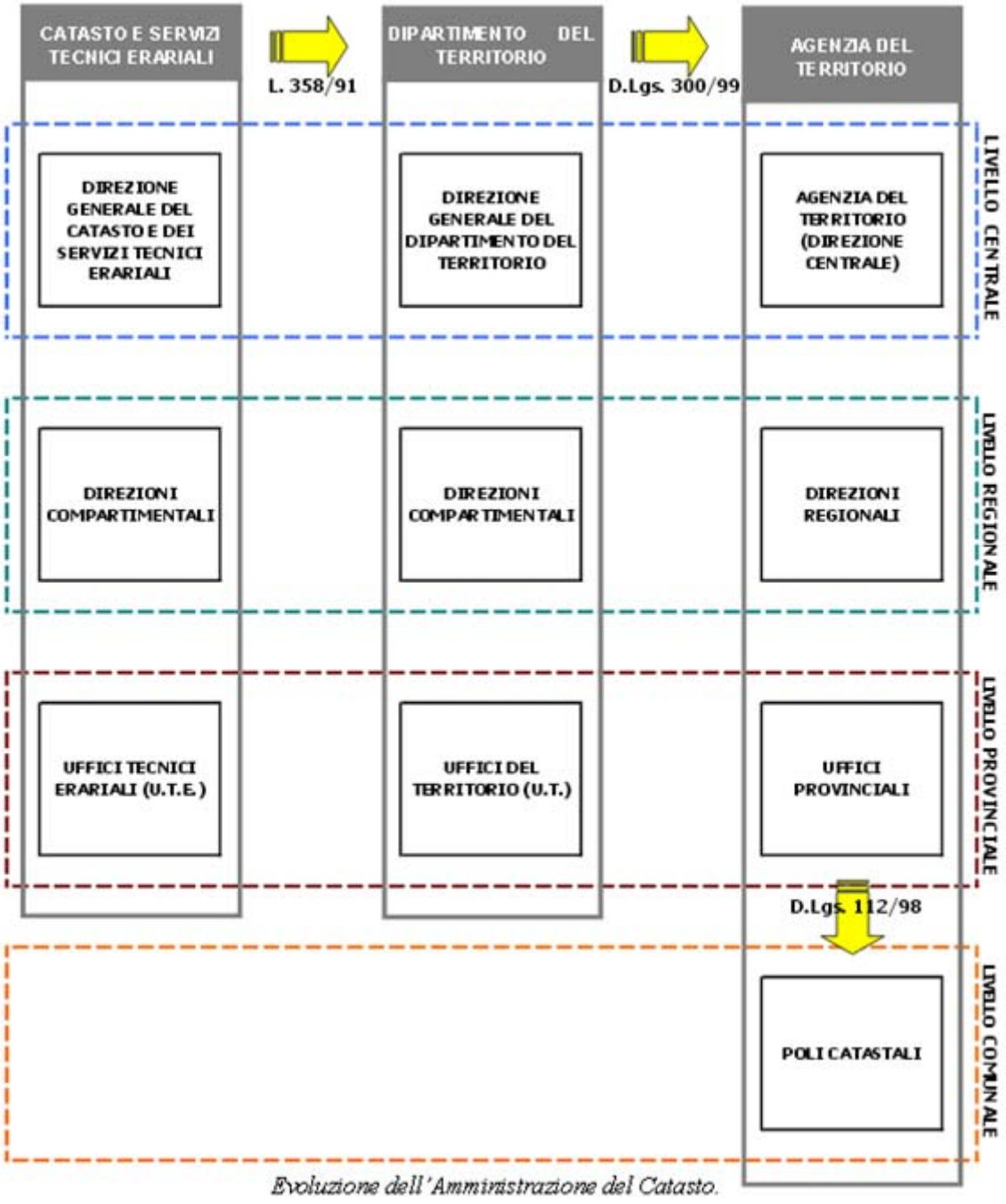


Figure 2. Evolution of the Cadastral Administration

MATERIALS AND METHODS

The Italian cadastral system in its current form comes from Law 3682/1886 as amended and supplemented (Messedaglia Law) regarding the land equalization. This required the establishment of a land tax calculation purposes by adopting the cartographic representation system Cassini-Soldner. The cadastral maps are usually drawn to a scale of 1: 2000 and offer a flat representation of the territory which is objects of interest with a standardized schematic representation.

