



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 **C**ommon **A**gricultural **P**olicy 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

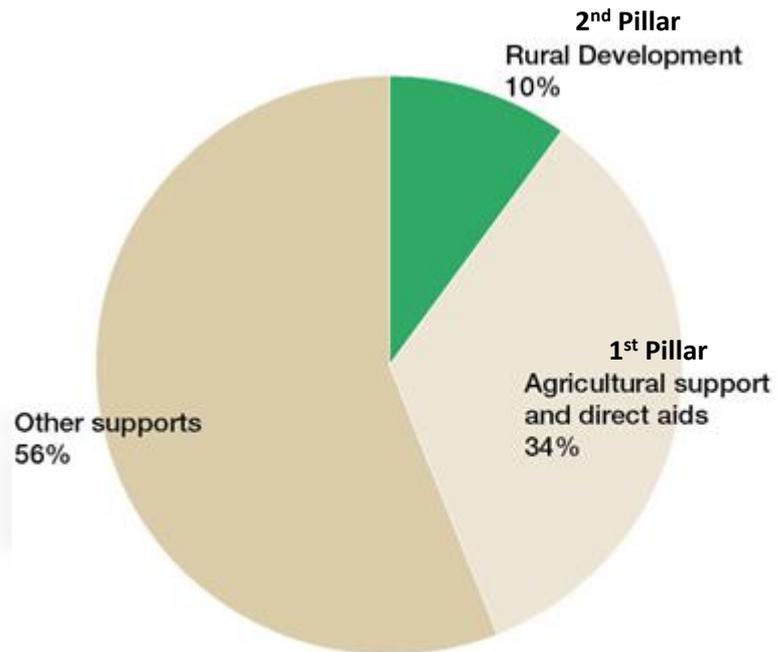
establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy

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 €**



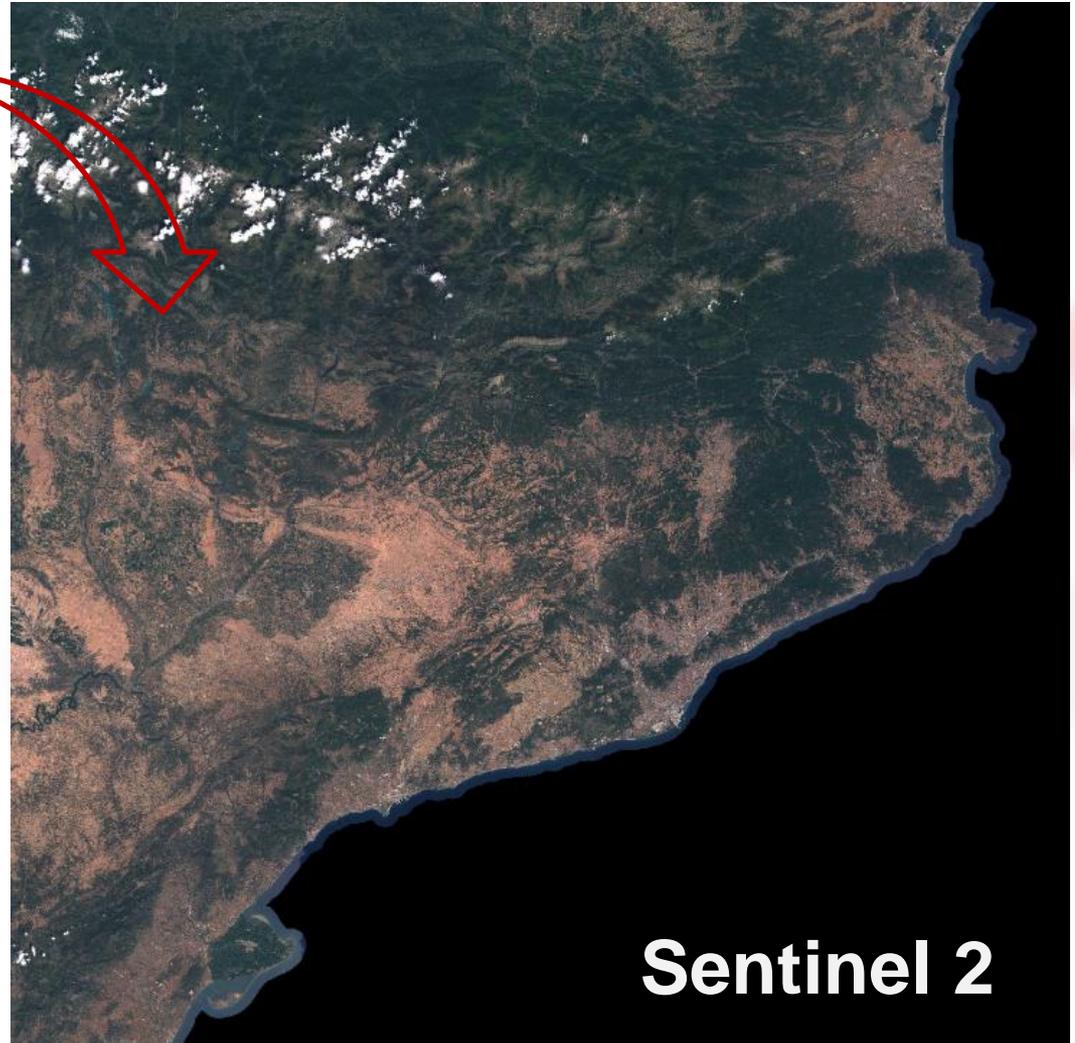
1. Introduction to the Common Agricultural Policy (CAP)



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)



