Generalitat de Catalunya
Departament d'Agricultura, Ramaderia, Pesca i Alimentació

EGNOS enabled equipment for CAP implementation in Catalonia, Spain

EGNOS annual workshop

3-4 Oct 2017 Athens (Greece)

Gemma Fustegueres-Rosich

GUIDELINE

1) Introduction to the Common Agricultural Policy (CAP)
2) Management of the CAP in Catalonia
   - 2.1 Land Parcel Identification System (LPIS)
   - 2.2 Area-based aid applications and control system
   - 2.3 Mobile devices: On-The-Spot Check support (OTSC)
3) The importance of using EGNOS
4) The future in CAP management

1. Introduction to the Common Agricultural Policy (CAP)

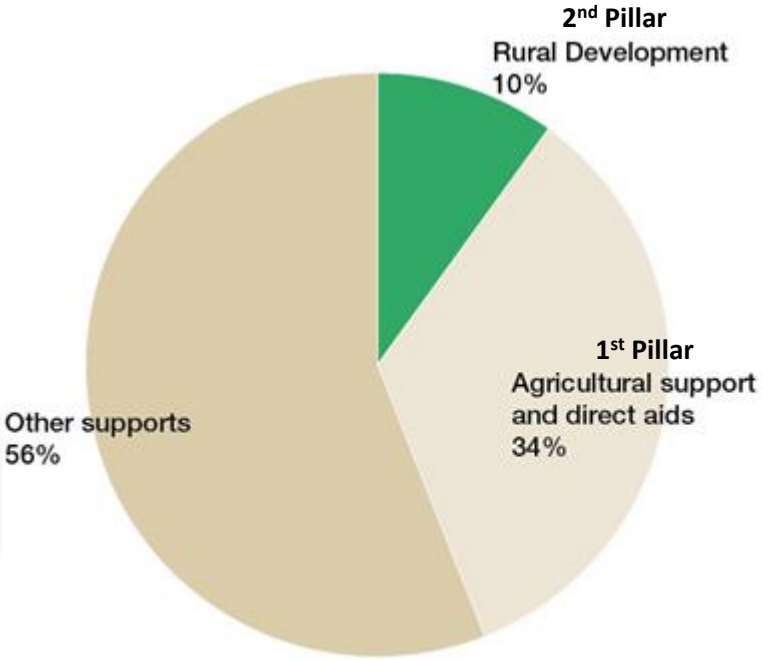
The CAP, is the Common Agricultural Policy followed by the European Union.

EU Regulation:

- **1305/2013**
  on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005
- **1306/2013**
  on the financing, management and monitoring of the common agricultural policy
- **1307/2013**
  establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy
- **1308/2013**
  establishing a common organisation of the markets in agricultural products

1. Introduction to the Common Agricultural Policy (CAP)

European Union budget 158,000,000,000 €

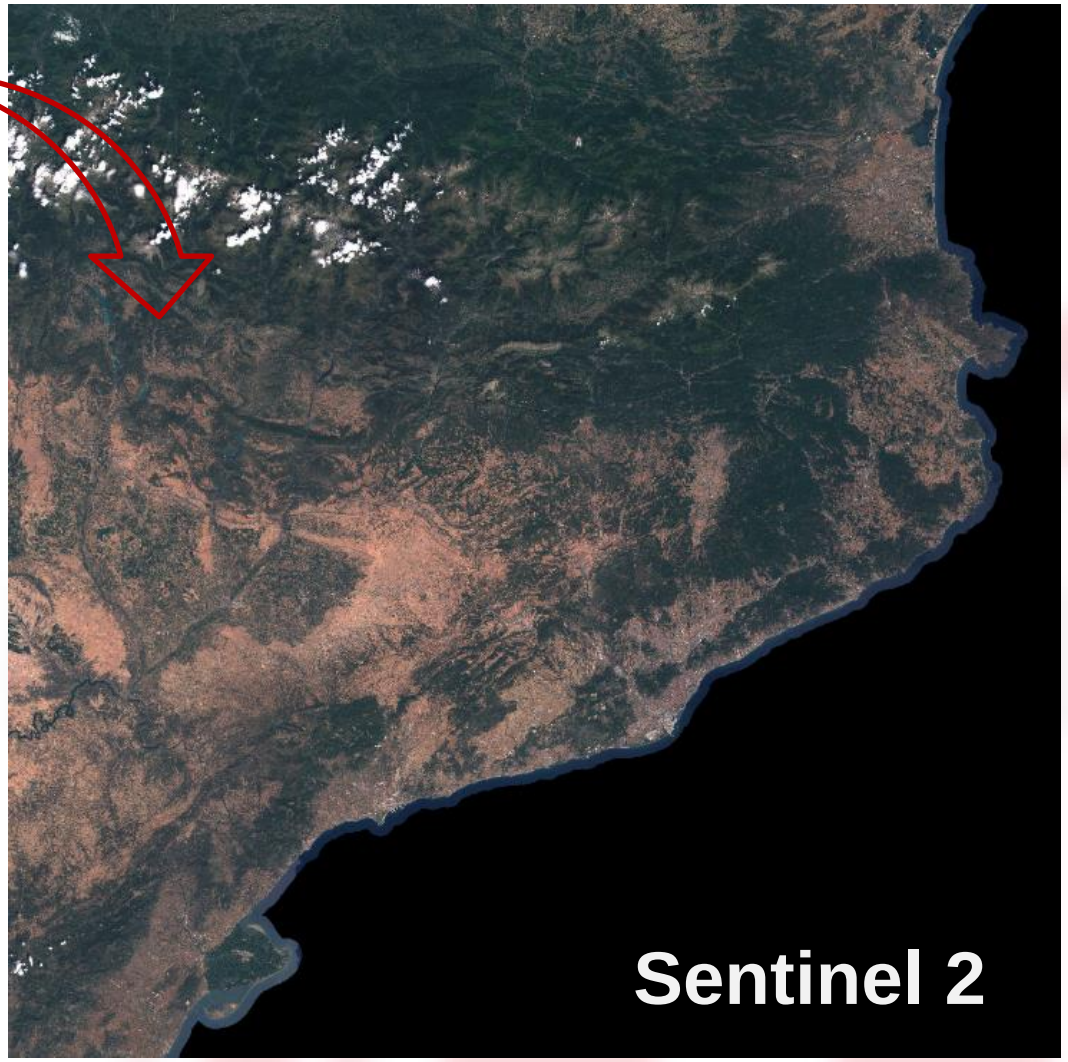


1. Introduction to the Common Agricultural Policy (CAP)

OP	TOTAL (€)
Andalucía	1.906.882.228,63
Aragón	514.543.959,05
Asturias (P. de)	80.917.031,13
Balears (Illes)	33.296.222,27
Canarias	292.456.934,89
Cantabria	52.514.762,19
Castilla-La Mancha	941.889.114,04
Castilla y León	1.022.173.465,01
Cataluña	357.405.159,36
C. Valenciana	176.864.731,74
Extremadura	675.950.302,06
Galicia	284.789.576,21
Madrid (C. de)	47.652.809,23
Murcia (R. de)	143.605.628,79
Navarra (C. F. de)	120.699.960,65
País Vasco	60.318.666,95
Rioja (La)	56.189.199,53
TOTAL	6.768.149.751,73