Italian mapping is achieved by using Hayford ellipsoid, except the cadastre system which

uses pre-war system based on Bessel ellipsoid (1841).
The Italian cadastral system has three main origins namely in Genoa (Italy centre-north) in Castanea delle Furie (for southern Italy) and Rome Mario M. (part of central Italy).

The mapping system is based on a reference network (Figure 3) and consists of the points corresponding to the area identified for which the coordinates are known (Table 1).

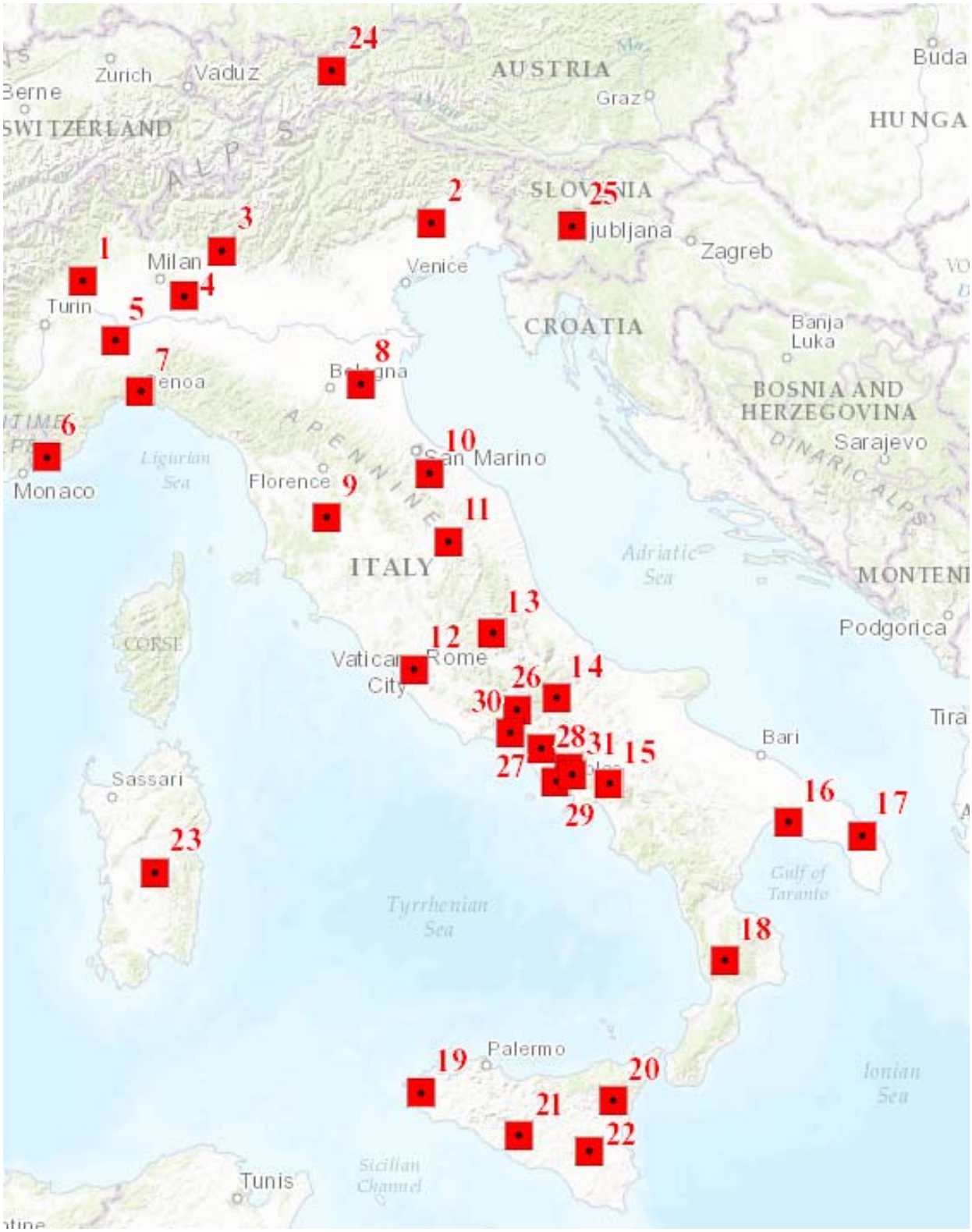


Figure 3. The refference points in Italy

Table 1. Coordinates of the refference points

N.	Centro di sviluppo	Foglio 1:100000	Latitudine	Longitudine	Centro di emanazione
1	P.I. (Vercelli)	-	-	-	-
2	Pordenone	39	45°57'15.104"	3°44'21.453"	GE
3	Monte Bronzone	34	45°42'31.080"	1°04'09.404"	GE
4	Lodi	60	45°18'49.219"	0°34'53.166"	GE
5	Alessandria	70	44°54'51.212"	-0°18'37.157"	GE
6	Monte Bignone	102	43°52'22.465"	-1°11'17.116"	GE
7	Forte Diamante	83	44°27'38.020"	0°01'04.180"	GE
8	Portonovo	88	44°41'55.045"	2°49'55.338"	GE
9	Siena (Torre del Mangia)	120	43°19'03.126"	2°24'39.027"	GE
10	Urbino	109	43°43'27.930"	3°42'54.290"	GE
11	Monte Pennino	123	43°06'02.076"	3°58'03.310"	GE
12A	Roma M.te Mario (Genova)	149	41°55'24.399"	3°31'51.131"	GE
12B	Roma M.te Mario (Castanea)	150	41°55'24.428"	-3°04'06.155"	Castanea
13	Monte Ocre	145	42°15'20.090"	0°59'28.010"	Roma M.M.
14	Monte Palombo	152	41°50'34.650"	-1°42'34.580"	Castanea
15	Monte Terminio	185	40°50'25.860"	-0°34'59.190"	Castanea
16	Taranto	202	40°28'30.105"	1°42'30.469"	Castanea
17	Lecce	204	40°21'02.850"	2°38'57.488"	Castanea
18	Monte Brutto	236	39°08'22.455"	0°54'06.199"	Castanea
