Main innovations from Open IACS project
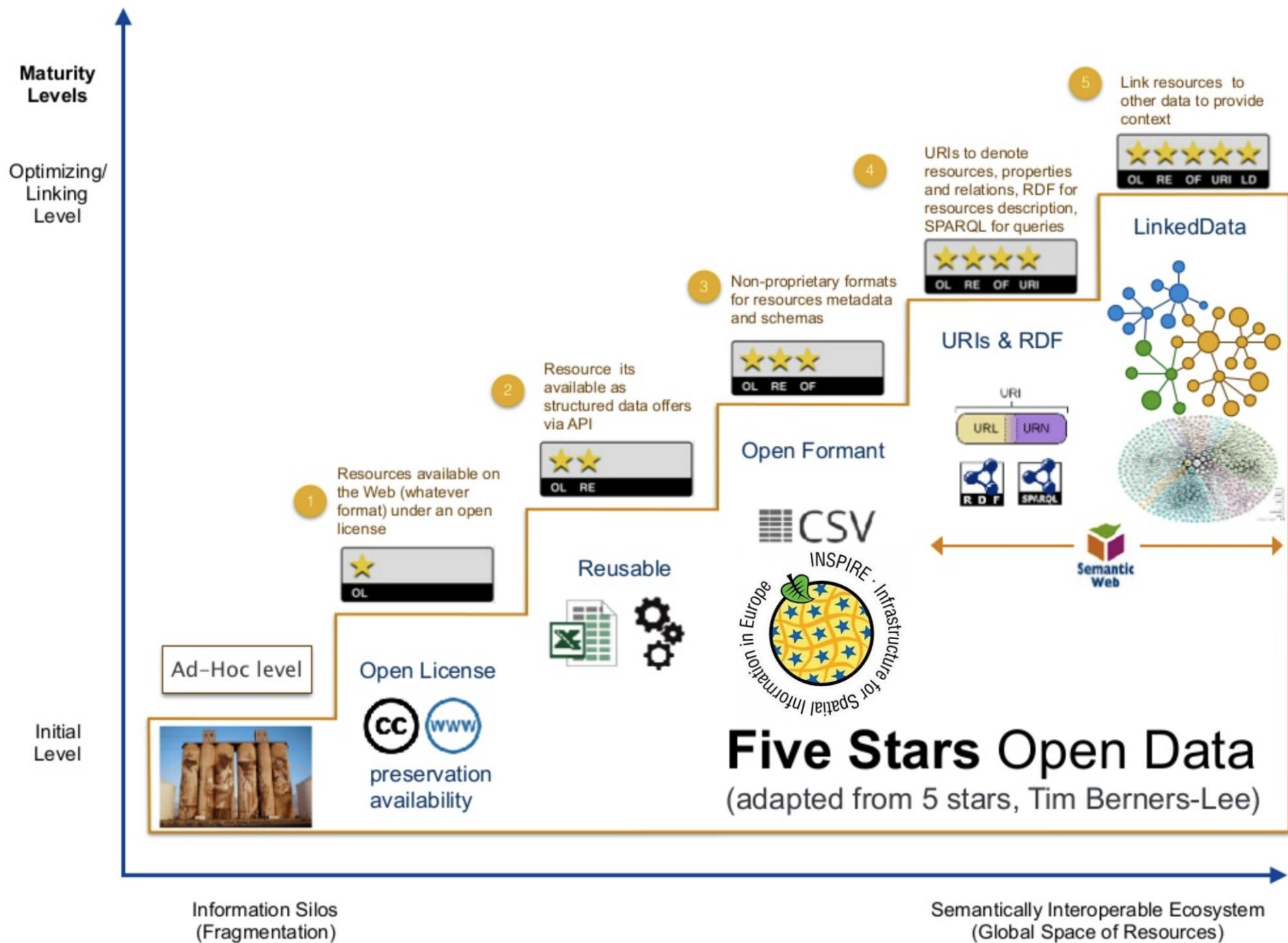
Javier García Guzmán / Mat Montalvo Martínez

Agenda

1) Objectives and current results of the project.

2) Publication of IACS Linked Open Data

3) Relating IACS Linked Open with External Data Sources

4) Integration of Open IACS results with INSPIRE.

5) Key Issues of the Next Version.

Co-financed by the European Union
Connecting Europe Facility

Maturity Levels

Optimizing/ Linking Level

Initial Level

5 — Link resources to other data to provide context

★★★★★ — OL RE OF URI LD

LinkedData

4 — URIs to denote resources, properties and relations, RDF for resources description, SPARQL for queries

★★★★ — OL RE OF URI

URIs & RDF

URI — URL URN

RDF SPARQL

3 — Non-proprietary formats for resources metadata and schemas

★★★ — OL RE OF

Open Formant

2 — Resource its available as structured data offers via API

★★ — OL RE

Reusable

1 — Resources available on the Web (whatever format) under an open license

★ — OL

Ad-Hoc level

Open License

CC WWW

preservation availability

INSPIRE · Infrastructure for Spatial Information in Europe

CSV

Semantic Web

Five Stars Open Data
(adapted from 5 stars, Tim Berners-Lee)

Information Silos (Fragmentation)

Semantically Interoperable Ecosystem (Global Space of Resources)