2. Management of the CAP in Catalonia

2.1 Land Parcel Identification System (LPIS)



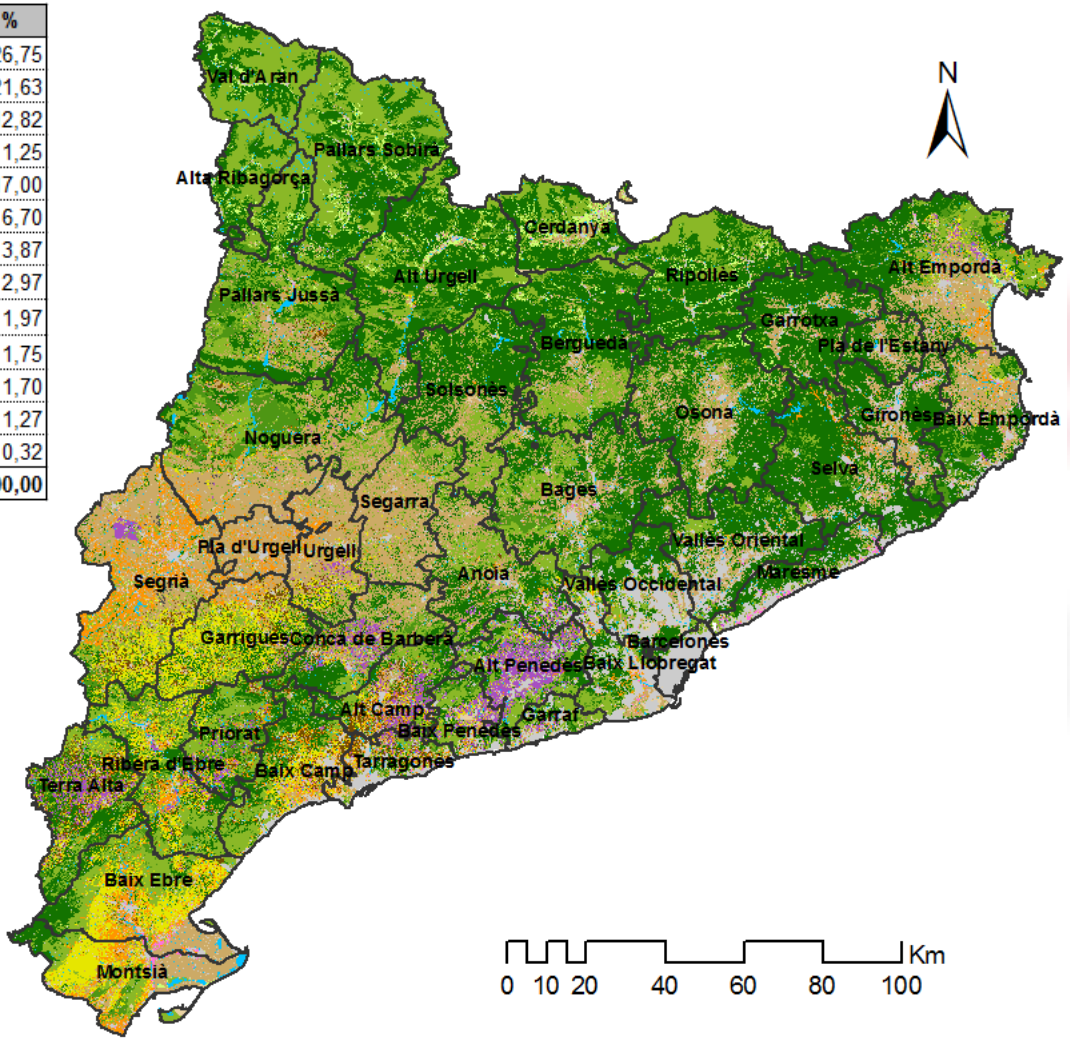
↓ **Area**
(32,100 km²)

↑ **Geographical diversity**

2. Management of the CAP in Catalonia

2.1 Land Parcel Identification System (LPIS)

Usos SIGPAC	LPIS use	Sup. (ha.)	%
Zona Forestal	Forest	858.604,85	26,75
Pastures arbustives	Permanent grasslands	694.440,18	21,63
Pastures arbrades		411.406,06	12,82
Pastius		40.266,80	1,25
Terra campa	Arable land	545.666,31	17,00
Zones urbanes o vies de comunicació	Urban areas	215.023,95	6,70
Olivera	Olive trees	124.249,81	3,87
Fruiters i Cítrics	Fruit trees	95.249,61	2,97
Zones improductives	Non-productive land	63.162,71	1,97
Vinya	Vineyard	56.275,72	1,75
Fruita seca	Nuts	54.716,05	1,70
Superfícies d'aigua	Water	40.848,13	1,27
Horta	Orchards	10.164,52	0,32
Total		**3.210.074,70**	**100,00**



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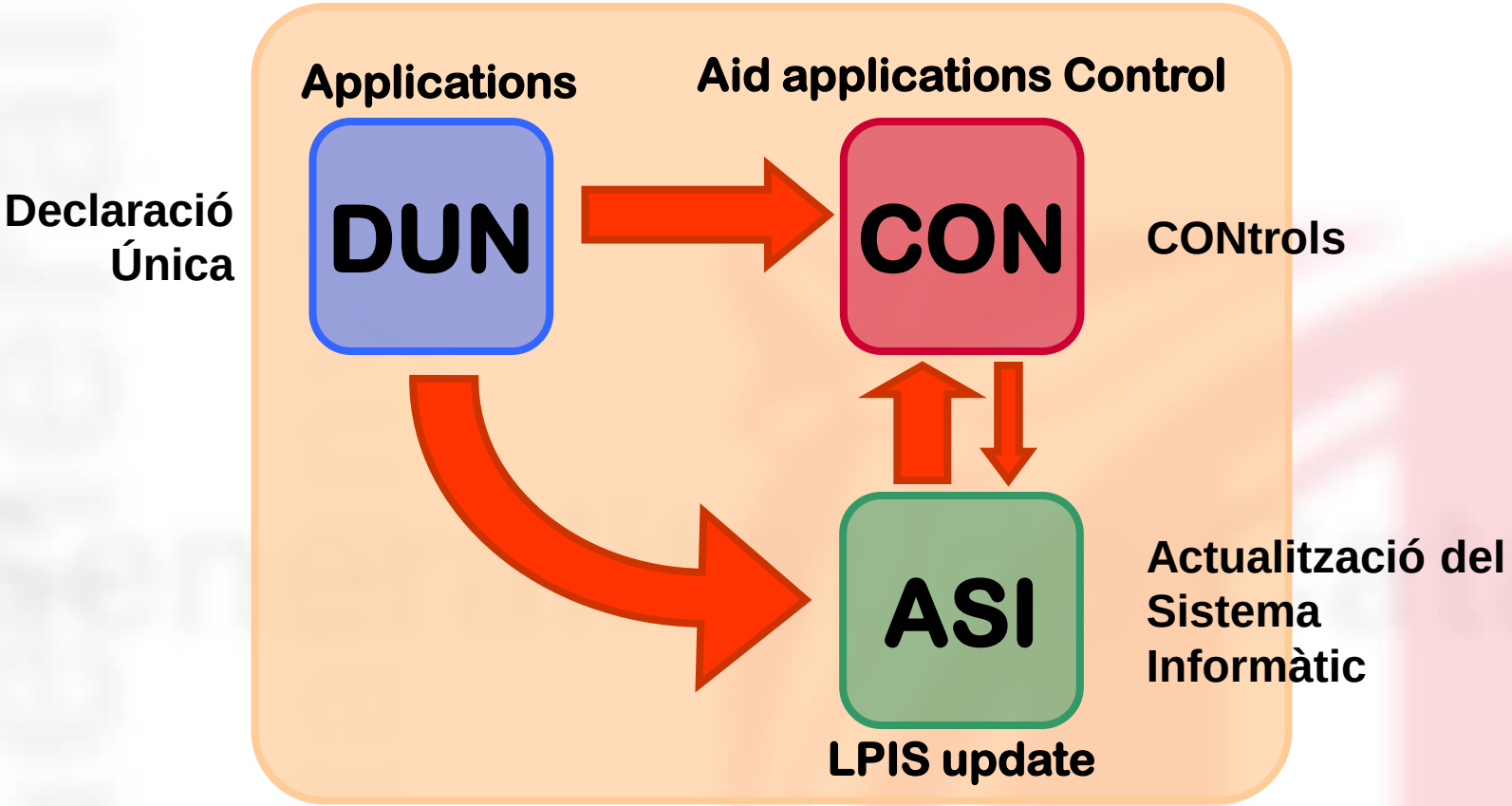
2. Management of the CAP in Catalonia