19	Monte Titone	257	37°50'47.830"	0°05'14.870"	Roma M.M.
20	Monte Etna (P.Lucia)	262	37°45'47.600"	-0°32'05.810"	Castanea
21	Monte Castelluccio	267	37°24'52.480"	-1°44'28.140"	Castanea
22	Mineo	273	37°15'55.873"	-0°49'40.426"	Castanea
23	P.I. (Sardegna)	-	-	-	-
24	Nuovo Catasto (Innsbruck)	-	-	-	-
25	Nuovo Catasto (Krimberg)	-	-	-	-
26	Monte Cairo	160	41°32'26.080"	-1°45'36.050"	Castanea
27	Francolise	172	41°10'53.600"	-1°27'23.910"	Castanea
28	Cancello	172	41°04'21.230"	-1°29'39.740"	Castanea
29	Miradois (Napoli)	-	-	-	-
30	Monte Petrella	171	41°19'16.112"	4°44'40.000"	GE
31	Marigliano	184	40°55'26.880"	-1°03'51.620"	Castanea

RESULTS AND DISCUSSIONS

Cassini-Soldner is an afilactic projection, from the deformation point of view, that is arbitrary, usually from arbitrary was passed to equidistant (preserves the distances on a direction). (Figure 4 and 5)

The Soldner method was designed in 1809 in Germany. It uses as orientation ellipsoid the Bessel ellipsoid (1841).

In terms of surface projection is a transverse cylindrical, the cylinder's axis is perpendicular to the pole's axis and the cylinder's tangent is at the origin meridian. The origin of the system is on the equator, the X axis is oriented on the north and the Y axis is oriented on the east.

Unlike Cassini-Soldner projection, the Gauss-Kruger projection is a conform projection from the point of view of deformations (preserves the angles).

The afilactic representation is obtained which gives a deformation acceptable for X <Y, and 50 km <70 km for example, in an area of approximately 140 x 100 km origin O is an arbitrary point chosen (usually a network node).