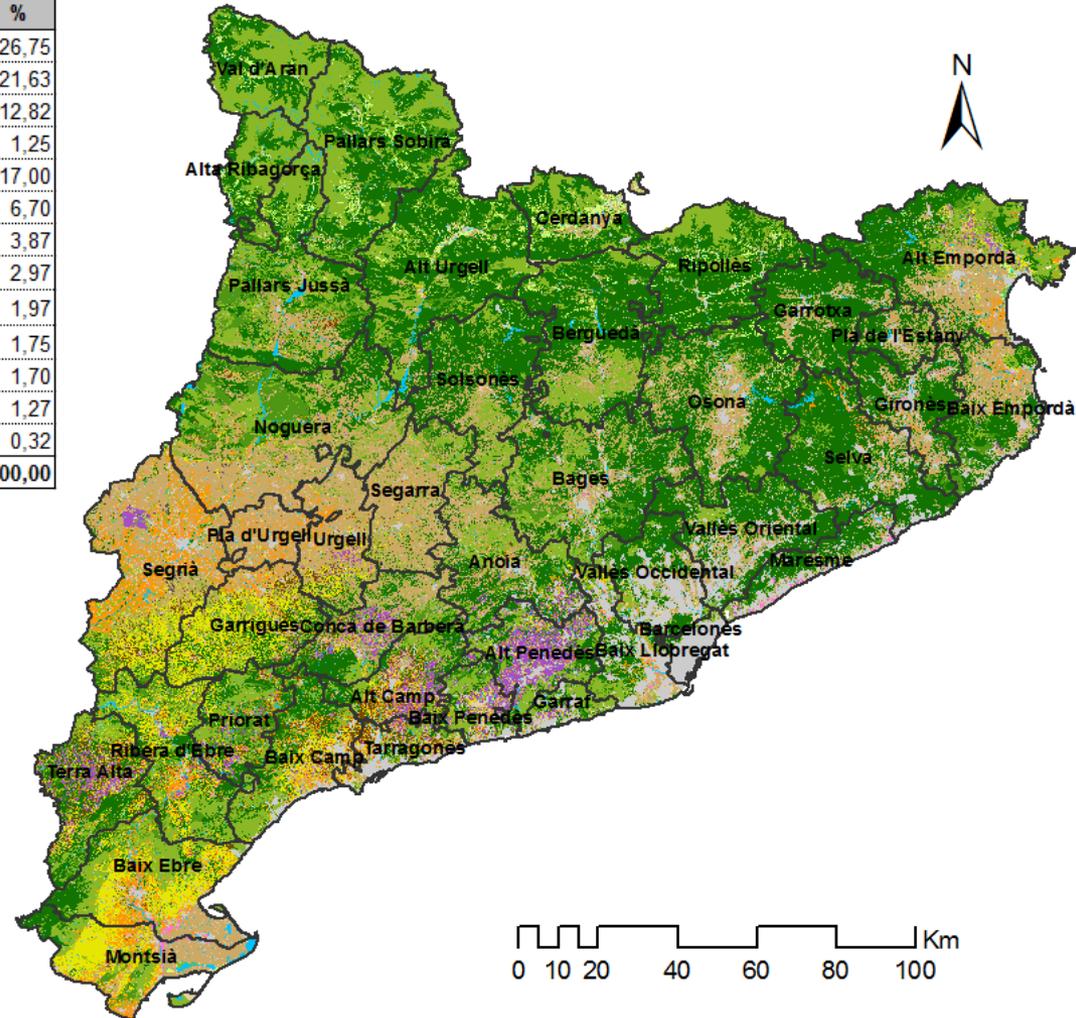
↓ **Area**
(32,100 km²)

↑ **Geographical
diversity**

2. Management of the CAP in Catalonia

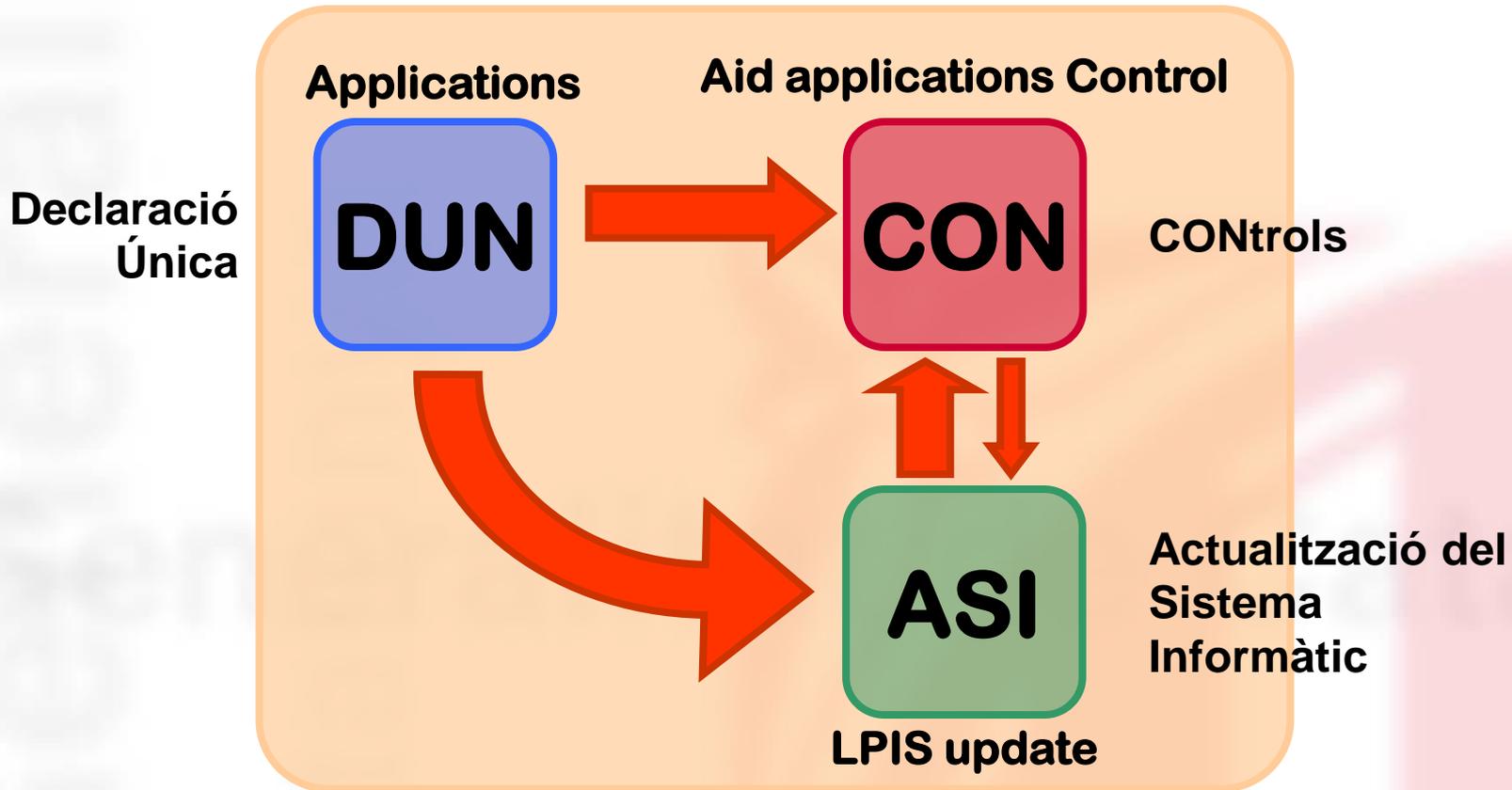
2.1 Land Parcel Identification System (LPIS)