2.2 Area-based aid applications and control system



2. Management of the CAP in Catalonia

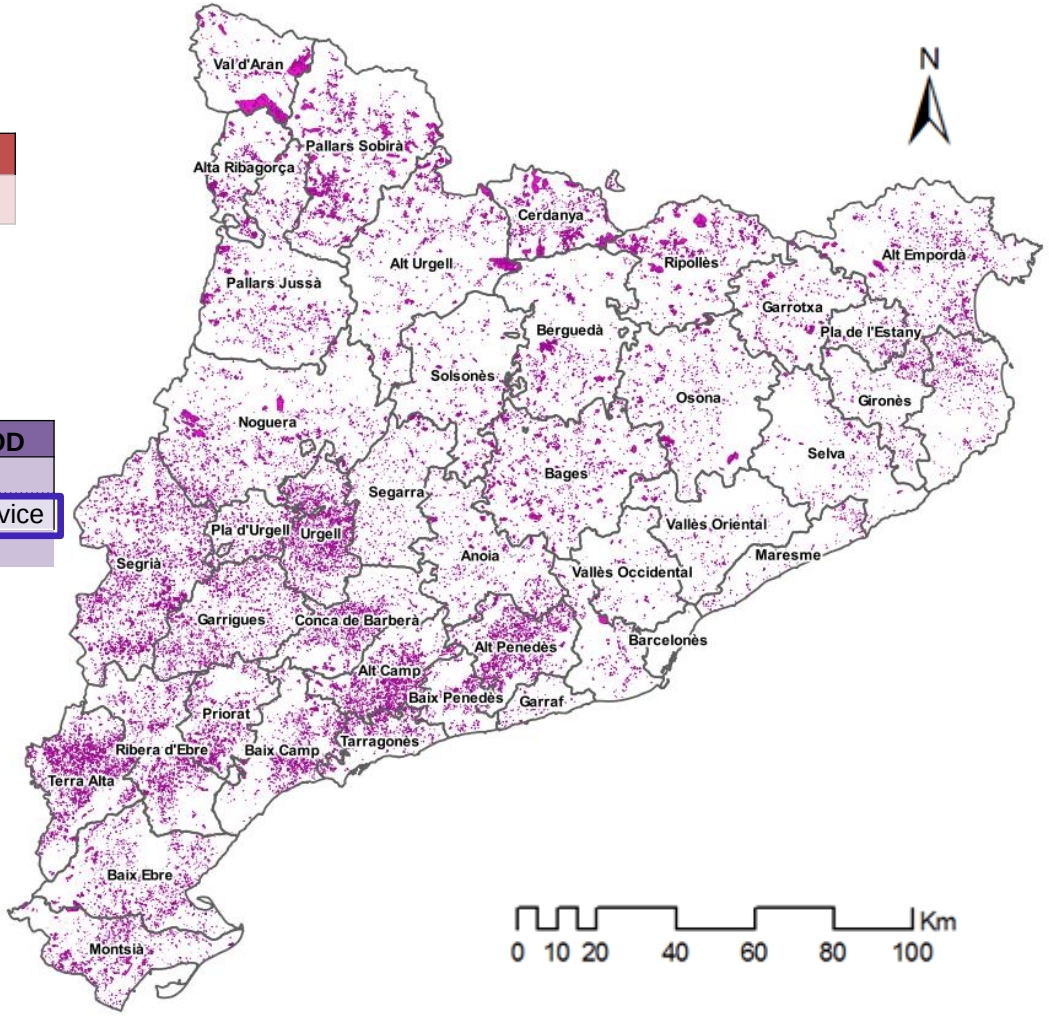
2.2 Area-based aid applications and control system

LPIS

REFERENCE PARCELS	ha
3.666.404	3.210.074,70

LPIS UPDATE - 2015

UPDATE APPLICATIONS	ha	ha_UPDATED	METHOD
73.113	142.088,67	54.746,99	Office
15.159	42.376,37	24.846,05	Mobile device
88.272	**184.465,04**	**79.593,03**	



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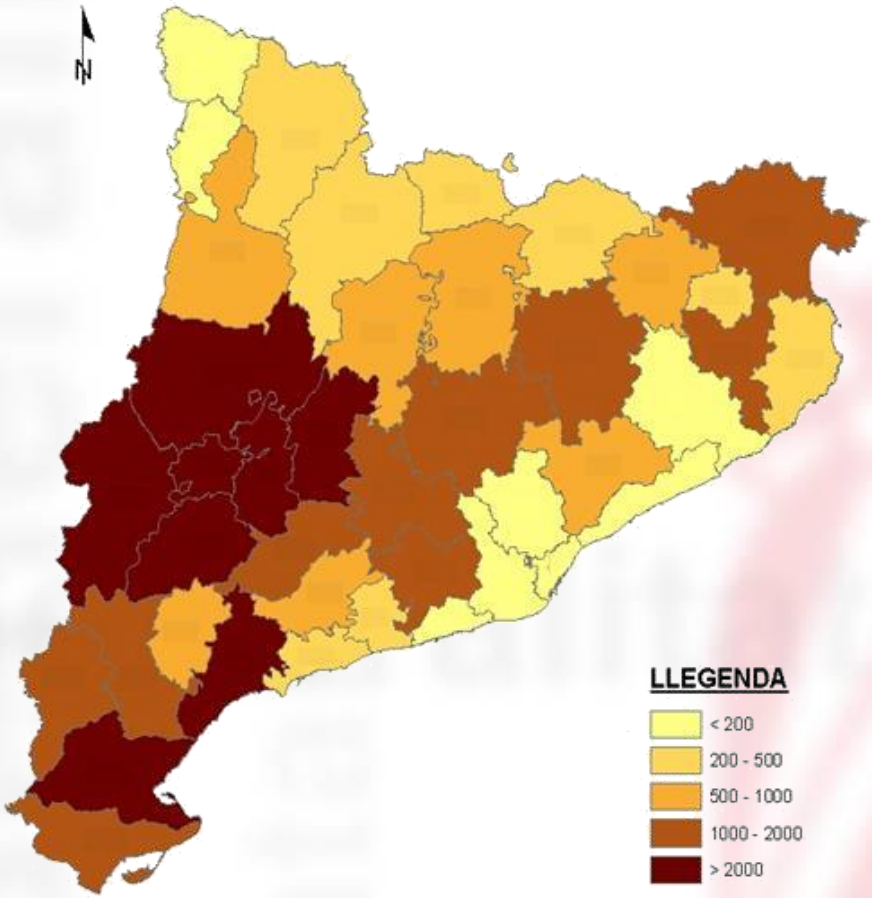
2. Management of the CAP in Catalonia

2.2 Area-based aid applications and control system



58.000 Applications (farmer requests)

- **Agricultural support and direct aids (1st pillar of the CAP)**
- **Rural development (2nd pillar of the CAP)**
- **Other integrated managements**

2. Management of the CAP in Catalonia

2.2 Area-based aid applications and control system

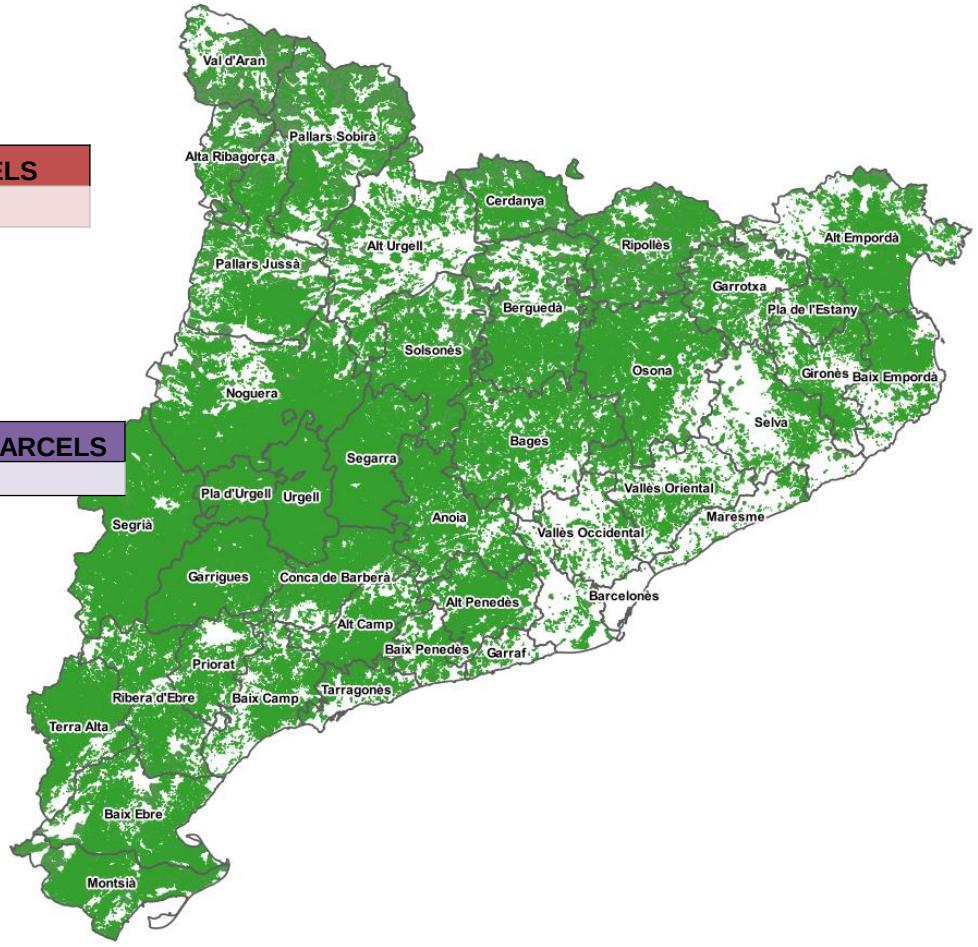
Area-based Aid applications management

Declared

BENEFICIARIES	ha	REFERENCE PARCELS
47.951	1.159.508	1.083.014

Control Sample

BENEFICIARIES	ha	REFERENCE PARCELS
3.881	93.995,20	85.104



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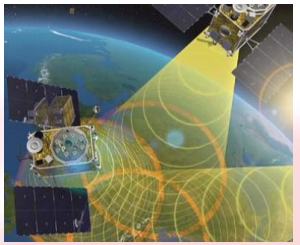
2. Management of the CAP in Catalonia