OPEN IACS

Main innovations from Open IACS project

OPEN IACS Partners

Project will be executed by a consortium composed of three types of partners: CAP Paying agencies, HPC Infrastructure providers and Research organisations. They are:
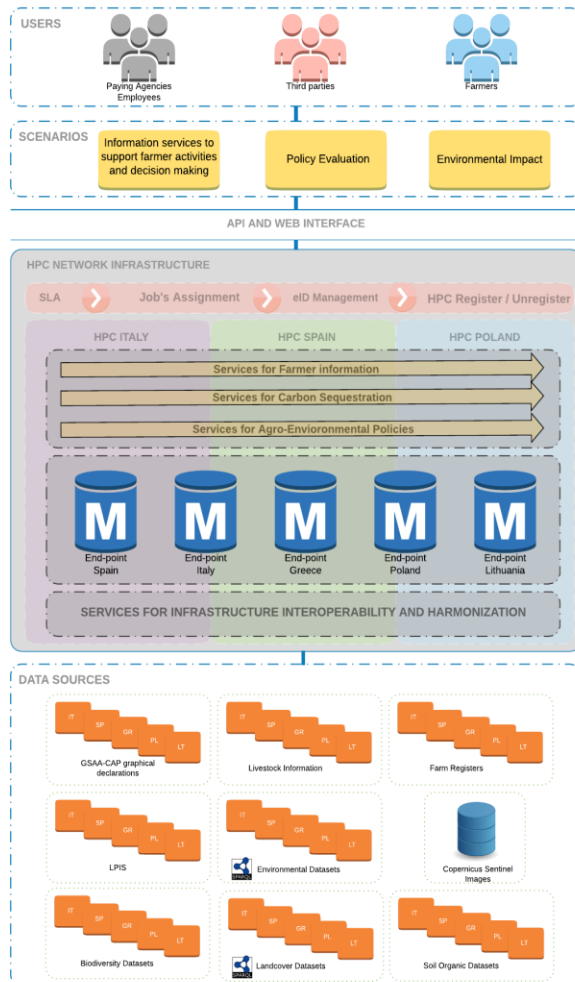
Paying Entities and Agriculture Innovation Entities
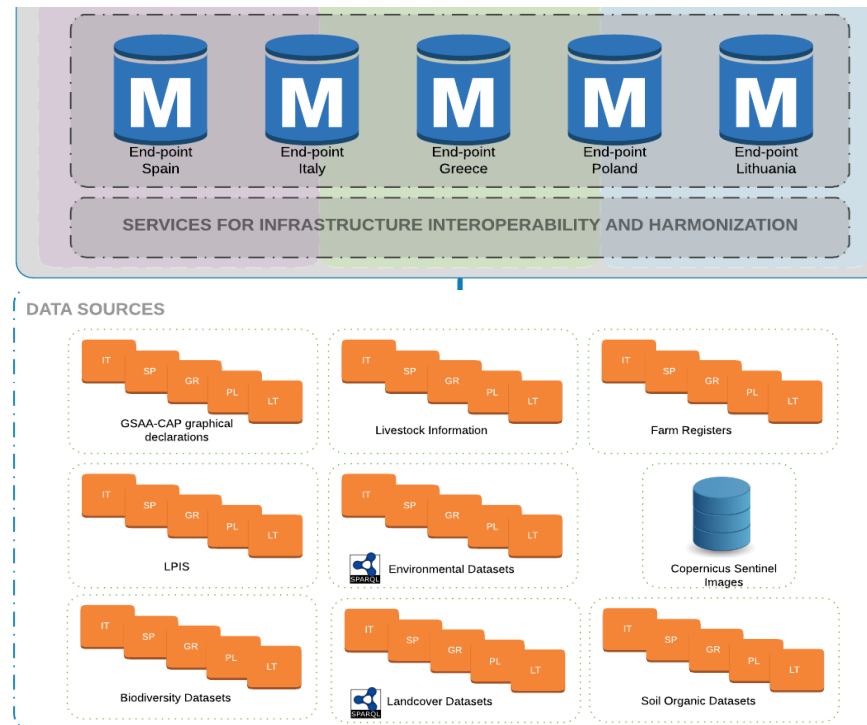
HPC Infrastructure Providers

Research institutions

Open IACS Objectives

Design a network of interoperable Linked Open Data End-point considering information for Agri-environmental management of IACS policies
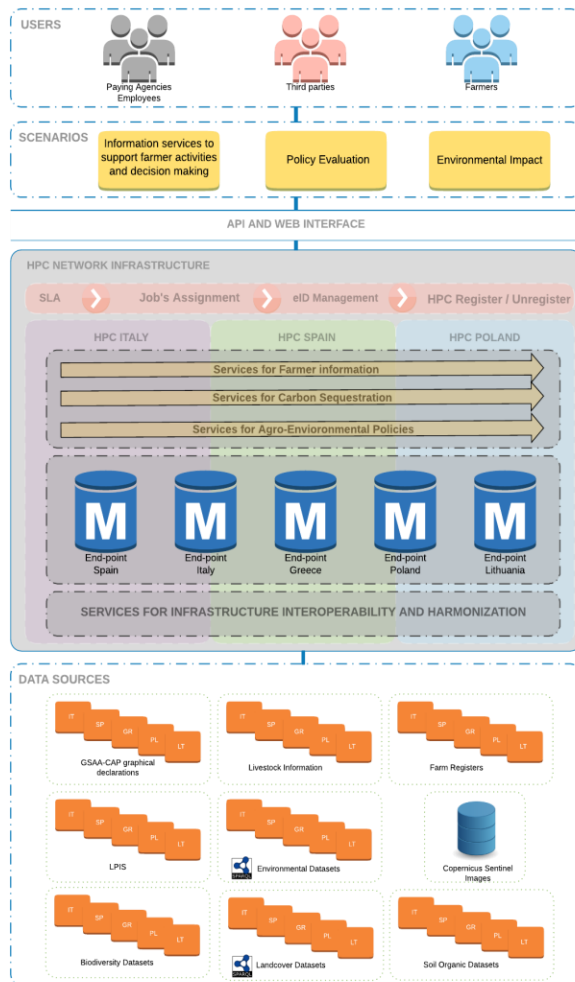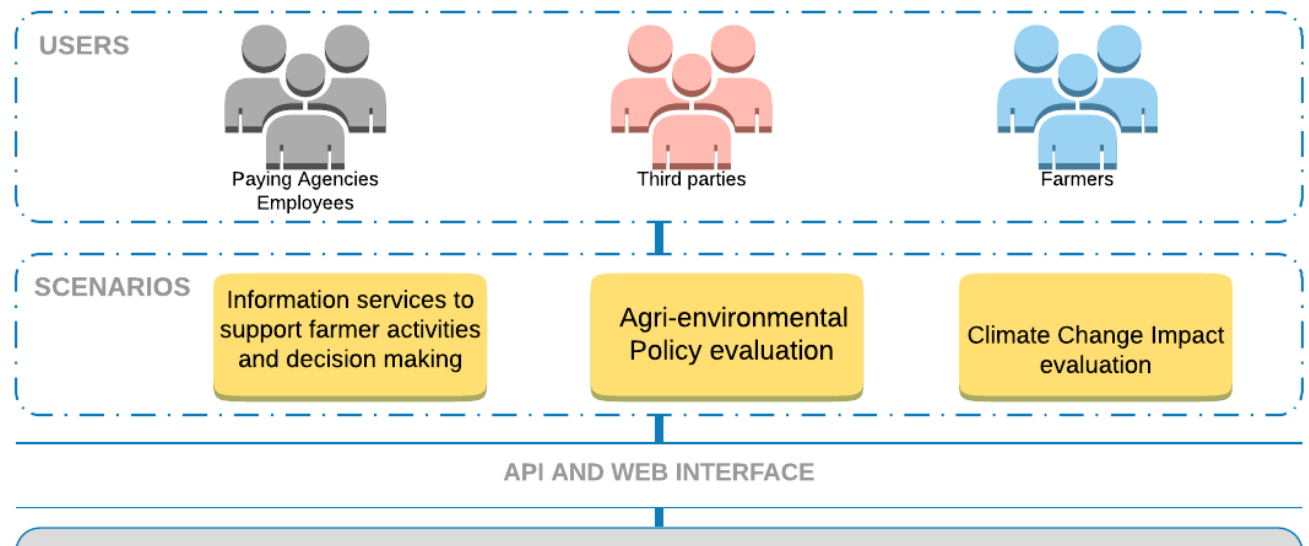
Open IACS Objectives