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 campà	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
Fruïters 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
Fruïta 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



2. Management of the CAP in Catalonia

2.2 Area-based aid applications and control system



2. Management of the CAP in Catalonia

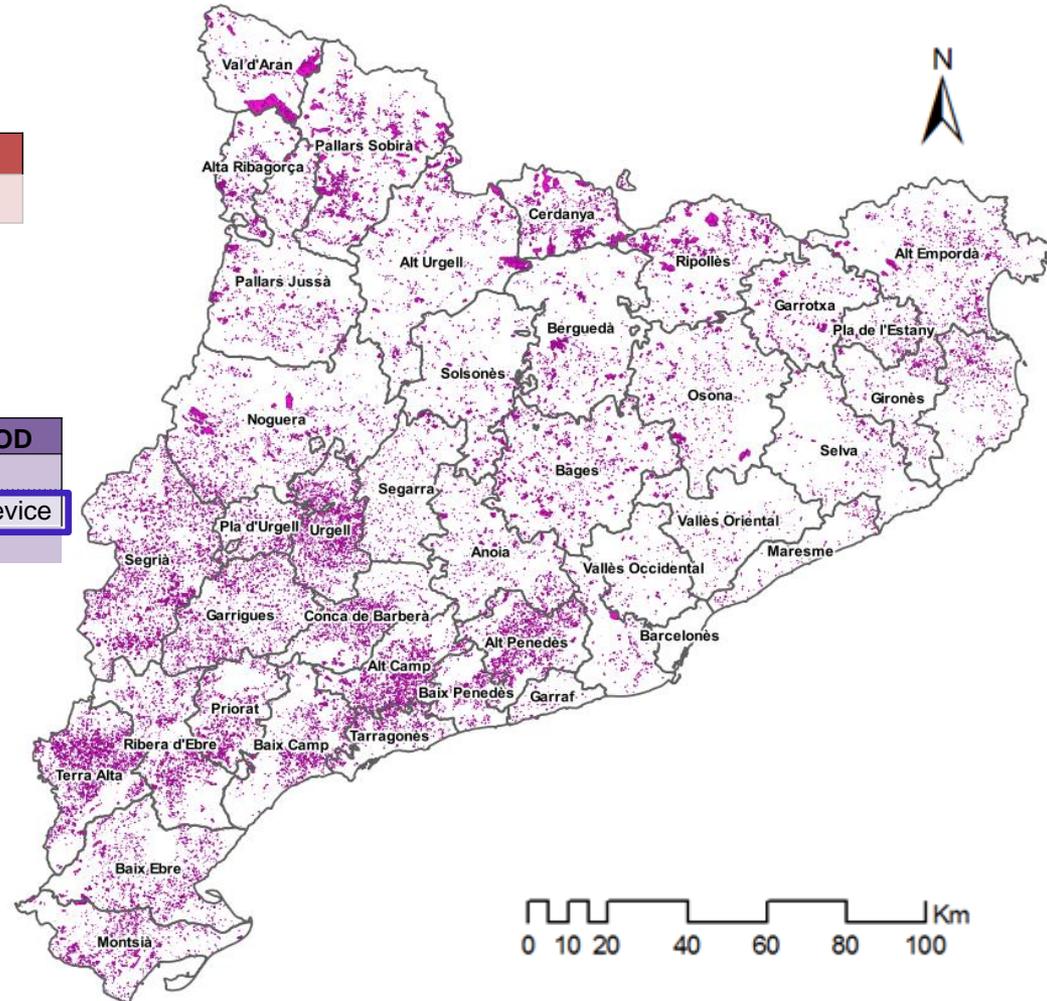
2.2 Area-based aid applications and control system