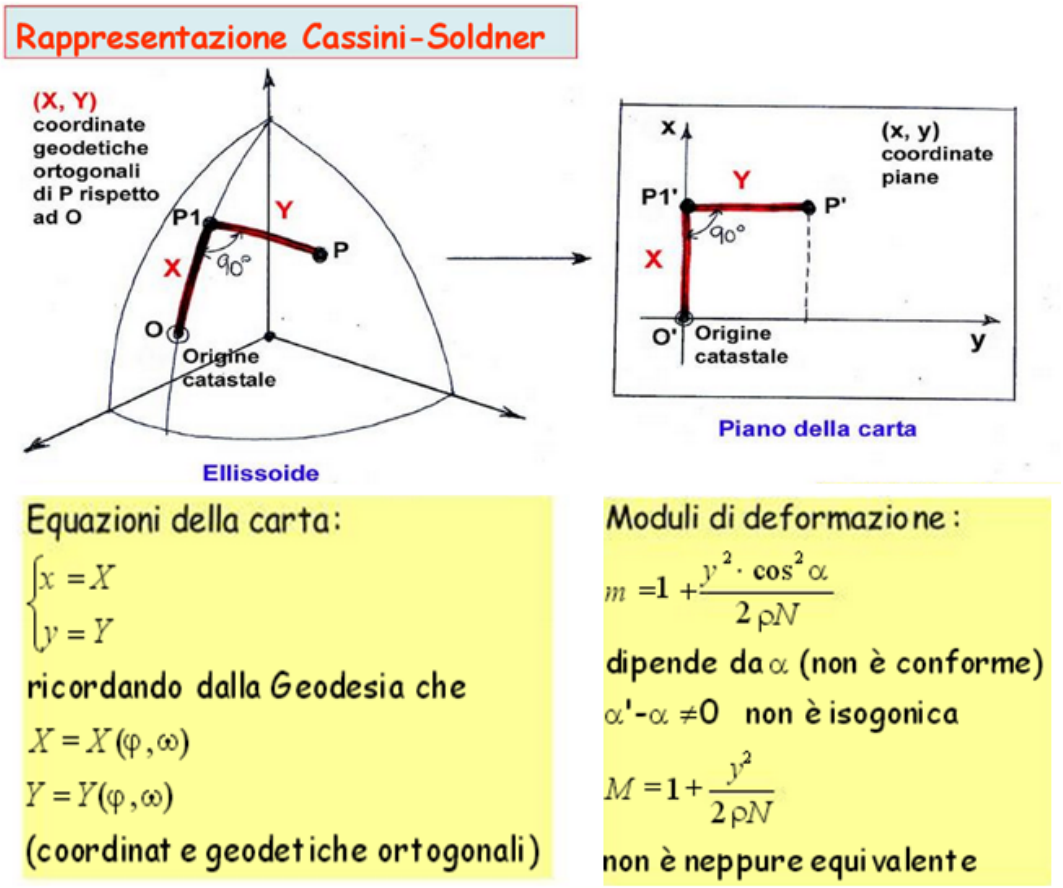


Figure 4. Cassini-Soldner representation

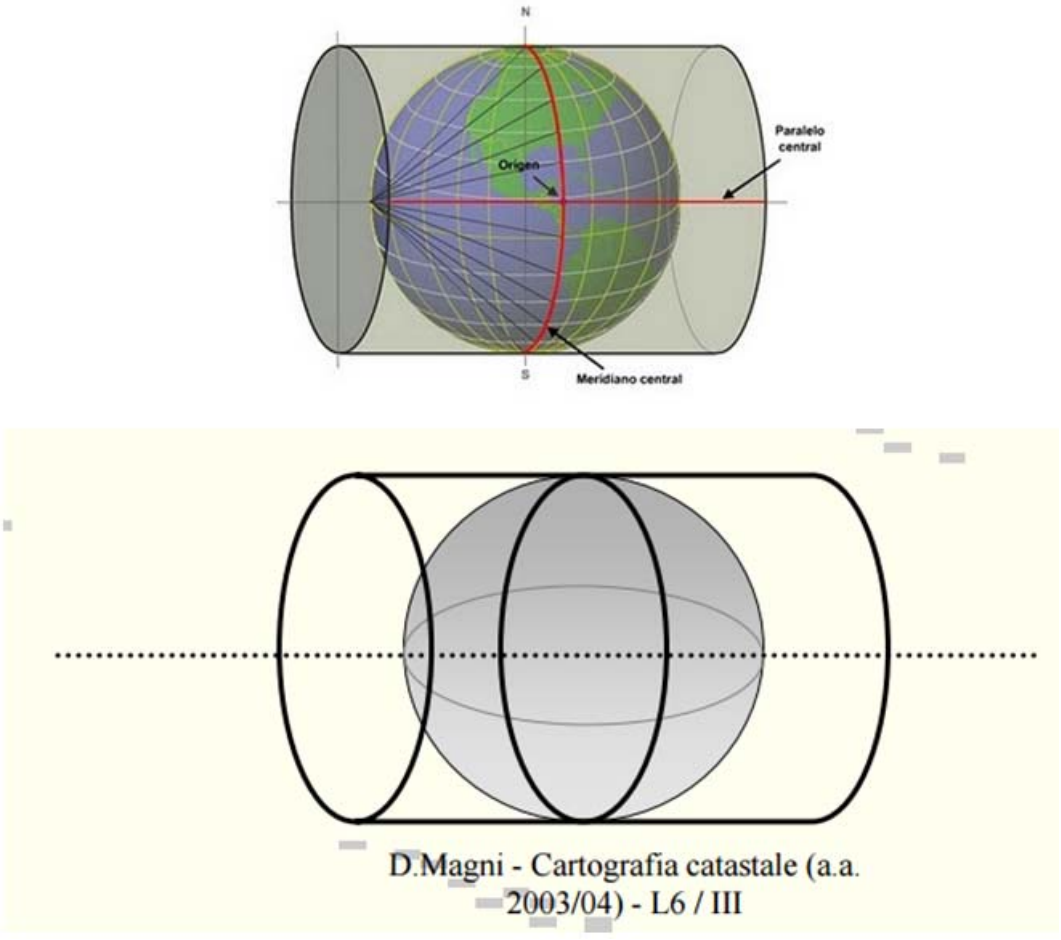


Figure 5. Cassini-Soldner projection

As an example, will be presented a part of the cadastral documentation for joining a proprety from Solarino village, Siracusa provence, Sicily region (Figures 6, 7 and 8).

Punto Fiduciale 01/014A/I785

agenzia del Territorio

Ufficio Provinciale di SIRACUSA

Sportello di SIRACUSA
Comune di SOLARINO

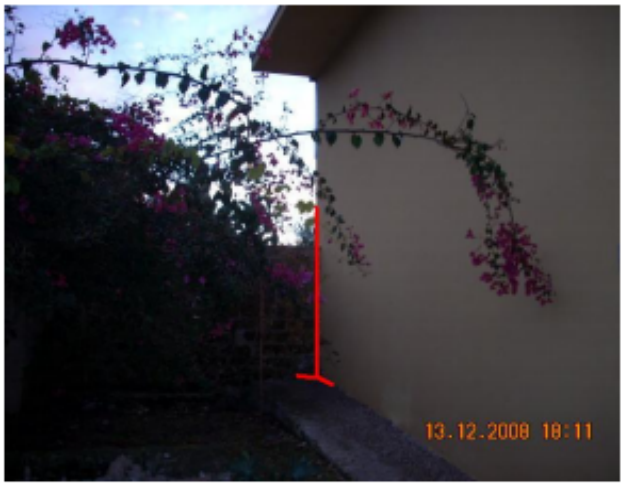
Comune: I785
Sezione:
Foglio: 014
Particella/e: 402
Allegato: A

Coordinate e quote

Cassini-Soldner	Gauss-Boaga	Quota s.l.m	UTM-WGS84
X: -18553.500	Nord:	206.000	Nord:
Y: 37374.500	Est:		Est:
Origine:	Fuso:		Fuso:
Attendibilità: 12		Attendibilità: 04	Q. ellips.:

Riferimenti
Planimetrico: SPIG.S.E.FABBR.
Altimetrico: BASE STRADA

Fotografia o schizzo prospettico



Estratto di mappa

Particolari

Note

Istituito:
Verificato:
Annullato:

Figure 6. Cadastral documentation

Agenzia del Territorio

Ufficio provinciale di: SIRACUSA
Protocollo n:
Data :
Codice file PREGEO: 2.905.422

TIPO MAPPALE
Atto di Aggiornamento
Informazioni geometriche

Dati generali del tipo

Comune:	SOLARINO	Sez. Censuaria:	
Foglio:	014A	Particelle:	434,435
Tecnico:	PACI DARIO	Qualifica:	INGEGNERE
Provincia:	SIRACUSA	N. iscrizione:	956