Implement the common agri-environmental infrastructure for IACS policy management by means of increasing HPCs capabilities
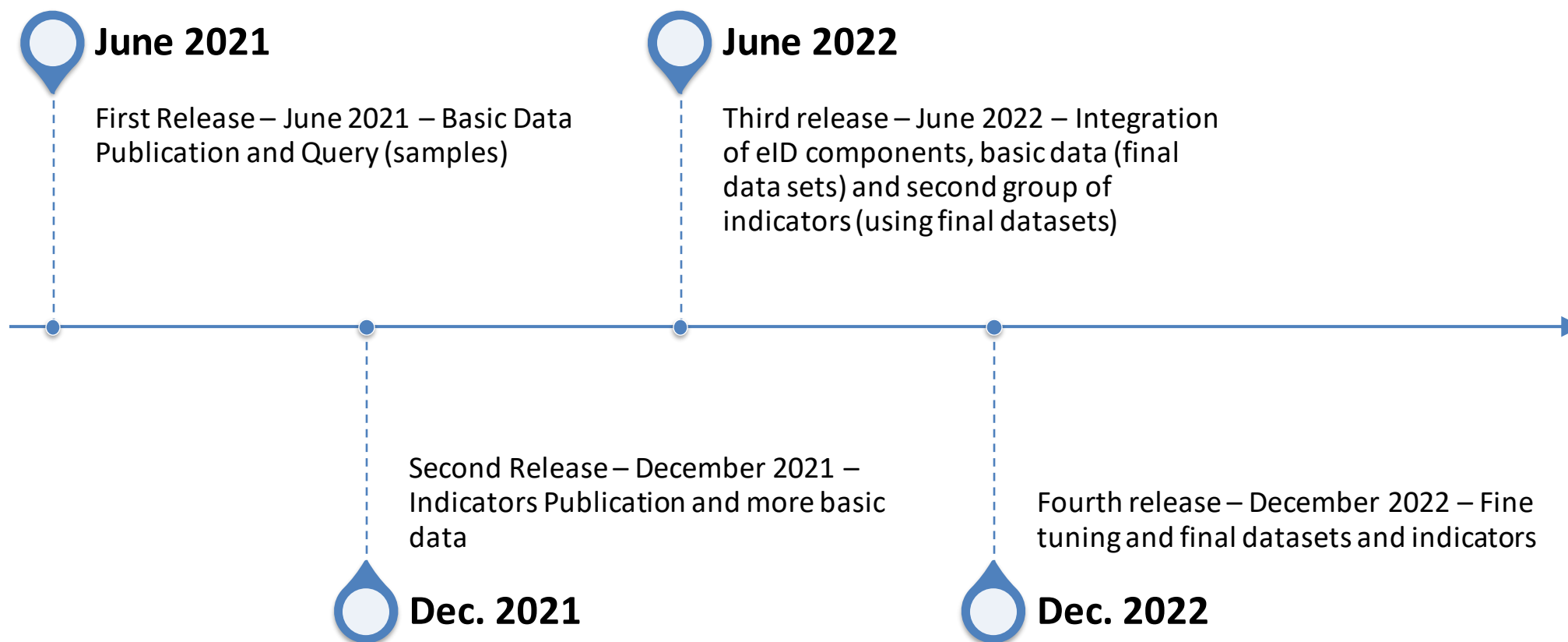
Main innovations from Open IACS project
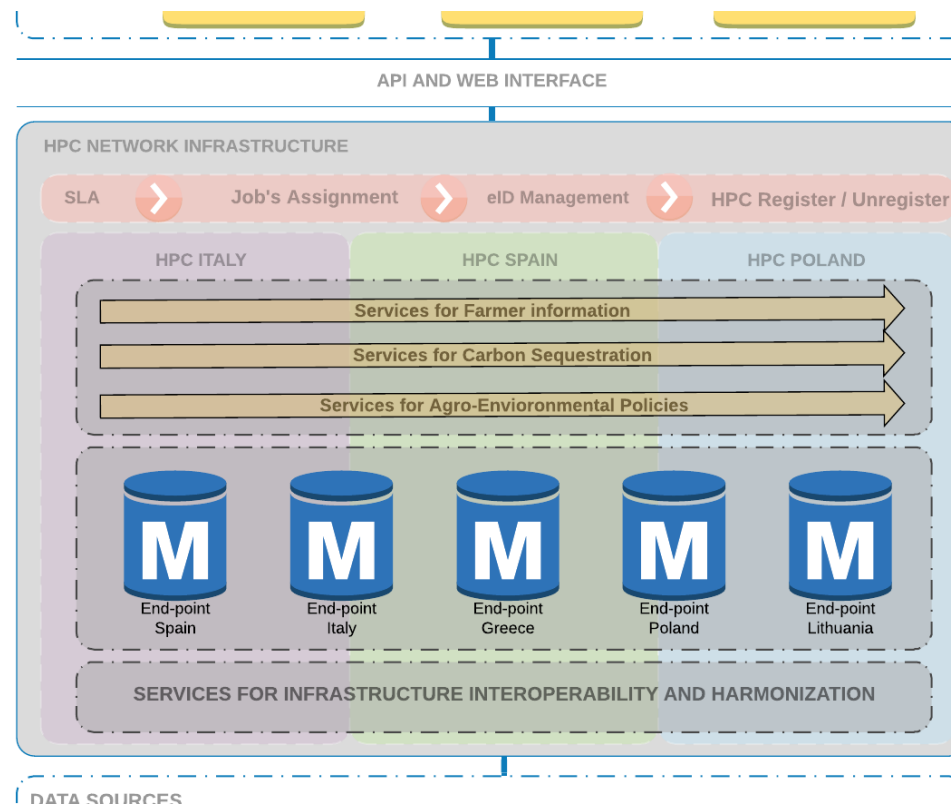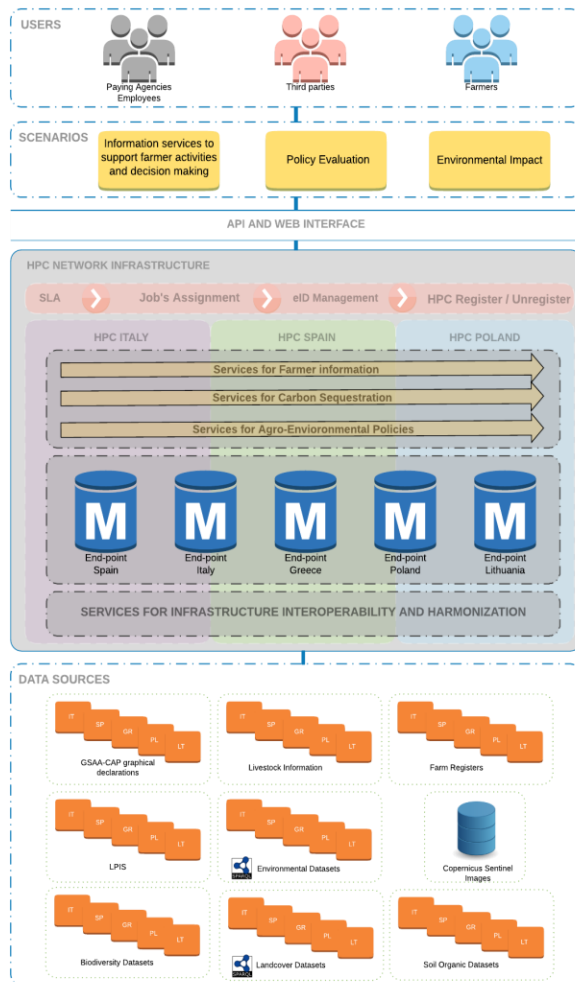
Open IACS Objectives

**Demonstrate the usefulness of this infrastructure through its application in different scenarios of use**

Main innovations from Open IACS project

Open IACS Development Roadmap

June 2021

First Release – June 2021 – Basic Data Publication and Query (samples)

June 2022

Third release – June 2022 – Integration of eID components, basic data (final data sets) and second group of indicators (using final datasets)

Second Release – December 2021 – Indicators Publication and more basic data

Dec. 2021

Fourth release – December 2022 – Fine tuning and final datasets and indicators

Dec. 2022

Main innovations from Open IACS project

Agenda

1) Objectives and current results of the project.