LPIS

REFERENCE PARCELS	ha
3.666.404	3.210.074,70

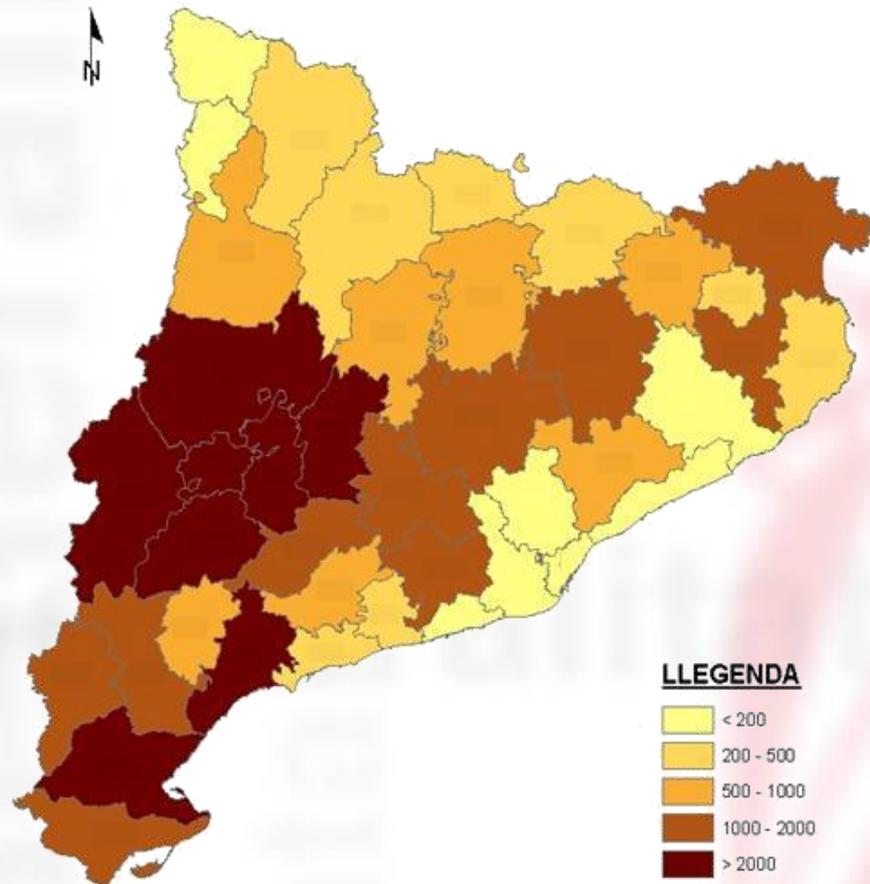
LPIS UPDATE - 2015

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	



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

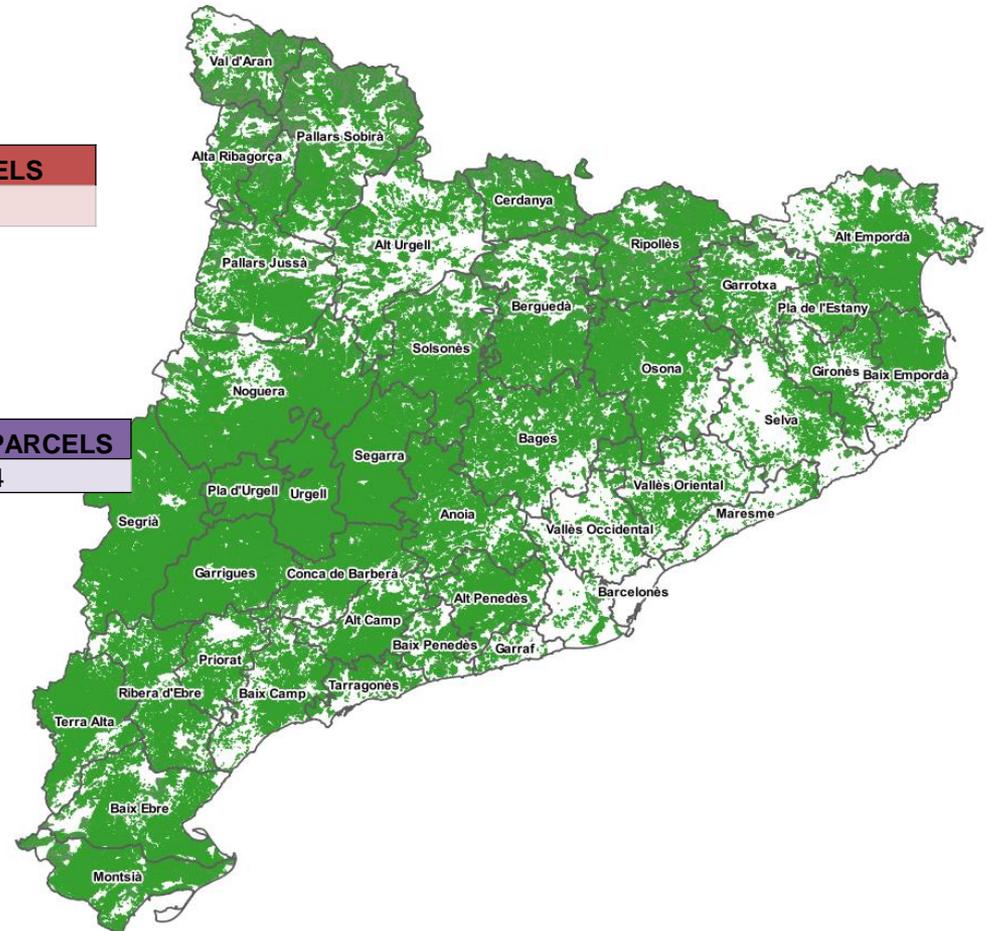
Area-based Aid applications management

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



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 CONTROLLED
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



**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



Garmin GPS 72
ETREX VENTURE

2010



Royaltek
RBT-2210

Validated by
JRC in 2011



2. Management of the CAP in Catalonia

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

2008



Garmin GPS 72
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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)