2.2 Area-based aid applications and control system

On-the-spot check with mobile device

☐ **LPIS**

METHOD	UPDATE APPLICATIONS	ha_UPDATED
Office	73.113	54.746,99
Mobile device	**15.159**	**24.846,05**
	88.272	**79.593,03**



57.592 parcels
65.692,82 ha

☐ **Area-based aids**

METHOD	REFERENCE PARCELS	ha CONTROLED
Classic (with mobile device)	**42.433**	**40.846,77**
Control with remote sensing	43.867	**44.513,99**
	86.300	**85.360,76**

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

2008

Garmin GPS 72
ETREX VENTURE

2010

WASS
EGNOS
enabled

Royaltek
RBT-2210

Compe
Pocket PRO

HP IPAQ 214

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

2008

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ETREX VENTURE

2010

Royaltek
RBT-2210

Validated by JRC in 2011

2. Management of the CAP in Catalonia

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WASS
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2017

Garmin GLO

Samsung
Galaxy TAB

CRAC

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

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2010

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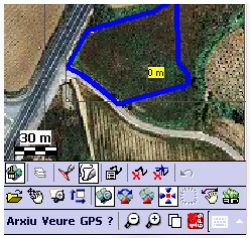
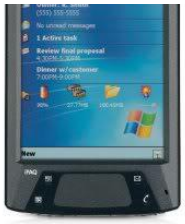




2017

Garmin GLO

In process of validation right now

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Uses of mobile devices:

- **Getting there**

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Uses of mobile devices:

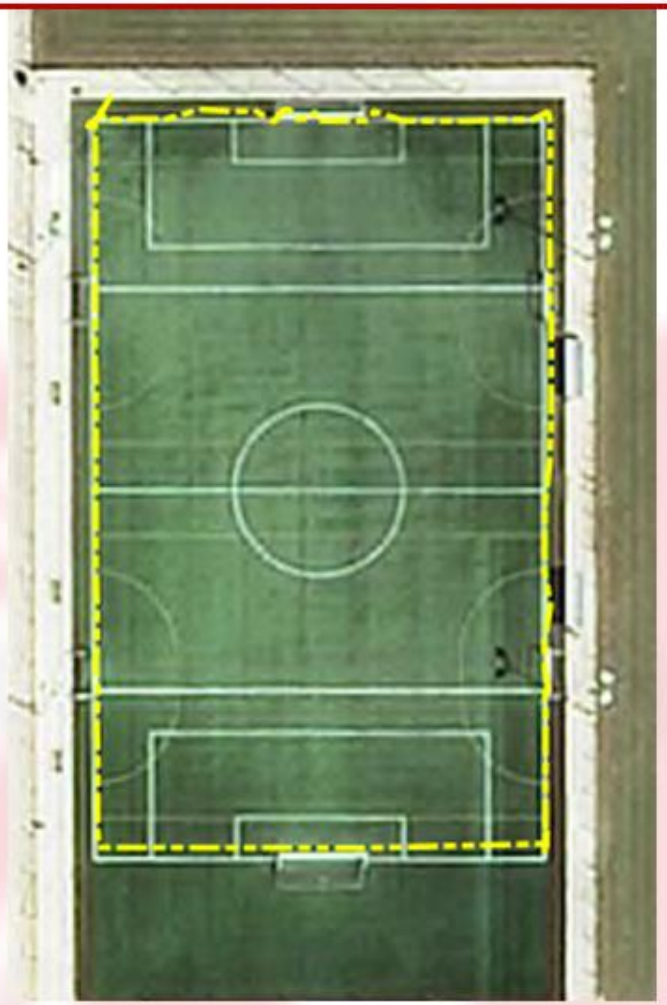
- Getting there
- Area measurement

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Uses of mobile devices:

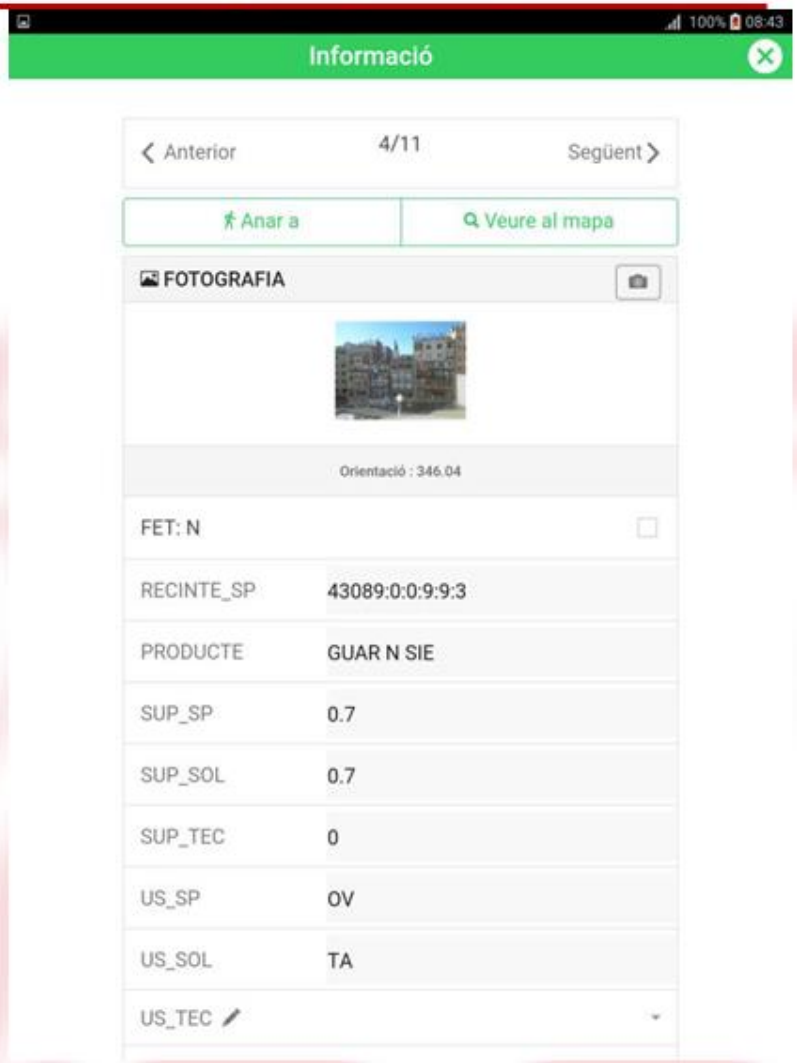
- Getting there
- Area measurement
- Establishment of boundaries



2. Management of the CAP in Catalonia
2.3 Mobile devices: On-The-Spot Check support (OTSC)

Uses of mobile devices:

- ❑ Getting there
- ❑ Area measurement
- ❑ Establishment of boundaries
- ❑ Data storage