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OPEN IACS

Co-financed by the European Union
Connecting Europe Facility

Web GIS Viewer

Main innovations from Open IACS project

Agenda

1) Objectives and current results of the project.

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3) **Relating IACS Linked Open with External Data Sources**

4) Integration of Open IACS results with INSPIRE.

5) Key Issues of the Next Version.

OPEN IACS

Co-financed by the European Union
Connecting Europe Facility
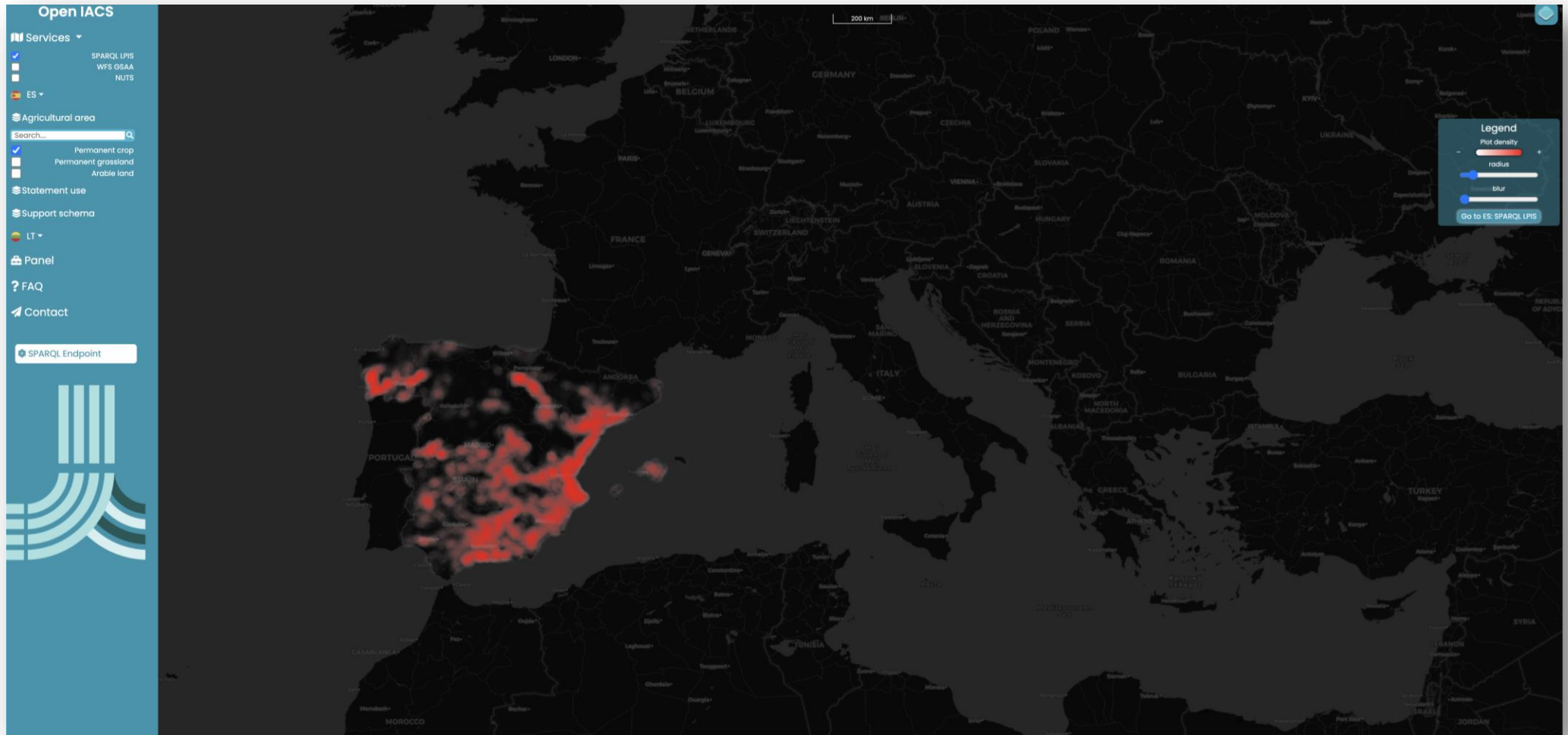
Query Samples

CROPS LIST

lbScheme	lbConcept	lbLabel
"Agricultural area"@en	"Arable land"@en	"Tierras de cultivo"@es
"Agricultural area"@en	"Arable land"@en	"Tierras de cultivo"@es
"Agricultural area"@en	"Permanent crop"@en	"Cultivos permanentes"@es
"Agricultural area"@en	"Permanent grassland"@en	"Pastos"@es
"Statement use"@en	"Mentha pulegium"@en	"Poleo"@es
"Statement use"@en	"Mentha spicata"@en	"Hierbabuena"@es
"Statement use"@en	"Mentha x piperita"@en	"Menta"@es
"Statement use"@en	"Ocimum basilicum"@en	"Albahaca"@es
"Statement use"@en	"Zea mays"@en	"Maíz"@es
"Statement use"@en	"Origanum vulgare"@en	"Orégano"@es
"Statement use"@en	"Avena sativa"@en	"Avena"@es
"Statement use"@en	"Fagopyrum esculentum"@en	"Alforfon"@es
"Statement use"@en	"Eragrostis tef"@en	"Teff"@es

year	accessURL
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_2020_landuse_10k_pnt&outputFormat=ap
"2019"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_2020_landuse_10k_pnt&outputFormat=ap
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_landuse_10k_pnt&outputFormat=ap
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_landuse_10k_pnt&outputFormat=ap
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm
"2020"^^<http://www.w3.org/2001/XMLSchema#string>	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs_es_2020_statementuse_10k_pnt&outputForm

LPIS GEOMETRIES

Main innovations from Open IACS project

Support to External Research – Forest Inventory

LPIS GEOMETRIES

Feature	Label
http://w3id.org/iacs/open/es/LPIS/Parcel/1205439985	"Spanish LPIS parcel of cadastral reference #13-57-0-73-24-1"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/1205440027	"Spanish LPIS parcel of cadastral reference #13-57-0-73-1029-7"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/1205440035	"Spanish LPIS parcel of cadastral reference #13-57-0-73-1029-3"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/1287875620	"Spanish LPIS parcel of cadastral reference #13-57-0-73-1029-8"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/1287875621	"Spanish LPIS parcel of cadastral reference #13-57-0-73-1029-9"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/1300069738	"Spanish LPIS parcel of cadastral reference #13-57-0-73-195-4"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/1353502156	"Spanish LPIS parcel of cadastral reference #13-57-0-73-24-6"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/870292452	"Spanish LPIS parcel of cadastral reference #13-57-0-73-191-2"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/870292454	"Spanish LPIS parcel of cadastral reference #13-57-0-73-195-2"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/870292609	"Spanish LPIS parcel of cadastral reference #13-57-0-73-9001-1"^^<http://www.w3.org/2001/XMLSchema#string>
http://w3id.org/iacs/open/es/LPIS/Parcel/982673580	"Spanish LPIS parcel of cadastral reference #13-57-0-73-1000-2"^^<http://www.w3.org/2001/XMLSchema#string>
https://datos.ign.es/recurso/btn100/provincia/ciudad-real	"Ciudad Real"
https://datos.iepnb.es/recurso/sector-publico/cuadricula-espacial/celda/10kmE317N183	