2008



Garmin GPS 72
ETREX VENTURE

2010



Royaltek
RBT-2210

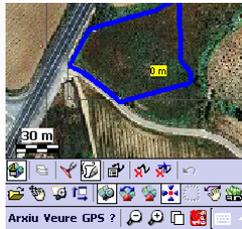
2017

Garmin GLO



Validated by
JRC in 2011

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

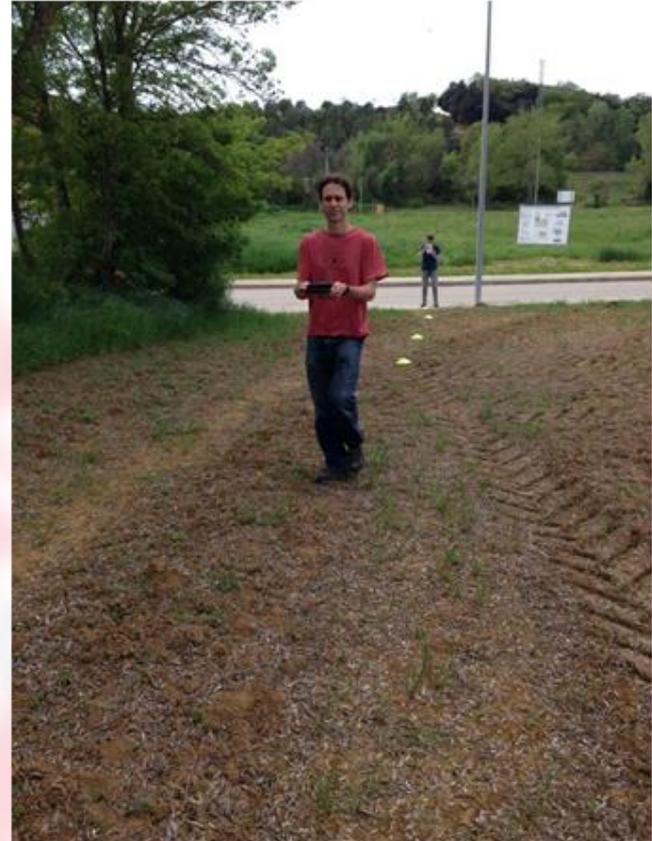


2. Management of the CAP in Catalonia

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

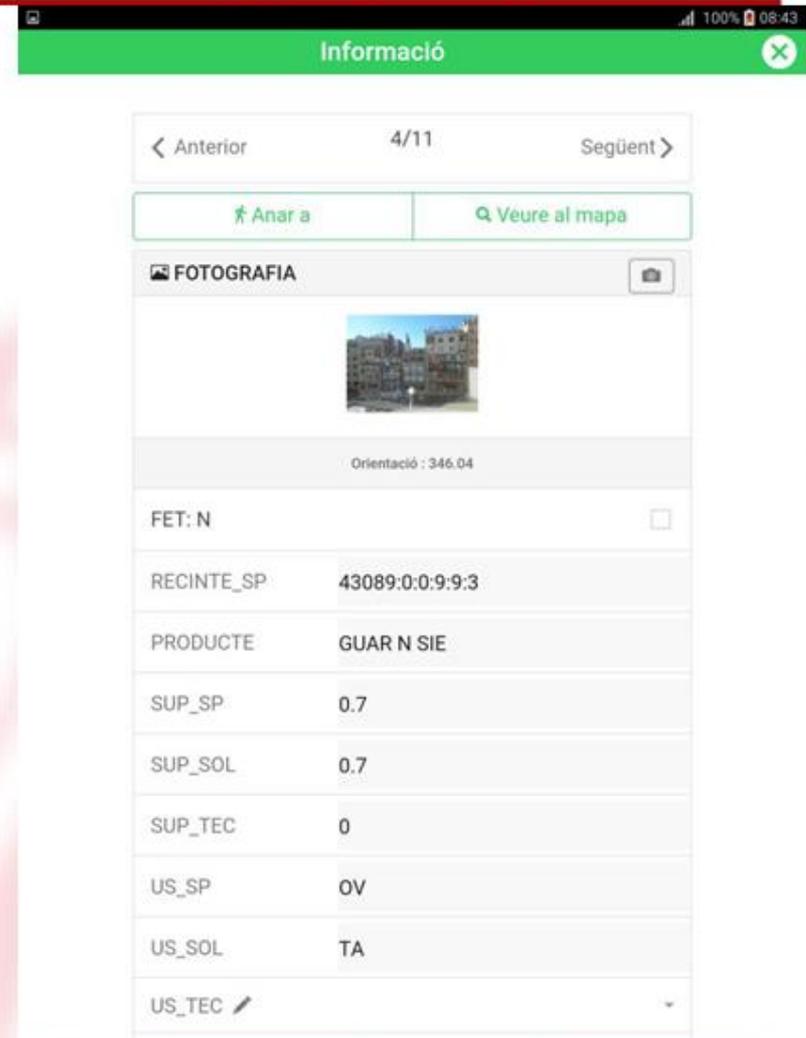


2. Management of the CAP in Catalonia

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

Uses of mobile devices:

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

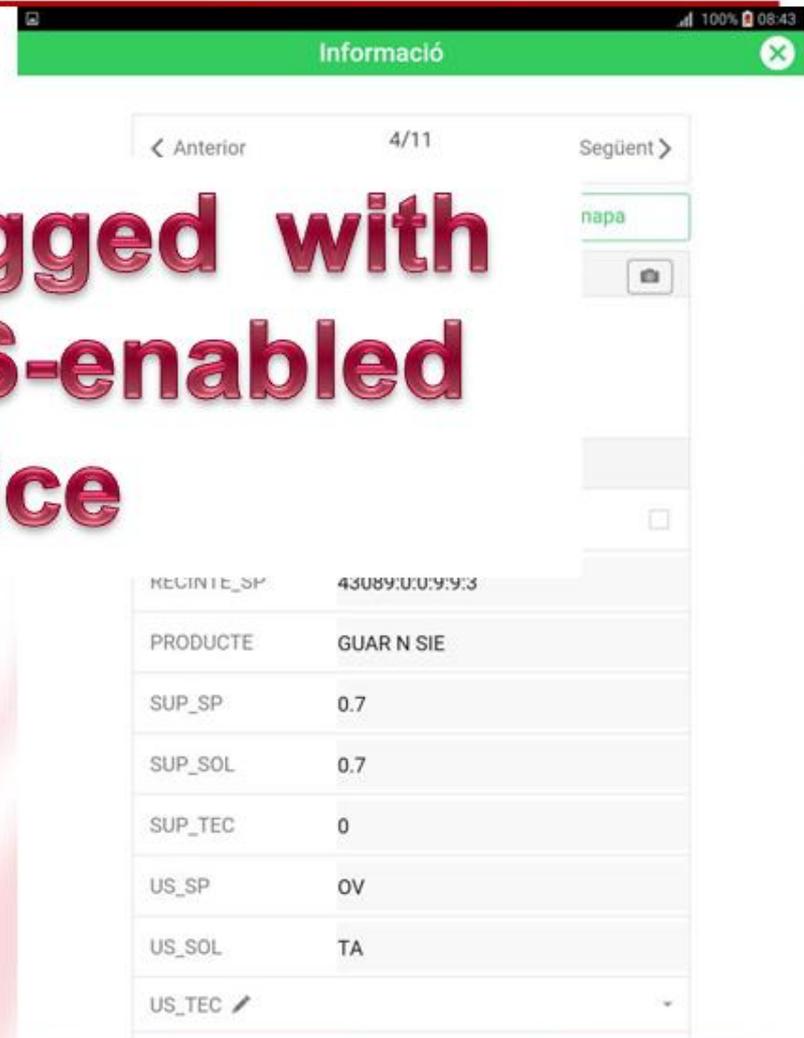


2. Management of the CAP in Catalonia

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**



The screenshot shows a mobile application interface with a green header bar labeled "Informació". Below the header, there are navigation arrows for "Anterior" and "Següent", and a page indicator "4/11". A search bar contains the text "napa". Below the search bar, there is a table with the following data:

RECINTE_SP	43089:0:0:9:9:3
PRODUCTE	GUAR N SIE
SUP_SP	0.7
SUP_SOL	0.7
SUP_TEC	0
US_SP	OV
US_SOL	TA
US_TEC	

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

The screenshot shows the 'Criteris de recerca' (Search criteria) section of the CON's interface. It includes several input fields and dropdown menus for filtering search results. Below the search criteria is a table with the following data:

Campanya	Entitat	Codi	Nif/Cif	Municipi	Poligon	Parcel·la	Recinte	Ajut	Producte	Marcats pel CTer	Visita camp	Eliminar
2016	25	00874										X

Below the table, there are buttons for 'Seleccions Totals' and 'Desmarcar Totals'. The main data table below has the following columns: Expedient, Nif/Cif, Nom, and Recinte SIGPAC. The data rows are as follows:

Expedient	Nif/Cif	Nom	Recinte SIGPAC
25-00874	47683291J	CARMONA BARDELLA, EVA	25136:7:229:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25136:7:236:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25136:7:237:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25136:7:243:2
25-00874	47683291J	CARMONA BARDELLA, EVA	25136:7:244:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25136:7:288:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25234:3:95:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25268:3:160:1
25-00874	47683291J	CARMONA BARDELLA, EVA	25268:3:160:3
25-00874	47683291J	CARMONA BARDELLA, EVA	25268:3:234:1

At the bottom of the interface, there are three buttons: 'Mapa de Control', 'Excel Mapa Control', and 'Generar fitxers'. The 'Mapa de Control' and 'Generar fitxers' buttons are circled in red.

2. Management of the CAP in Catalonia

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

ApoGes 3.2 [C:\Program Files (x86)\SigPac\ApoGes\config\Mapa_Control_Camp.dmprj] - [SIGPAC 2017]

Archivo Editar Ver Datos Herramientas Ventana Ayuda

Panel Capa Guía: LINEA_DECLARACION

	ORDRE	PRO	MUN	AGR	ZON	POL	PAR	REC	RecinteSIGPAC	CULTIU	AJUTS	SUPDECL	DN_SURFACE	PRODUCTE	VARIETAT	PARVIT	OBSERVACIONS	SR_SP
35	35	25		0	0	26	167	1			100 102		4.1600	GUARET SIE/ S...	NO ESPECIFICA...			
36	36	25		0	0	4	2	13			100 102		1.1600	GUARET SIE/ S...	NO ESPECIFICA...			
37	37	25		0	0	4	2	2			100 102		1.5000	GUARET SIE/ S...	NO ESPECIFICA...			
38	38	25		0	0	4	3	1			100 102		1.5100	GUARET SIE/ S...	NO ESPECIFICA...			
39	39	25		0	0	4	3	3			100 102 30304		0.6200	VINYES	MEN Merlot	IE924		

Capas de Vista 1

- SIGPAC 2017
 - Capas Vectorials
 - LINEA_DECLARACION CroquisWKT
 - RecPDA Temporal
 - GPX_Poly Temporal
 - GPX_Linea Temporal
 - PARCELA_2017 Km1Server
 - RECINTE_2017 Km1Server
 - Capas Raster
 - Topografics
 - Ortofotos
 - Tablas
 - PROVINCIA
 - MUNICIPIO_SP
 - TSRECINTO
 - DECLARANTE

Control map

Mensajes (430 errores)

Filtro: Error

2. Management of the CAP in Catalonia

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

ApoGes 3.2 [C:\Program Files (x86)\SigPac\ApoGes\config\Mapa_Control_Camp.dmprj] - [SIGPAC 2017]

Archivo Editar Ver Datos Herramientas Ventana Ayuda

Panel Capa Guia: LINEA_DECLARACION
39 entidades

	ORDRE	PRO	MUN	AGR	ZON	POL	PAR	REC	RecinteSIGPAC	CULTIU	AJUTS	SUPDECL	DN_SURFACE	PRODUCTE	VARIETAT	PARVIT	OBSERVACIONS	SR_SP
5	5	25		0	0	7	244	1			100 102 30301		2.5700	ORDI	NO ESPECIFICA...			
6	6	25		0	0	7	288	1			100 102 30301		0.4700	ORDI	NO ESPECIFICA...			
7	7	25		0	0	3	95	1			100 102 30304		0.2500	OLIVERES	MANZANILLA/M...			
8	8	25		0	0	3	160	1			100 102 30301		1.6700	ORDI	NO ESPECIFICA...			
9	9	25		0	0	3	160	3			100 102 30301		1.3200	ORDI	NO ESPECIFICA...			
10	10	25		0	0	3	234	1			100 102 30301		1.2100	ORDI	NO ESPECIFICA...			

Capas de Vista 1

- SIGPAC 2017
 - Capas Vectorials
 - LINEA_DECLARACION
 - CroquisWKT
 - RecPOA
 - Temporal
 - GPX_Poly
 - Temporal
 - GPX_Linea
 - Temporal
 - PARCELA_2017
 - KmlServer
 - RECINTE_2017
 - KmlServer
 - Capas Raster
 - Topografics
 - Ortofotos
 - Tablas
 - PROVINCIA
 - MUNICIPIO_SP
 - TSRECINTO
 - DECLARANTE

Capas de Vista 1 Propiedades del gru...

Mensajes (430 errores)

2. Management of the CAP in Catalonia

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

Downloaded data

CON_170614_22_00002.zip
ASI_250013832017.zip

D:\CRAC\Dades_Originals\CON_170614_22_00002.zip\

Nom	Mida	Mida com
CON_170614_22_00002.dbf	6 921	
CON_170614_22_00002.imp	523	
CON_170614_22_00002.prj	377	
CON_170614_22_00002.shp	1 124	
CON_170614_22_00002.shx	132	
default.json	6 753	
default.prt	10 993	

Processing...