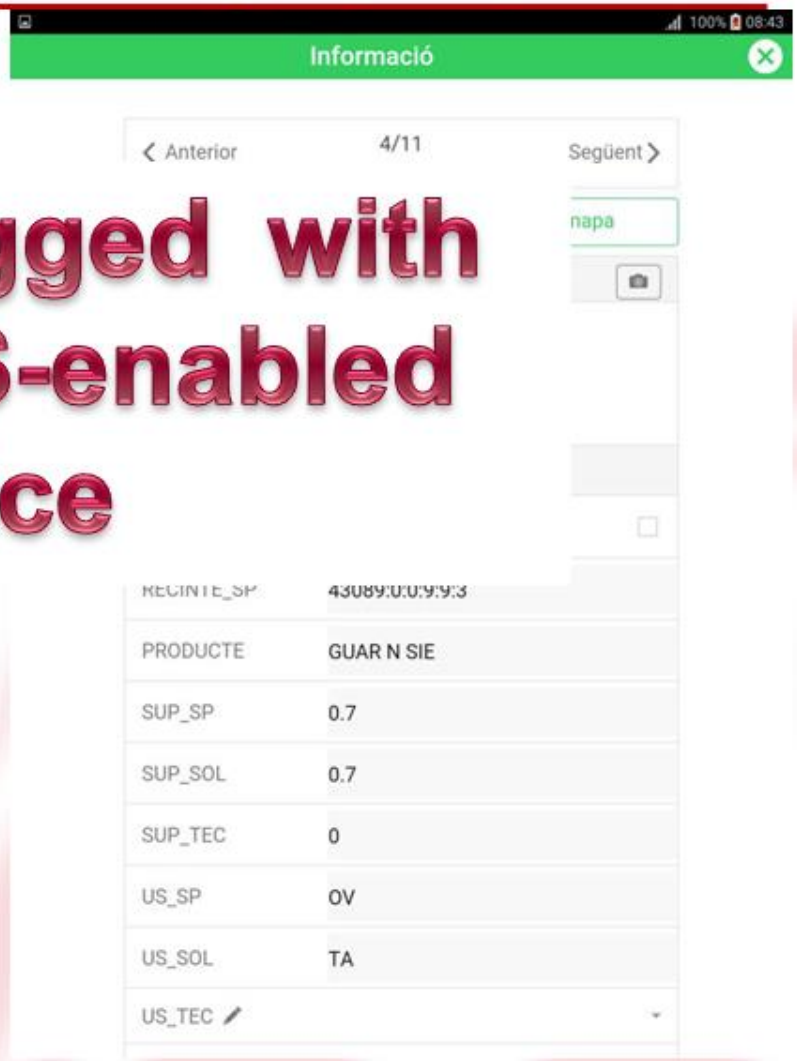
2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Uses of mobile devices:

- ❑ C
- ❑ A
- ❑ E
- ❑ **Data storage**

Position tagged with the EGNOS-enabled device



2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Preparing the work at office with web programs (ASI or CON):

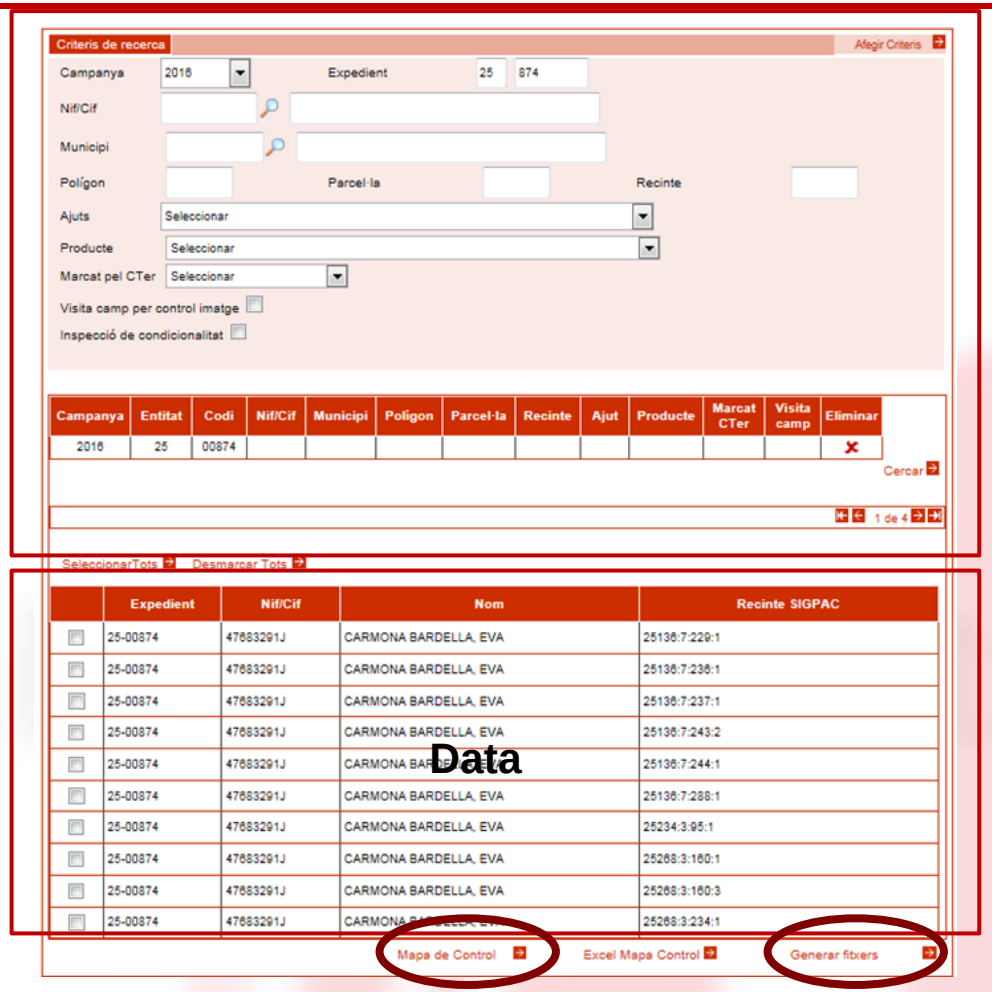
- **Get data**
- **Look for the parcels in control map**
- **Download data**
- **Process data**
- **Data upload at mobile device**

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

CON's interface

Getting data



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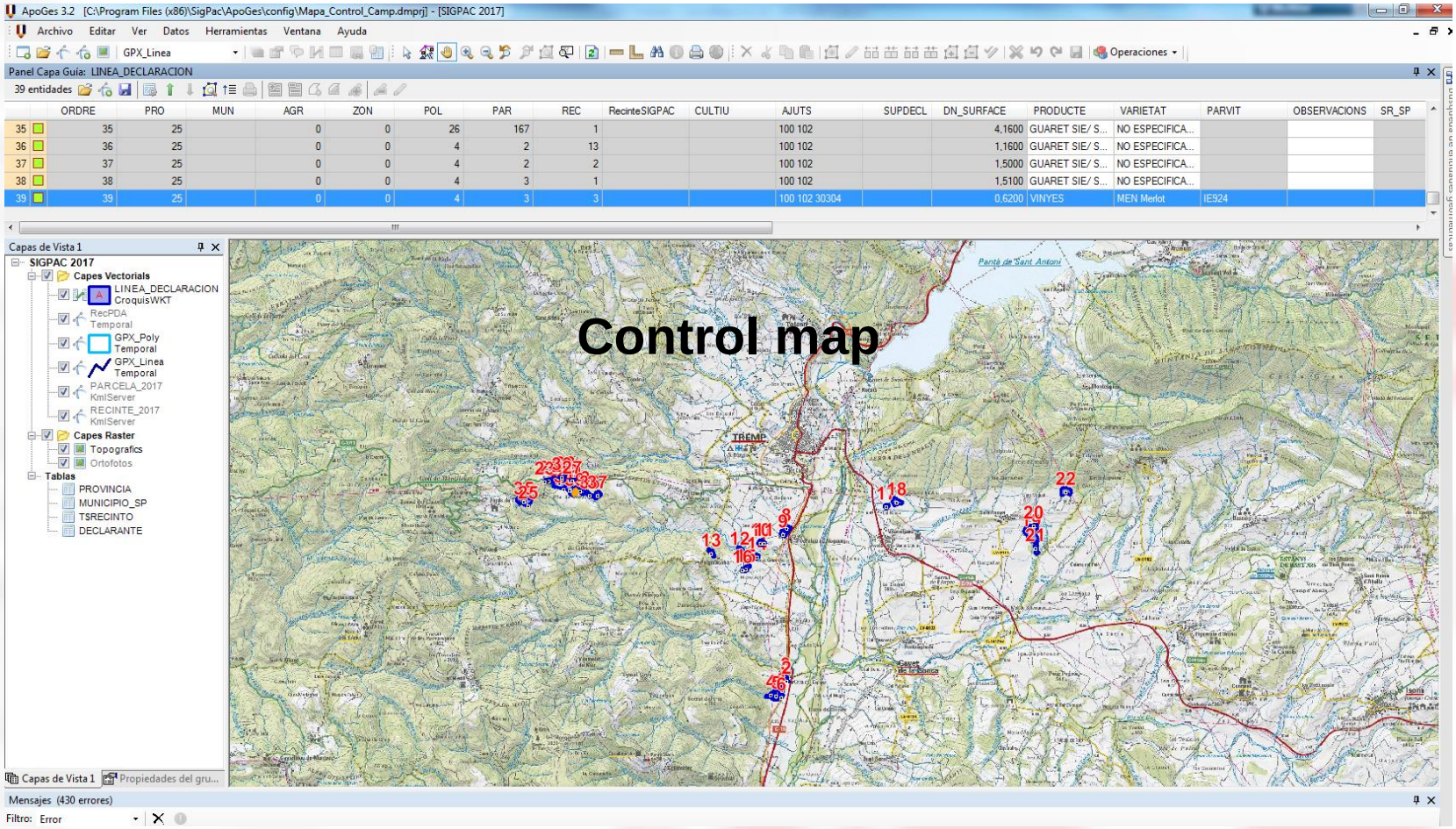
Looking for the parcels in map