"MULTIPOLYGON(((-3.1429604984349 38.698092287945,-3.143026257822 38.698771373016,-3.1430243752464 38.698771476114,-3.1430084504676 38.698772342802,-3.1430072032404 38.698772409858,-3.
"MULTIPOLYGON(((-3.1404516815105 38.697684826843,-3.1405043223801 38.69822739585,-3.1405060792271 38.698245503276,-3.1405639973433 38.69884264099,-3.1405669209513 38.698872913074,-3.
"MULTIPOLYGON(((-3.1381433882203 38.700557715106,-3.1383145517224 38.700585290731,-3.1384825292629 38.700683443662,-3.1385715475945 38.700735160007,-3.1387941776615 38.700798359561,-
"MULTIPOLYGON(((-3.1357641773195 38.6996657674,-3.1360352011456 38.699750127908,-3.1362381396063 38.699795358336,-3.1366751058467 38.699822828349,-3.1376849500573 38.699842628082,-3.
"MULTIPOLYGON(((-3.1357552355047 38.69959056999,-3.1360328097885 38.699664443898,-3.1362446640801 38.69970966343,-3.1365367390573 38.699739051222,-3.1369870794631 38.699766503633,-3.
"MULTIPOLYGON(((-3.1678877418682 38.700409531431,-3.1369666167217 38.700449931369,-3.1370063477833 38.700458900006,-3.1370460796831 38.700467868643,-3.1371099514654 38.700483333255,-
"MULTIPOLYGON(((-3.1405904849971 38.698831995134,-3.1406288749541 38.698838868295,-3.1406791680525 38.698838784476,-3.1407432074729 38.6988671 9913,-3.1407807592395 38.698899301821,-3
"MULTIPOLYGON(((-3.138007366017 38.697920969377,-3.1381294809657 38.699070988354,-3.138105802926 38.699072472789,-3.137514397 5959 38.699109550978,-3.1360322658029 38.699205989809,-3
"MULTIPOLYGON(((-3.1367457753529 38.700454966379,-3.136903333349 38.700469337991,-3.1370145586961 38.700483763247,-3.1373251174472 38.700552537605,-3.1375476251385 38.700610498468,-3
"MULTIPOLYGON(((-3.1313668353553 38.682837828437,-3.1313721159546 38.682839840093,-3.1313734570592 38.682840343008,-3.1318326303151 38.68303849121,-3.1324297738965 38.683296486205,-3
"MULTIPOLYGON(((-3.13844900081 38.700760810109,-3.1385769120128 38.700809341531,-3.1387851252055 38.700854267697,-3.139026949832 38.700877316255,-3.139254273765 38.700923415887,-3.13

Forest inventory

Main innovations from Open IACS project

Support to External Research – Common Crops Vocabulary

lbScheme	lbConcept	accessURL	country
"Agricultural area"@en	"Arable land"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_landuse_10k	"ES"
"Agricultural area"@en	"Permanent crop"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_landuse_10k	"ES"
"Agricultural area"@en	"Permanent grassland"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_landuse_10k	"ES"
"Statement use"@en	"Abelmoschus esculentus"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Abies alba"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Abies pinsapo"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Achillea millefolium"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Actinidia deliciosa"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Agaricus bisporus"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Agave sisalana"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Agrimonia eupatoria"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"
"Statement use"@en	"Ailanthus altissima"@en	http://185.179.104.23:8082/geoserver/iacs/ows?service=WFS&version=1.0.0&request=GetFeature&typeName=iacs:es_2020_statementuse	"ES"