Proposta di aggiornamento cartografico: Rappresentazione grafica

I punti di appoggio e le nuove linee da introdurre in mappa sono descritte nel LIBRETTO DELLE MISURE

Scala 1 : 500

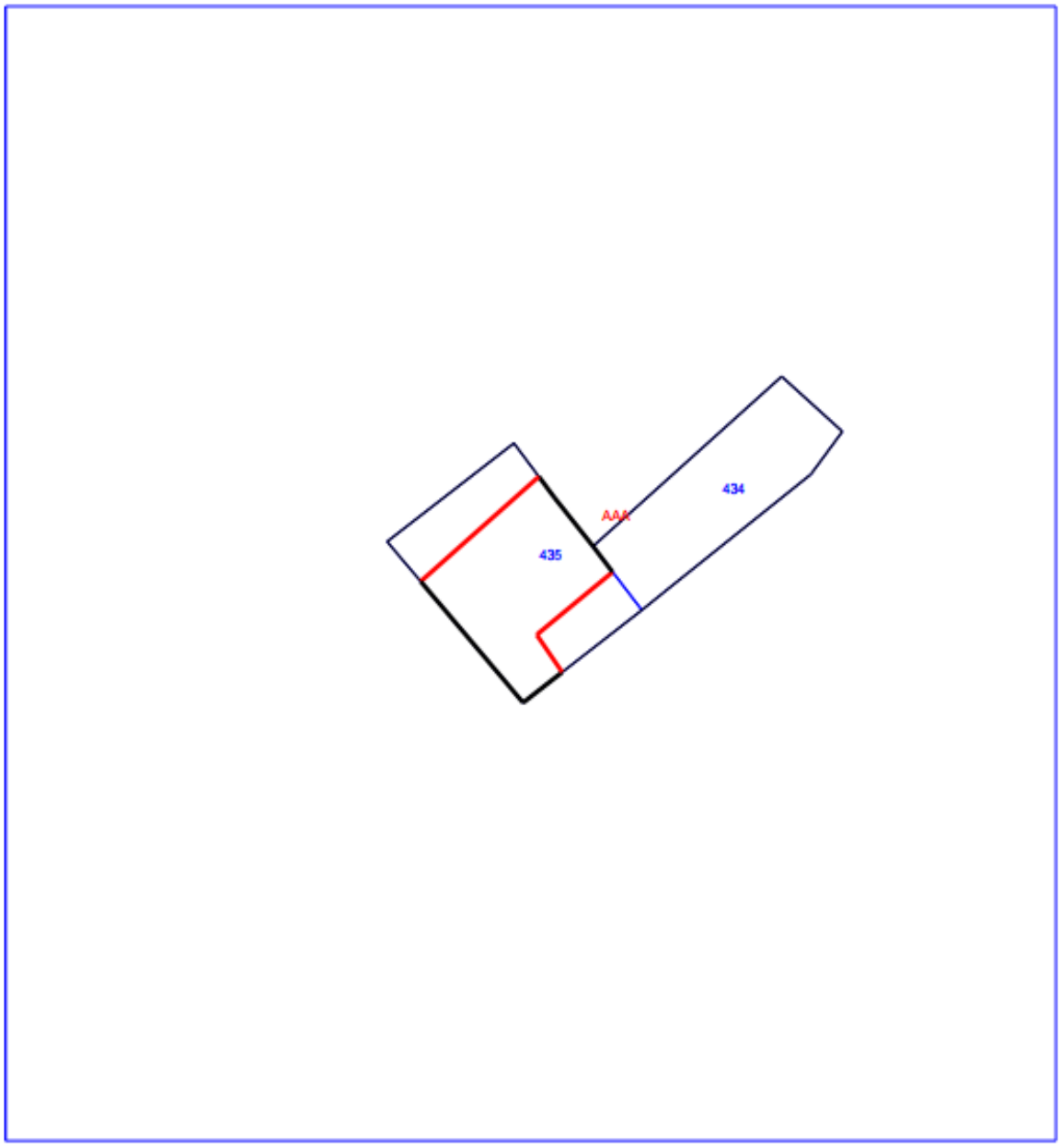


Figure 7. Cadastral documentation – graphic representation

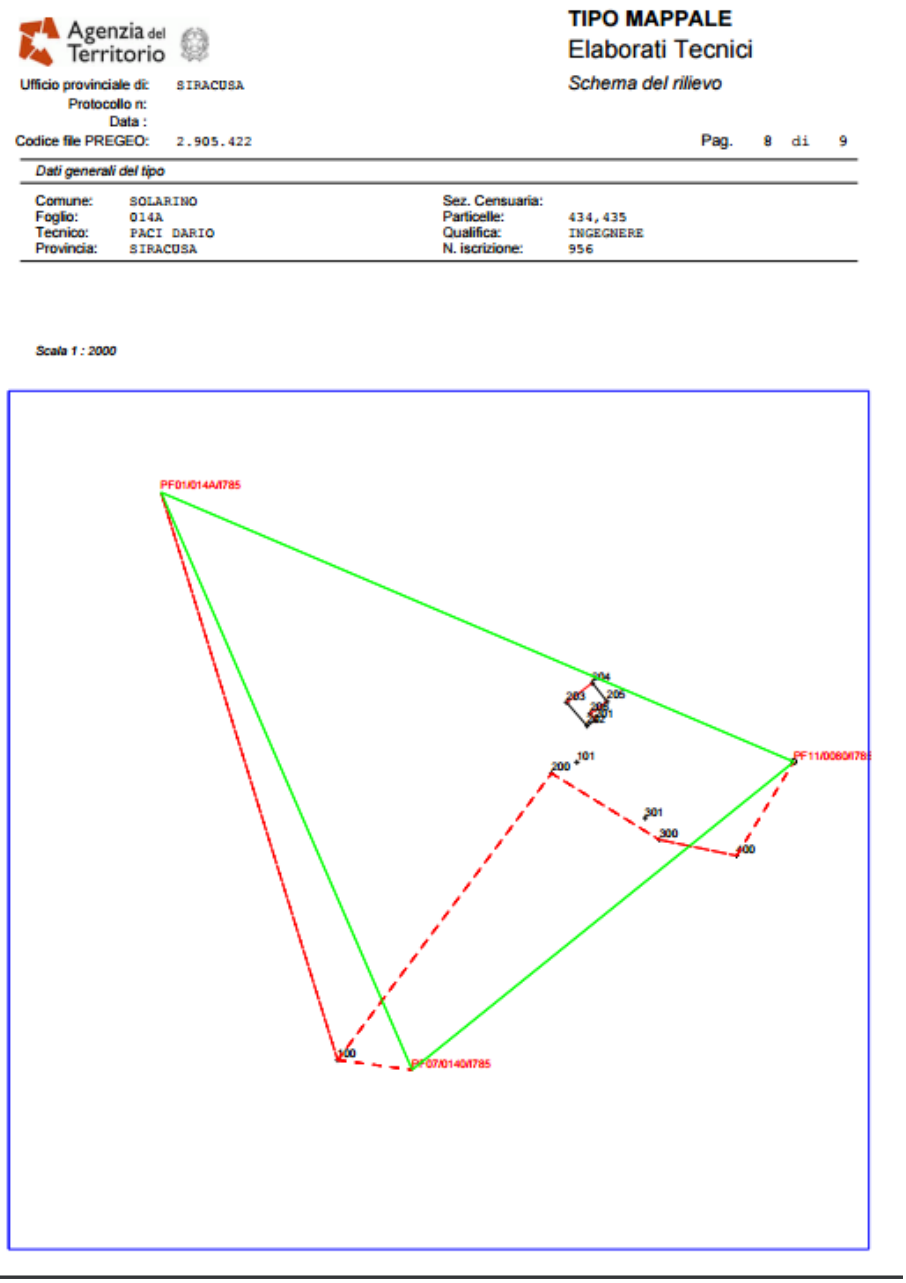


Figure 8. Cadastral documentation – refference points

CONCLUSIONS

Although, for making the cadastral works in Italy, it is used a different projection system and different coordinates system, the topographic measurements are the same.
Unlike Cassini-Soldner projection, the Gauss-Kruger projection is a conform projection from the point of view of deformations (preserves the angles).
In Italy, unlike Romania, it is not so great emphasis on precision of determination, such as cadastre made in Romania, because in Romania if you have some differences of surface etc. the project could be rejected at the cadastral offices.

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