Downloading data

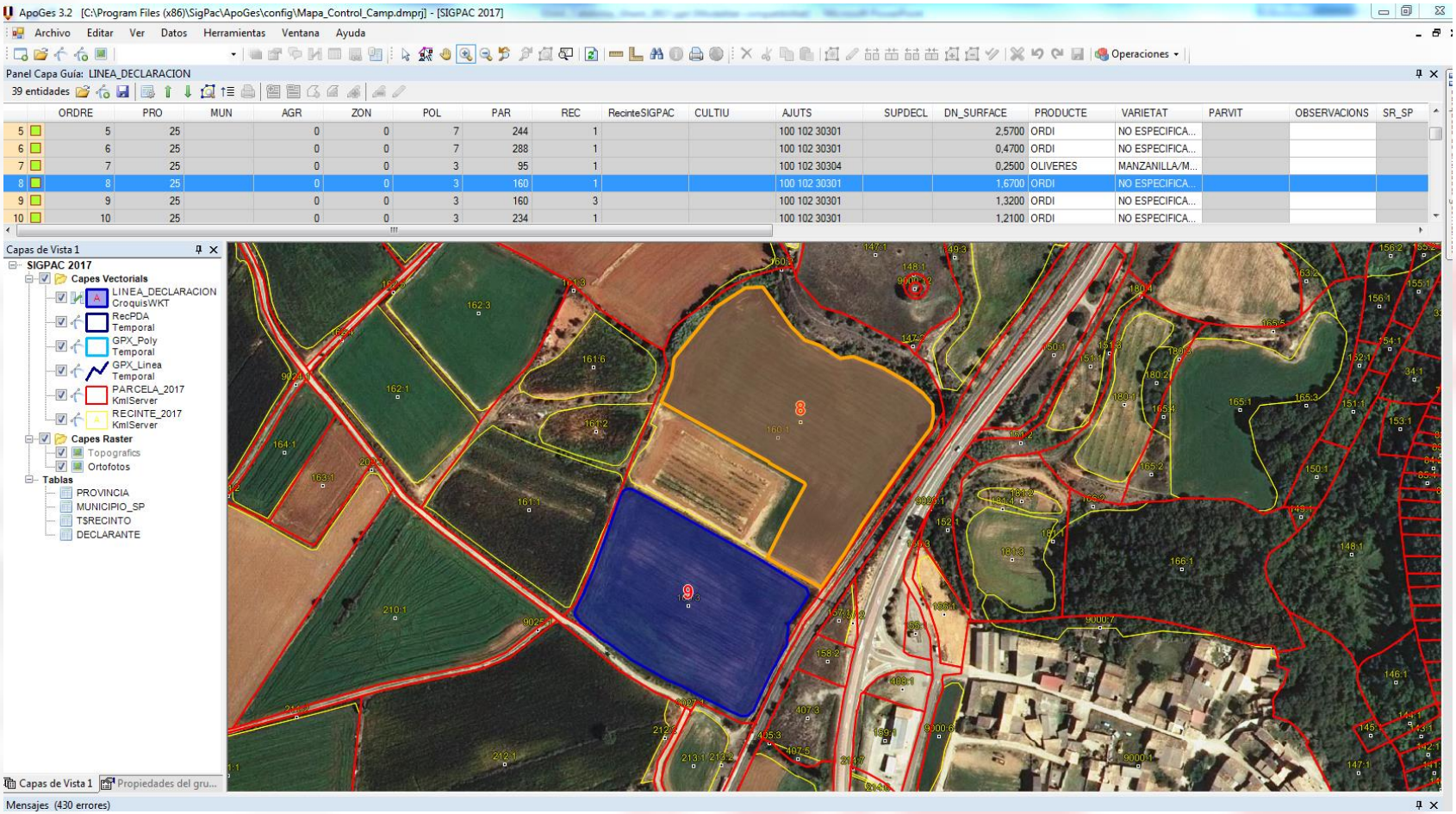
2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)



2. Management of the CAP in Catalonia

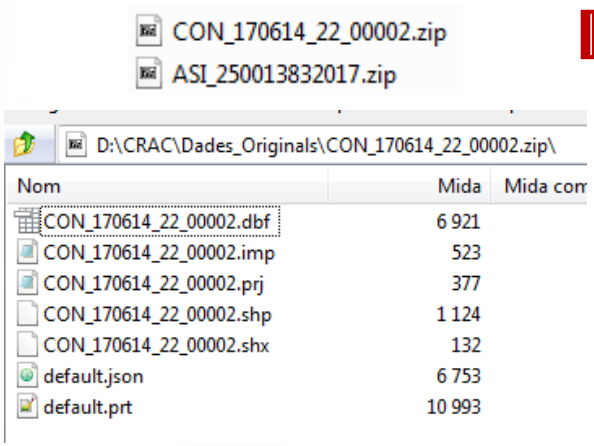
2.3 Mobile devices: On-The-Spot Check support (OTSC)



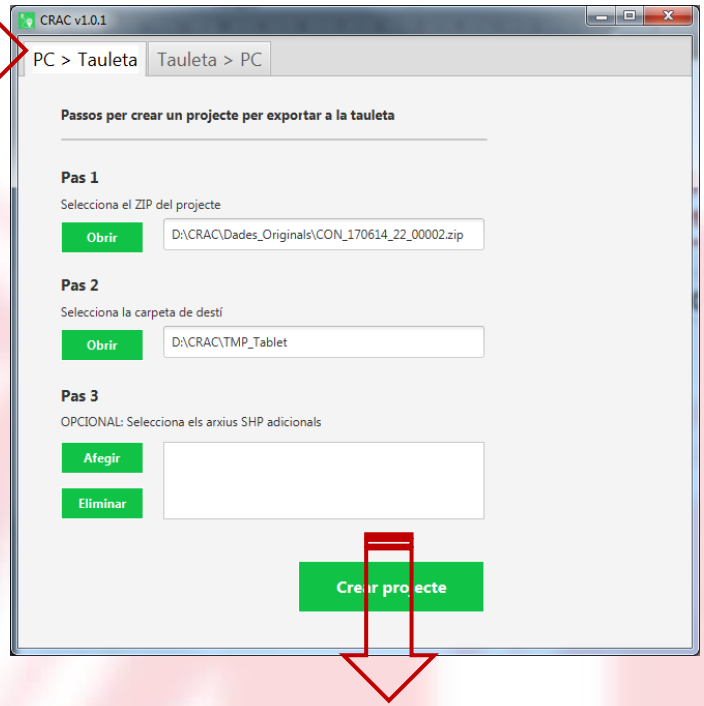
2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Downloaded data