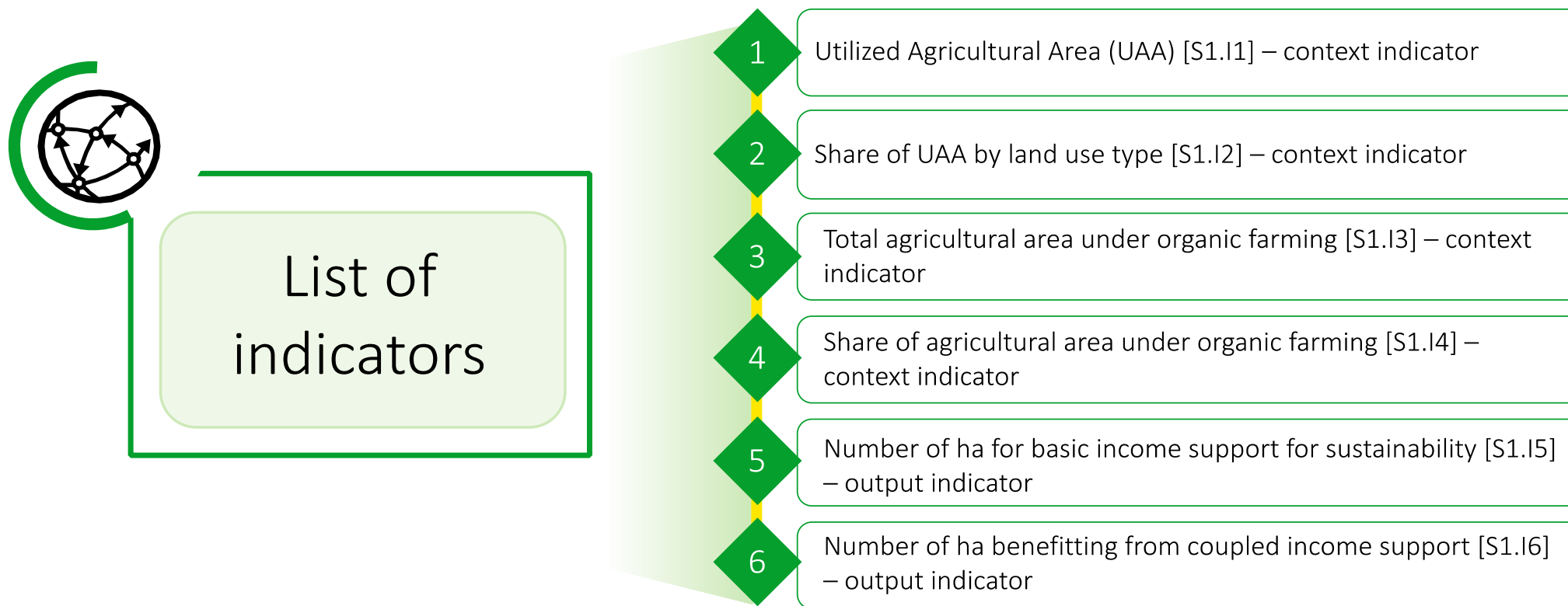**List all distribution and access URL**

Main innovations from Open IACS project

Support to External Research – Common Crops Vocabulary

uri	eppo_code	scientificName	code_eppo
http://open-iacs.eu/resource/taxon/1000	"MENCU"	"Mentha cunninghamii"	"1000"
http://open-iacs.eu/resource/taxon/1001	"MENJA"	"Mentha japonica"	"1001"
http://open-iacs.eu/resource/taxon/1002	"MENLO"	"Mentha longifolia"	"1002"
http://open-iacs.eu/resource/taxon/1003	"MENLC"	"Mentha longifolia subsp. capensis"	"1003"
http://open-iacs.eu/resource/taxon/1004	"MENLT"	"Mentha longifolia subsp. typhoides"	"1004"
http://open-iacs.eu/resource/taxon/1005	"MENMC"	"Mentha micrantha"	"1005"
http://open-iacs.eu/resource/taxon/1006	"MENMI"	"Mentha microphylla"	"1006"
http://open-iacs.eu/resource/taxon/1007	"MENPU"	"Mentha pulegium"	"1007"
http://open-iacs.eu/resource/taxon/1008	"MENRE"	"Mentha requienii"	"1008"
http://open-iacs.eu/resource/taxon/1009	"MENSA"	"Mentha satureioides"	"1009"
http://open-iacs.eu/resource/taxon/1010	"MENSS"	"Mentha sp."	"1010"
http://open-iacs.eu/resource/taxon/1011	"MENSP"	"Mentha spicata"	"1011"
http://open-iacs.eu/resource/taxon/1012	"MENSC"	"Mentha spicata var. crispa"	"1012"
http://open-iacs.eu/resource/taxon/1013	"MENST"	"Mentha spicata var. tenuis"	"1013"
http://open-iacs.eu/resource/taxon/1014	"MENSU"	"Mentha suaveolens"	"1014"
http://open-iacs.eu/resource/taxon/1015	"MENSI"	"Mentha suaveolens subsp. insularis"	"1015"

List of taxon's, EPPO code and scientific Name

Main innovations from Open IACS project

Support to Farmers' Decision Making

List of indicators

1 — Utilized Agricultural Area (UAA) [S1.I1] – context indicator

2 — Share of UAA by land use type [S1.I2] – context indicator

3 — Total agricultural area under organic farming [S1.I3] – context indicator

4 — Share of agricultural area under organic farming [S1.I4] – context indicator

5 — Number of ha for basic income support for sustainability [S1.I5] – output indicator

6 — Number of ha benefitting from coupled income support [S1.I6] – output indicator

…. Other agri-environmental indictors (ISPRA)

Main innovations from Open IACS project

Support to Farmers' Decision Making

lau_name	codi_occu	shape_area	bio_area
Foggia	47	879,568	879,568
Foggia	47	13033,373	13033,373
Foggia	47	147,879	147,879
Foggia	47	1162,501	1162,501
Foggia	47	872,62	872,57
Foggia	83	180,934	0
Foggia	47	412,166	412,166
Foggia	83	6598,24	0
Foggia	47	790,534	790,506
Foggia	47	602,831	602,828
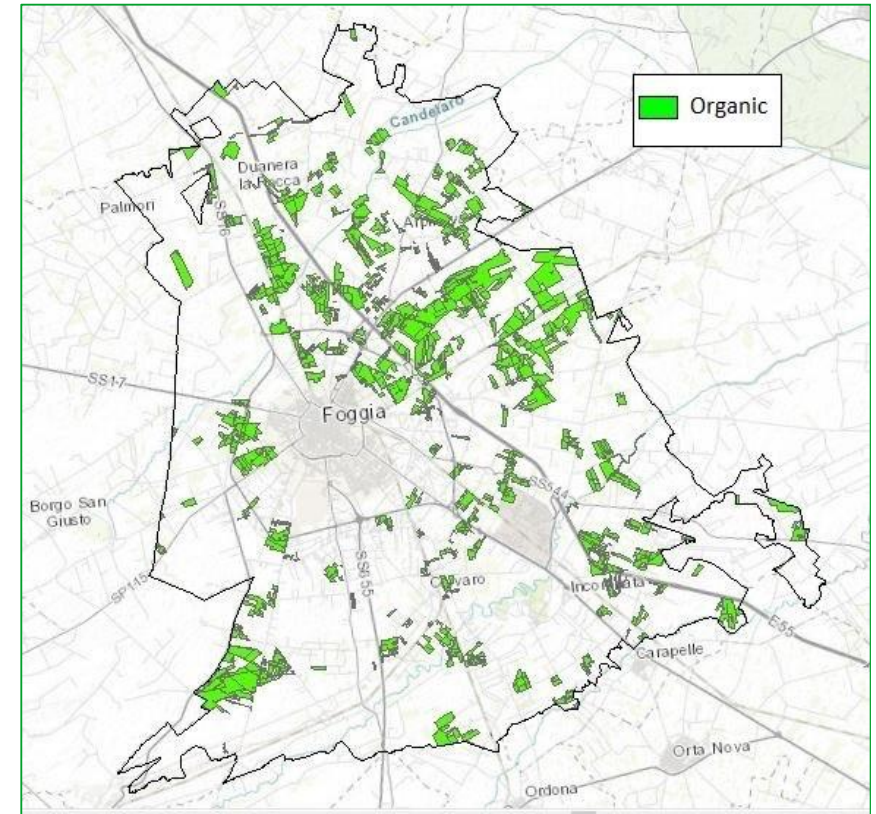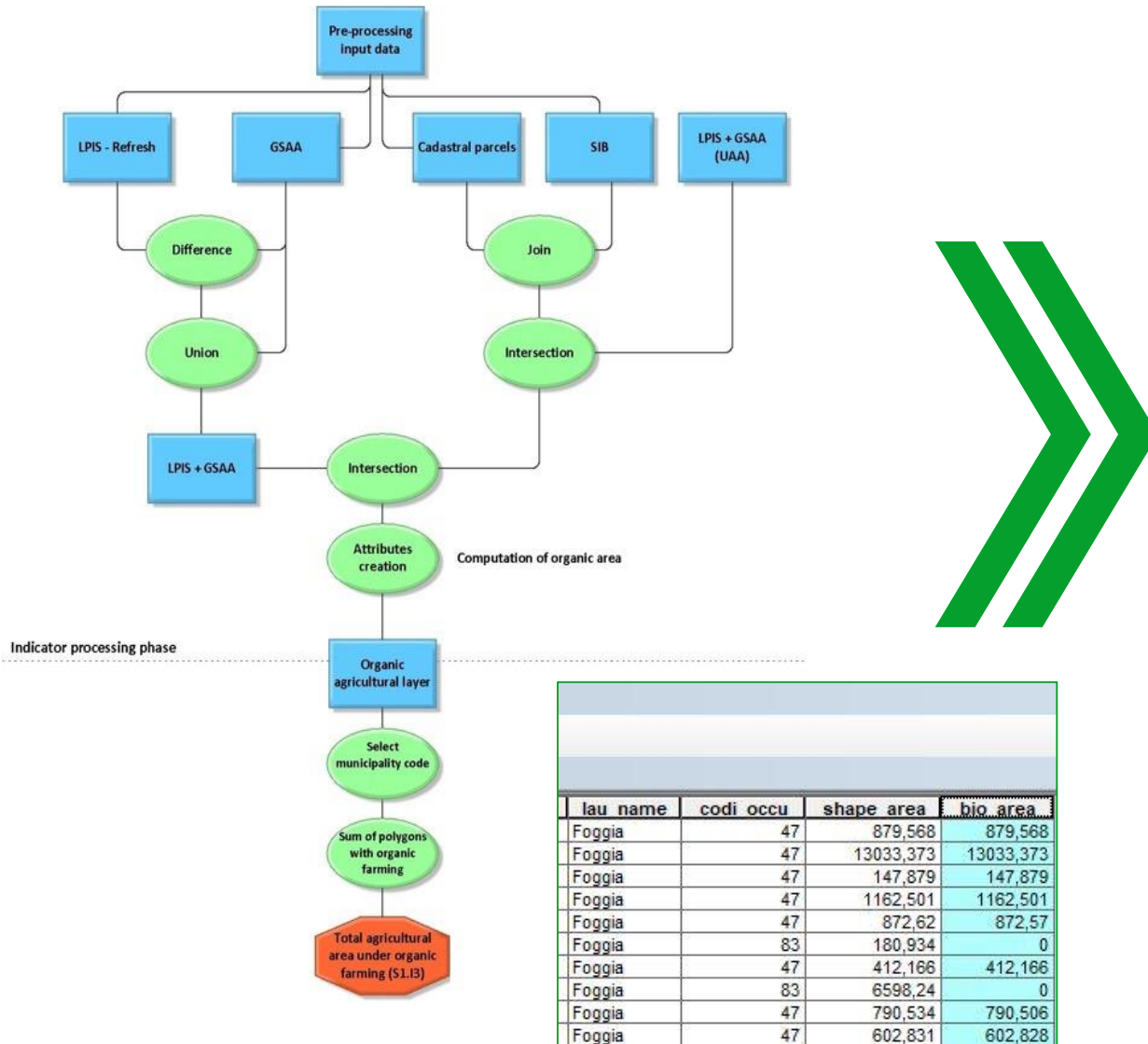
MUNICIPALITY	Organic agricultural area (ha)
Foggia	2,690