CRAC v1.0.1

PC > Tauleta Tauleta > PC

Passos per crear un projecte per exportar a la tauleta

Pas 1
Selecciona el ZIP del projecte
 D:\CRAC\Dades_Originals\CON_170614_22_00002.zip

Pas 2
Selecciona la carpeta de destí
 D:\CRAC\TMP_Tablet

Pas 3
OPCIONAL: Selecciona els arxius SHP addicionals

Data uploading to mobile device

2. Management of the CAP in Catalonia

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

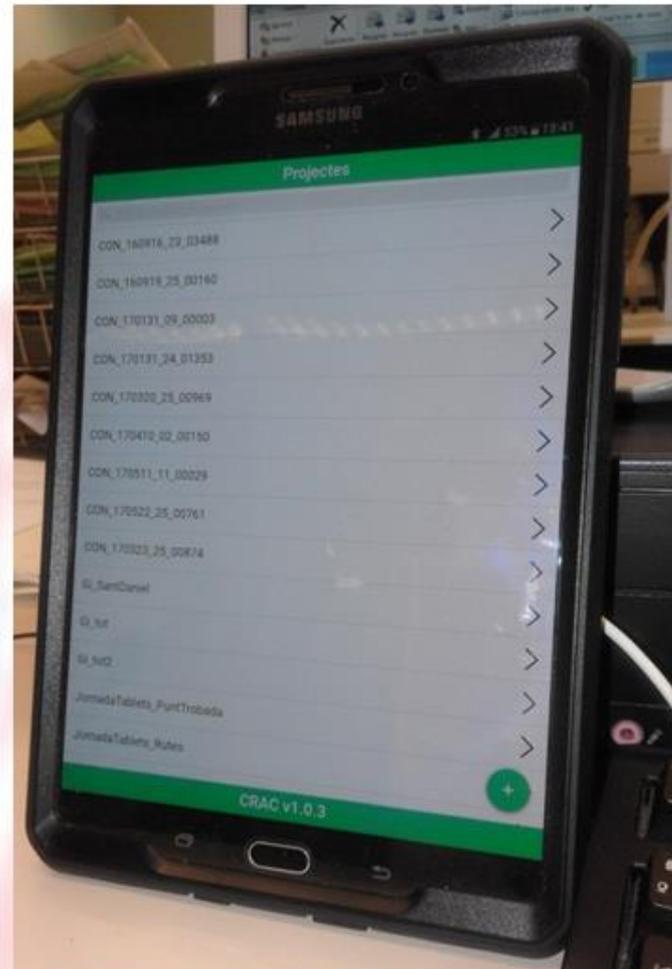
Working in the **field** with mobile devices (CRAC):

- 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



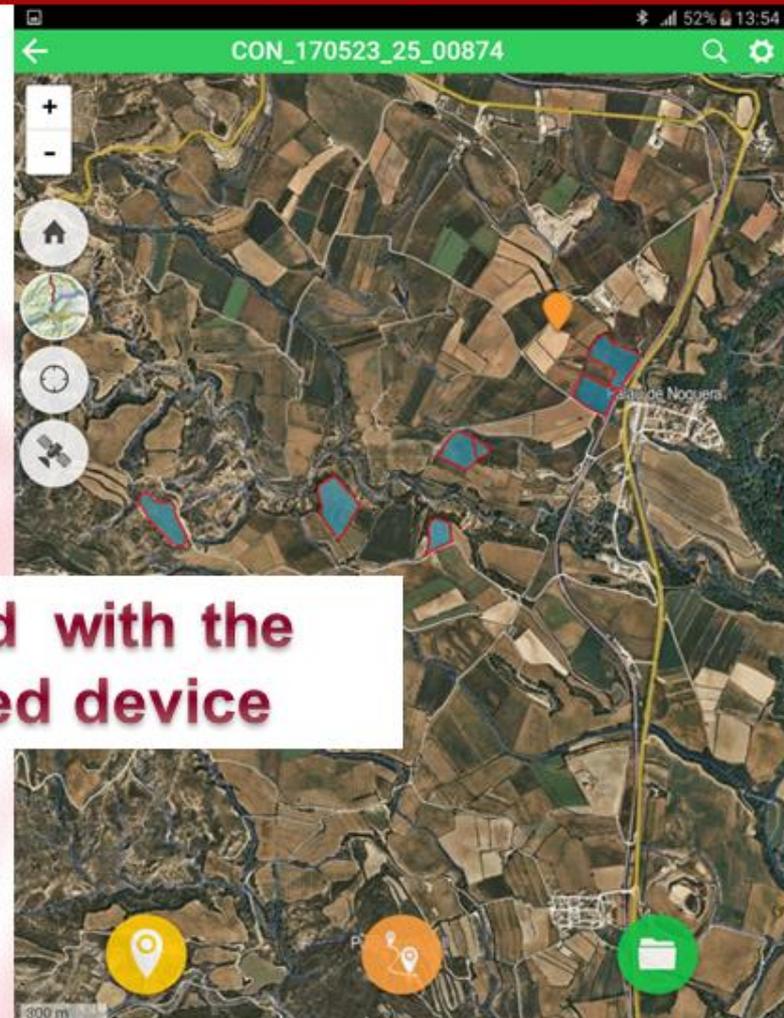
2. Management of the CAP in Catalonia

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 I 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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of this paragraph.