Processing…



Data uploading to mobile device

2. Management of the CAP in Catalonia

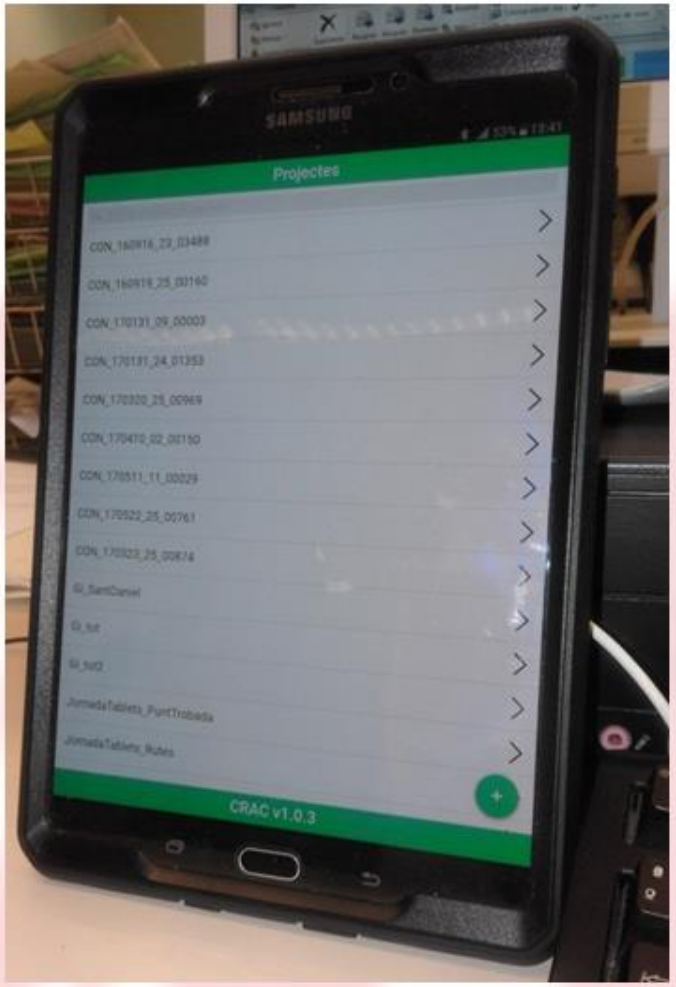
2.3 Mobile devices: On-The-Spot Check support (OTSC)

Working in the field with mobile devices (CRAC):

- **Select the project to work on and open it**
- **Work on it**
- **Transfer data to computer**
- **Process data**
- **Update data to web application**

2. Management of the CAP in Catalonia
2.3 Mobile devices: On-The-Spot Check support (OTSC)

Select project to work on it



2. Management of the CAP in Catalonia
2.3 Mobile devices: On-The-Spot Check support (OTSC)

Select project to work on it

2. Management of the CAP in Catalonia
2.3 Mobile devices: On-The-Spot Check support (OTSC)

Select project to work on it

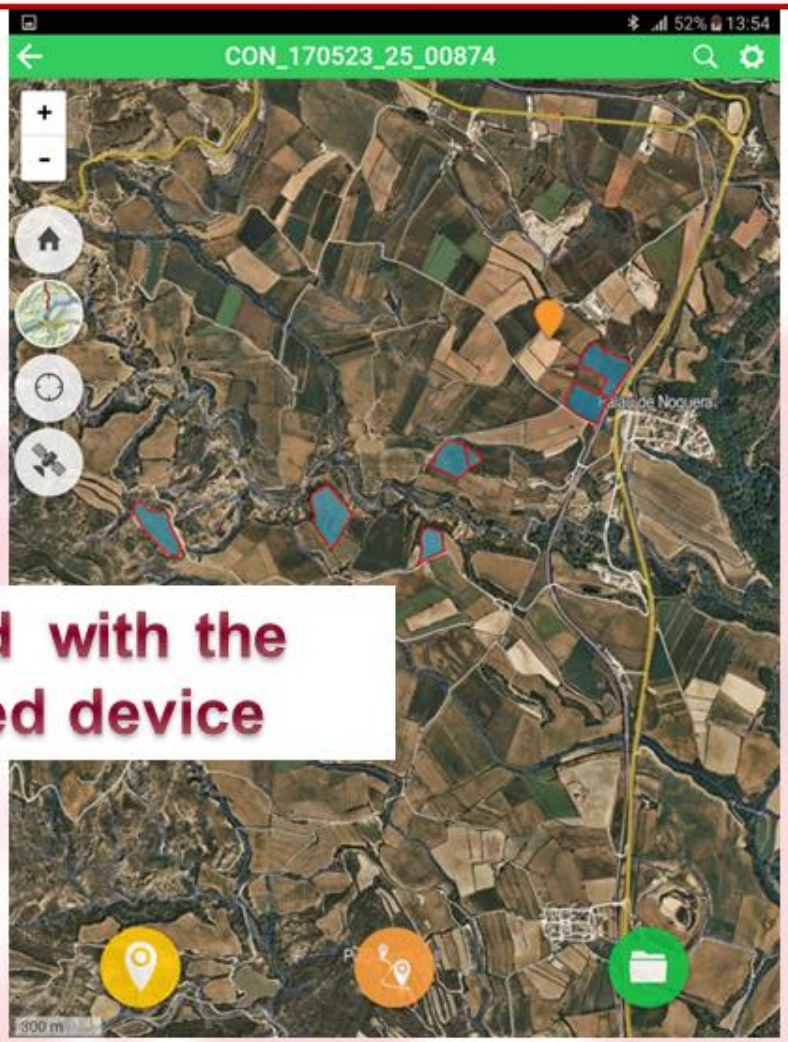
Work on it

2. Management of the CAP in Catalonia

2.3 Mobile devices: On-The-Spot Check support (OTSC)

Select project to work on it

Work on it



Position tagged with the EGNOS-enabled device

3. The importance of using EGNOS

Establishing a higher accuracy requirement for the land parcel system identification applicable to all Member States is one of the priorities established by the CAP

Article 38

Area measurement

1. While all agricultural parcels shall be subject to eligibility checks, the actual area measurement of the agricultural parcel as part of an on-the-spot check may be limited to a randomly selected sample of at least 50 % of the agricultural parcels for which an aid application and/or payment claim has been submitted under the area-related aid schemes and/or rural development measures. When this sample check reveals any non-compliance, all agricultural parcels shall be measured, or conclusions from the measured sample shall be extrapolated.

The first subparagraph shall not apply to agricultural parcels to be checked for the purpose of ecological focus area in accordance with Article 46 of Regulation (EU) No 1307/2013.

2. Agricultural parcel areas shall be measured by any means proven to assure measurement of quality at least equivalent to that required by applicable technical standards, as drawn up at Union level.

3. The competent authority may make use of remote sensing in accordance with Article 40 and Global Navigation Satellite Systems (GNSS) techniques where possible.

4. A single value buffer tolerance shall be defined for all area measurements performed using GNSS and/or ortho-imagery. For this purpose the measurement tools used shall be validated for at least one validation class of buffer tolerance below the single value. However, the single tolerance value shall not exceed 1.25 m.

The maximum tolerance with regard to each agricultural parcel shall not, in absolute terms, exceed 1.0 ha.

However, for the measures referred to in Article 21(1)(a) and Articles 30 and 34 of Regulation (EU) No 1305/2013 as far as the forestry area is concerned, Member States may define appropriate tolerances, which shall in no case be greater than twice the tolerance set out in the first subparagraph of this paragraph.

5. The total area of an agricultural parcel may be taken into account in the measurement provided that it is fully eligible. In other cases the net eligible area shall be taken into account. For that purpose, the pro-rata system as referred to in Article 10 of Delegated Regulation (EU) No 640/2014 may be applied, where appropriate.

6. For the purpose of the calculation of shares of different crops for crop diversification as referred to in Article 44 of Regulation (EU) No 1307/2013, the area actually covered by one crop in accordance with Article 40(2) of Delegated Regulation (EU) No 639/2014 shall be taken into account for the measurement. On areas where mixed cropping is applied, the total area covered with mixed cropping in accordance with the first and the second subparagraphs of Article 40(3) of that Regulation or covered with a mixed crop in accordance with the third subparagraph of Article 40(3) of that Regulation shall be taken into account.

7. Where Article 17(1)(b) of Delegated Regulation (EU) No 640/2014 may lead to an artificial division of the area of adjacent agricultural parcels with a homogeneous land cover type into separate agricultural parcels, the measurement of this area of adjacent agricultural parcels with a homogeneous land cover type shall be combined in one single measurement of the agricultural parcels concerned.

8. Where appropriate, two separate measurements shall be carried out on the agricultural parcel for the purpose of the basic payment scheme or the single area payment scheme in accordance with Chapter 1 of Title III of Regulation (EU) No 1307/2013 and a spatially different overlapping agricultural parcel for the purpose of the remaining area-related aid schemes and/or rural development measures, where appropriate.