Main innovations from Open IACS project

Biodiversity Indicators

- How agriculture affects biodiversity and vice versa?
  - **EEA - Abundance and distribution of selected species in Europe**
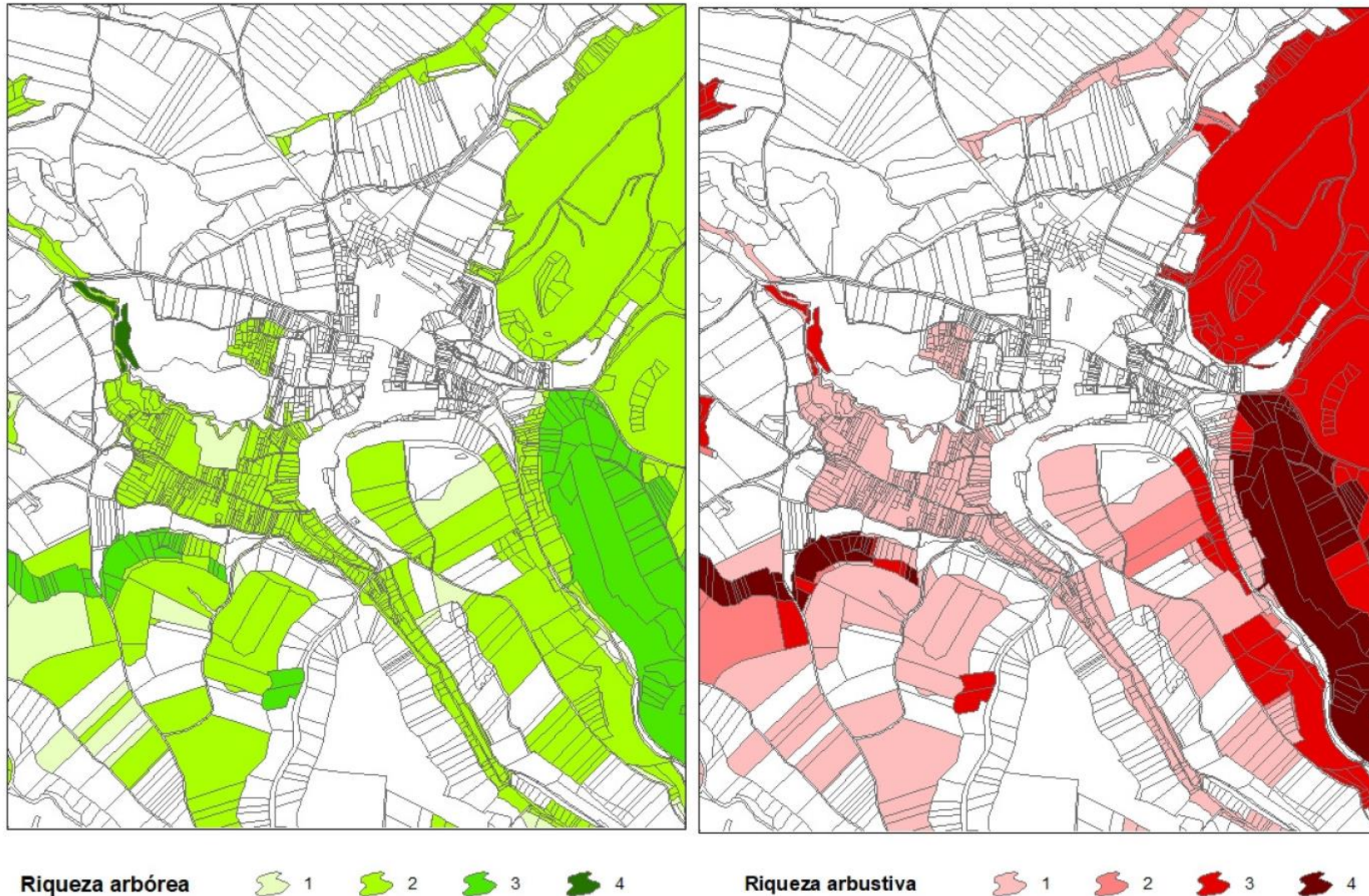- Is it possible to identify some indicators?
  - **Depends on data**