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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



3,000 €



**Samsung
Galaxy TAB**

200 €



Garmin GLO

99 €



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

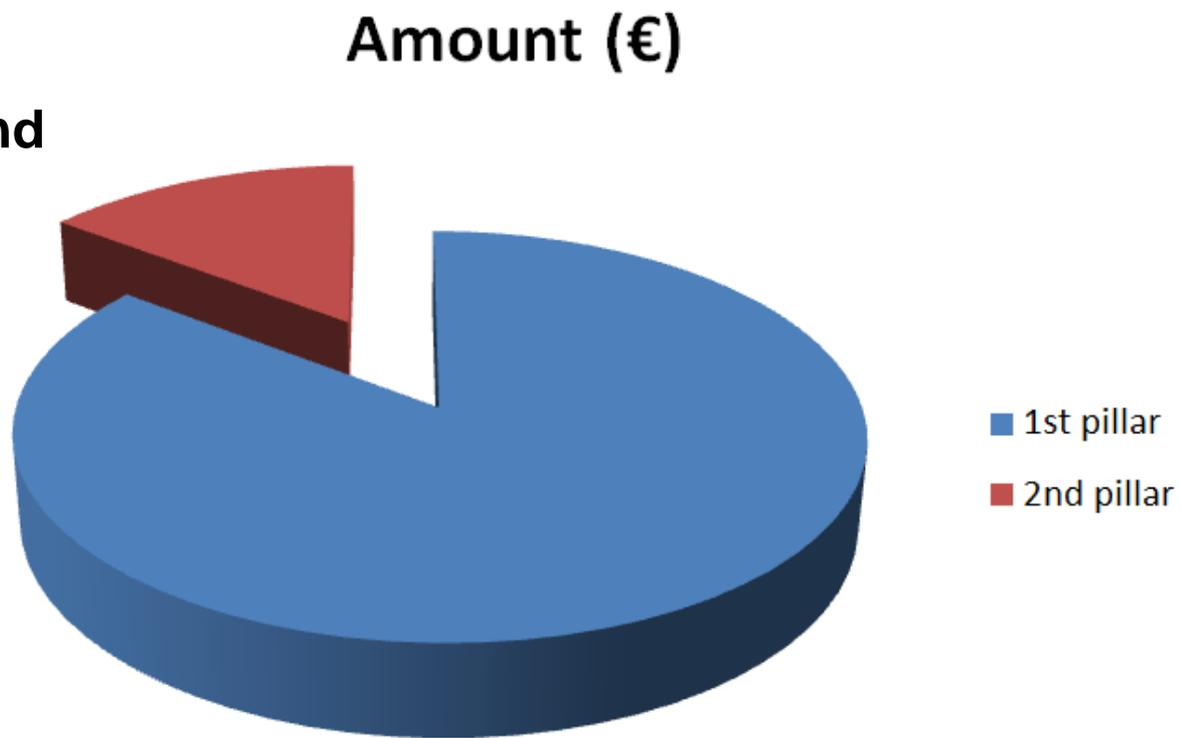
**Agricultural support and
direct aids**

239,278,021.09 €

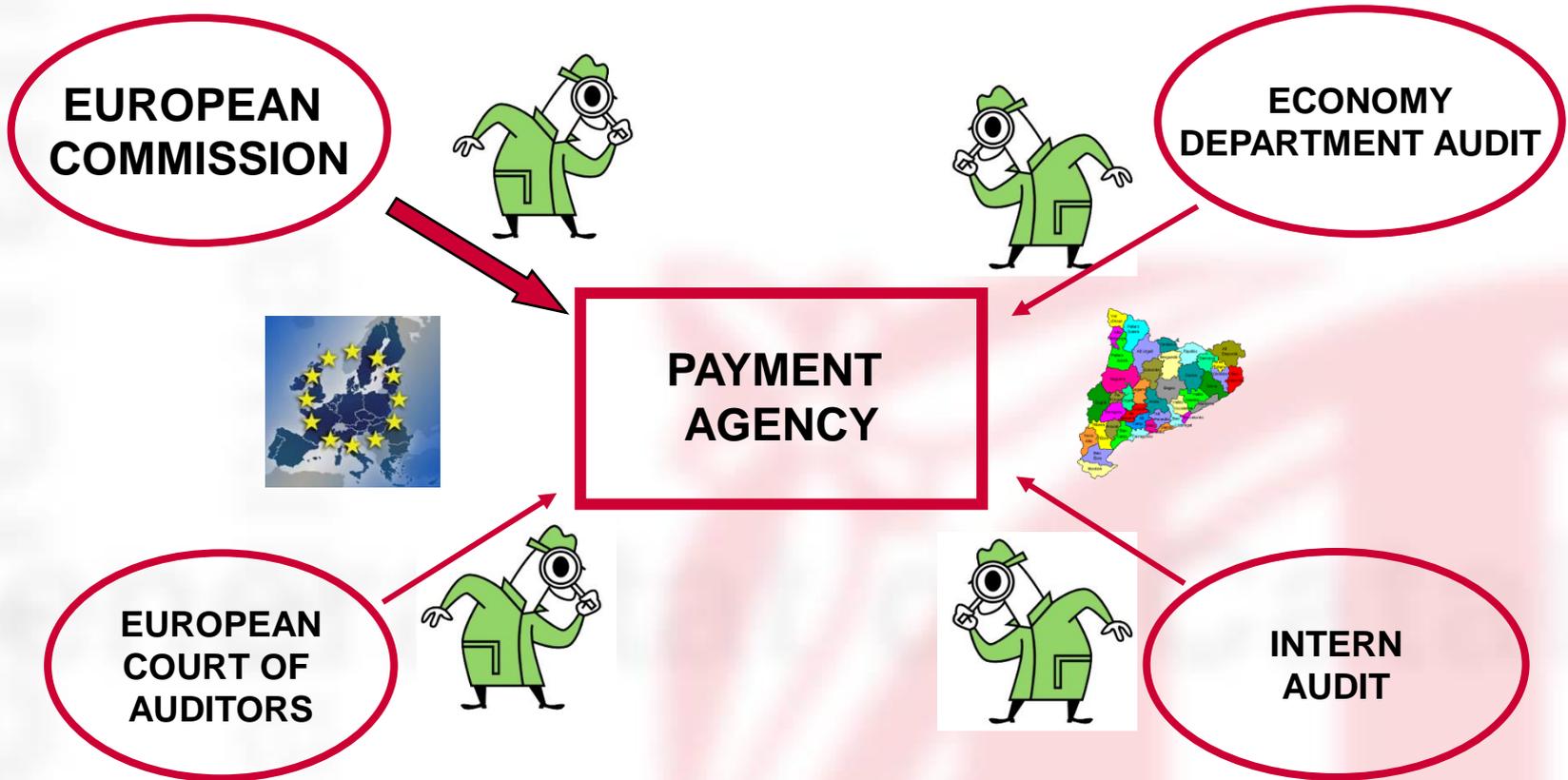
2nd pillar

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**



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

Thank you for your attention!