3. The importance of using EGNOS

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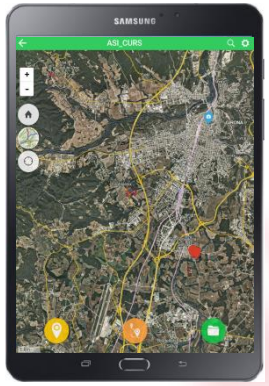
3. The importance of using EGNOS

3,000 €



Samsung Galaxy TAB

200 €

Garmin GLO

99 €

EGNOS **Free**

120-150 Inspectors

3. The importance of using EGNOS

Based on the statistical analysis of the data collected during the validation test the following conclusions could be drawn for ***Royaltek RBT-2210 GNSS using Compe Pocket Pro 2.61d application***

- The analysis of variance showed that there is a statistically significant difference between the measurements taken in clockwise and anticlockwise directions, between the operators and between parcels. However, considering their low absolute value, these differences can reasonably be omitted.
- The mean reproducibility limit of the measurements (95% confidence level) of all parcels, expressed as a buffer width, was found to be **0.56m**.

In conclusion, the results of this test suggest the use of a **0.75 m buffer tolerance** to be applied to measurements made with ***Royaltek RBT-2210 GNSS using Compe Pocket Pro 2.61d application*** *in* standalone mode using continuous measurement method.

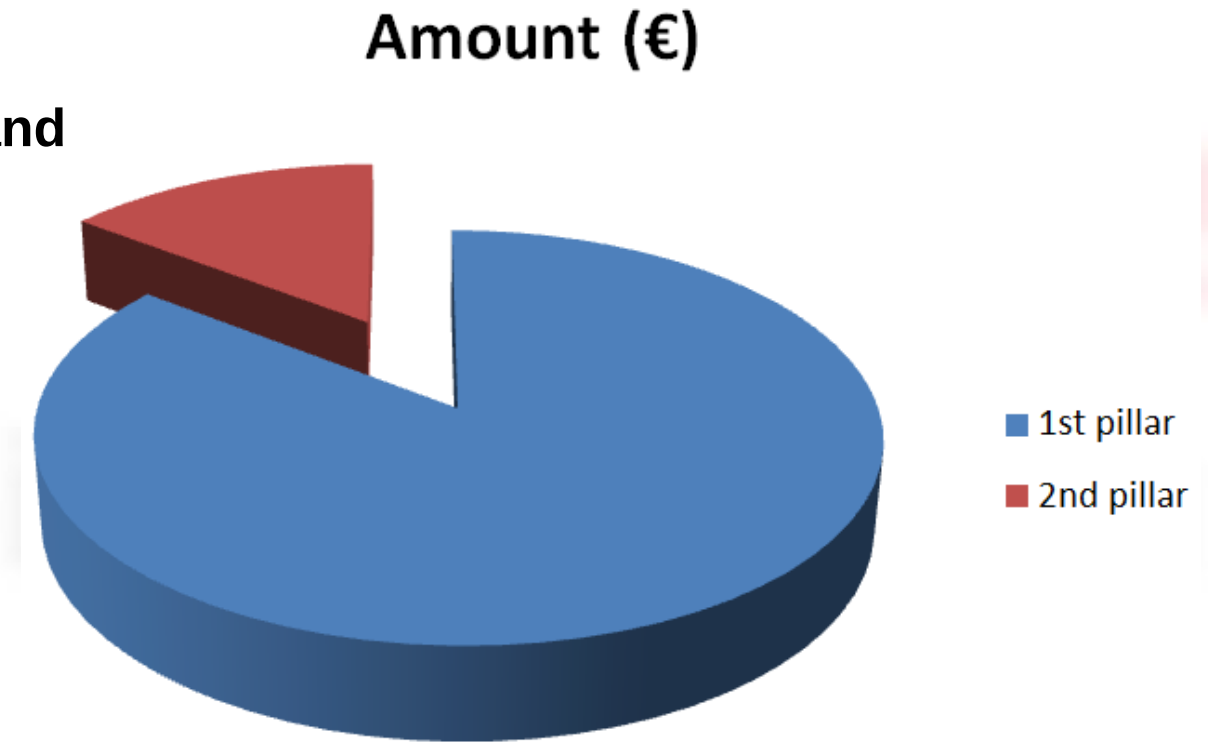
We would be happy to provide you with further information upon the results, should this be required.

3. The importance of using EGNOS

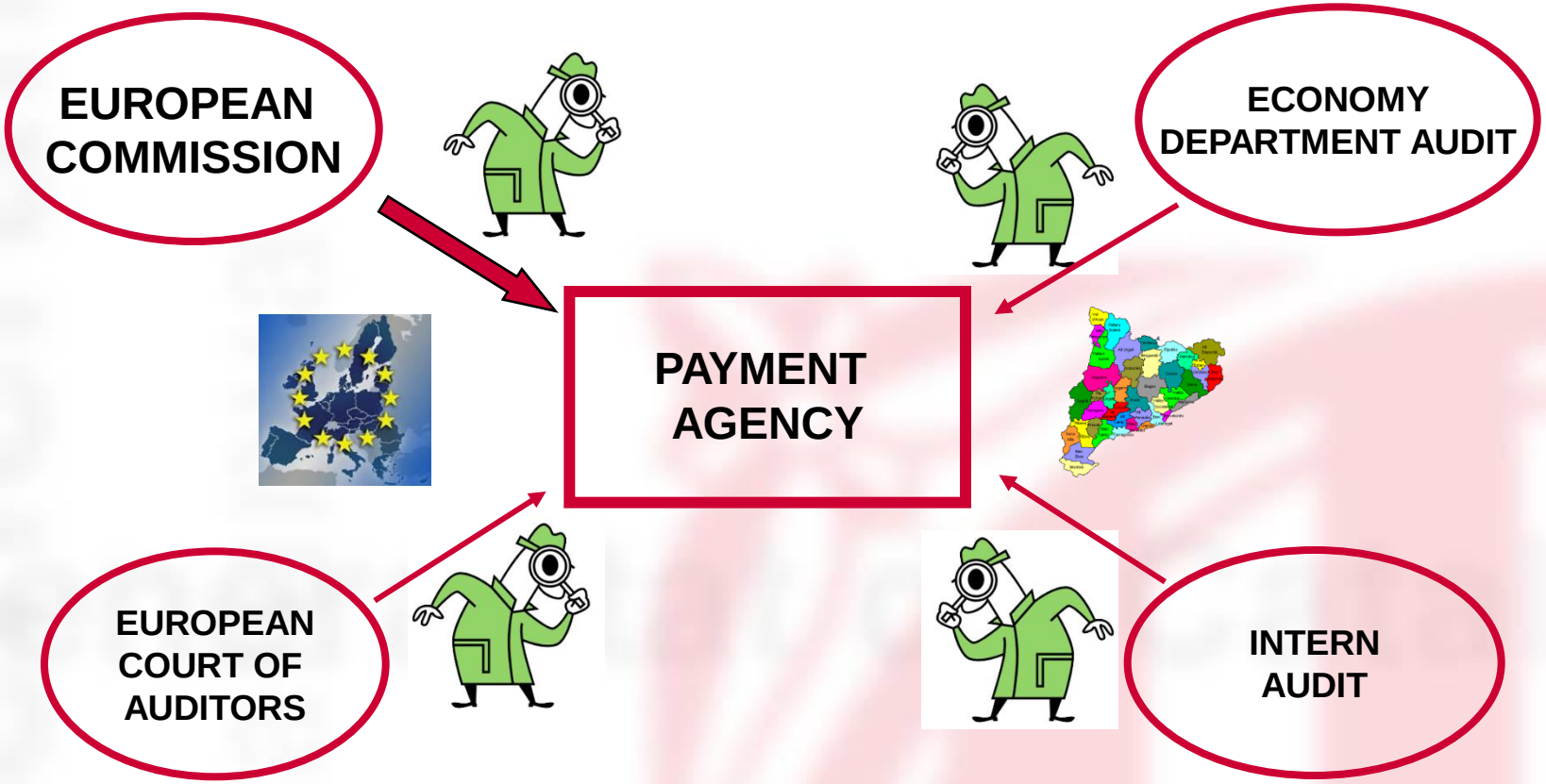
2015 Area-based aids payments

1st pillar
Agricultural support and direct aids
239,278,021.09 €

2nd pillar
Rural development
40,809,080.80 €



3. The importance of using EGNOS



4. The future in CAP management

Currently: EU regulations are being revised

Today
Integrated Aid Control System (IACS)

Tomorrow…
Integrated Aid Monitoring System ??

4. The future in CAP management

Our next steps…

- **Sentinel 2**
  - **Cover semi-automatic classification**
  - **Cover changes detection**
  - **Cover admissibility**

- **LiDAR**
  - **Tree detection**
  - **Cover changes detection**

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Thank you for your attention!