OPEN IACS

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Biodiversity Indicators

Test in Apulia Region
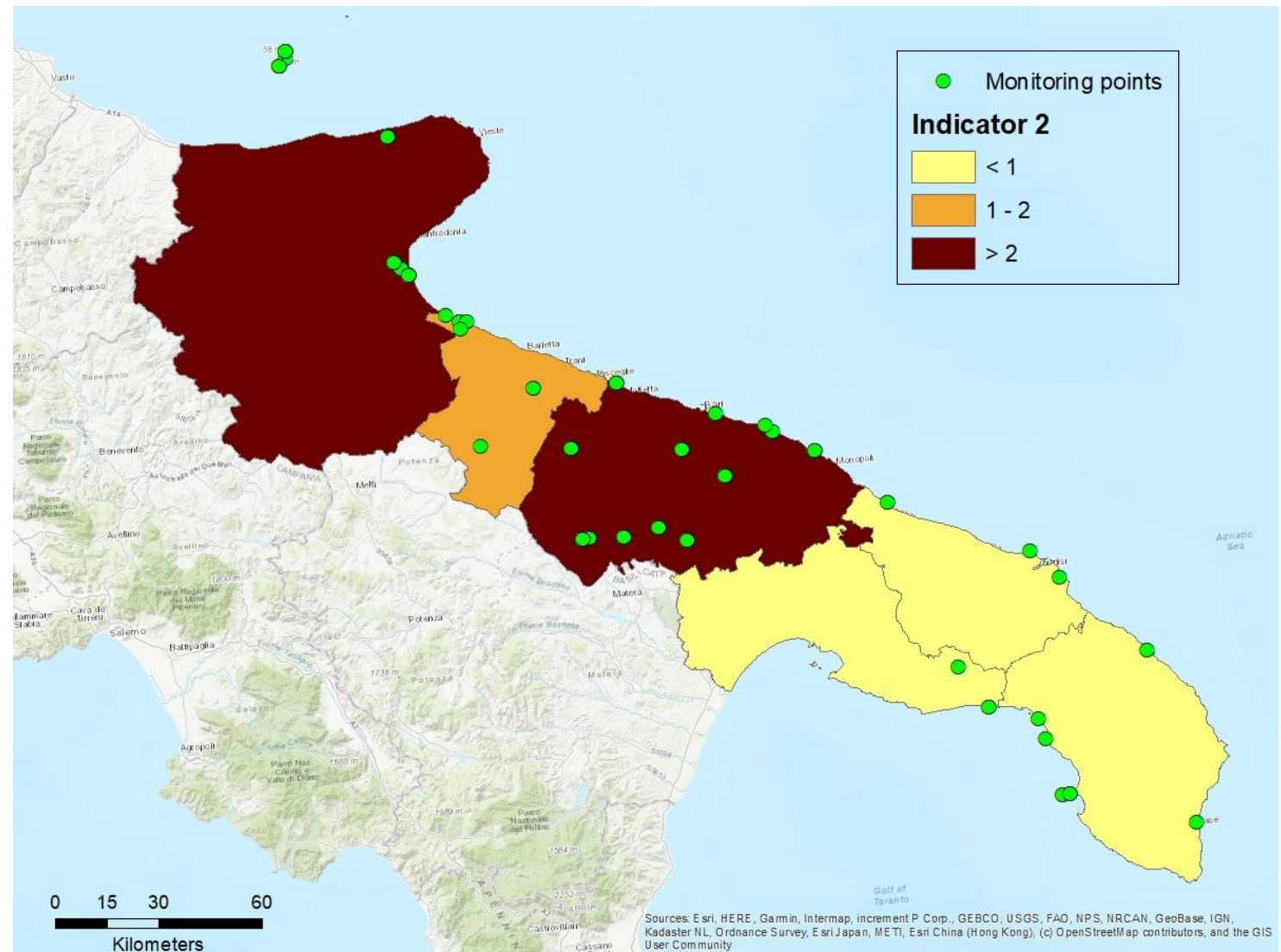
Biodiversity Indicators – Forest Richness

Riqueza arbórea   1   2   3   4

Riqueza arbustiva   1   2   3   4

OPEN IACS

Co-financed by the European Union
Connecting Europe Facility

Main innovations from Open IACS project

GHG Emissions

Enteric Fermentation map (2018)

Indicator Enteric Fermentation

- Epig0,50257
- Ehor0,290564
- Fshee115,097
- Ebov51,395
- Epoth0,0057
- ?
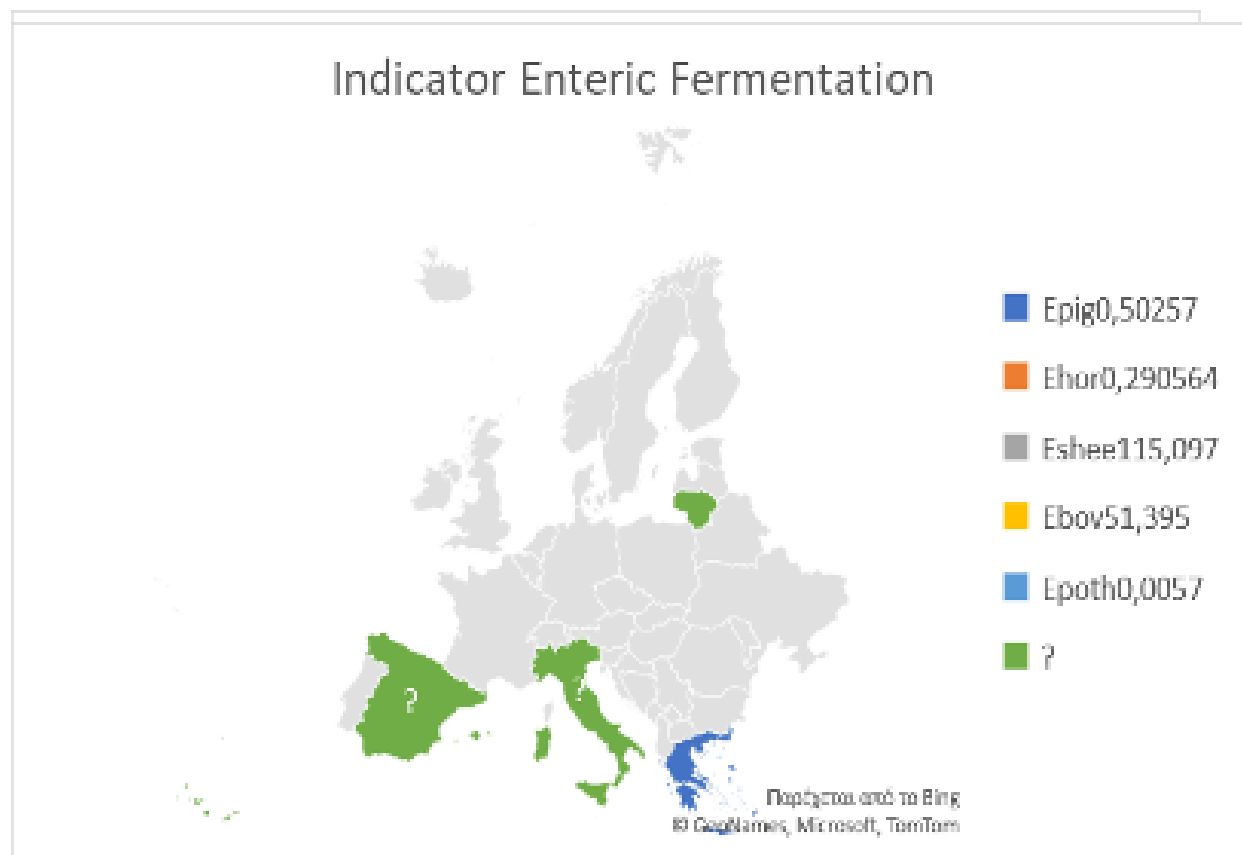
Livestock related information

Agenda

1) Objectives and current results of the project.

2) Publication of IACS Linked Open Data

3) Relating IACS Linked Open with External Data Sources

4) **Integration of Open IACS results with INSPIRE.**

5) Key Issues of the Next Version.

Strategy for Integration with JRC-INSPIRE

✓ Models and ontologies

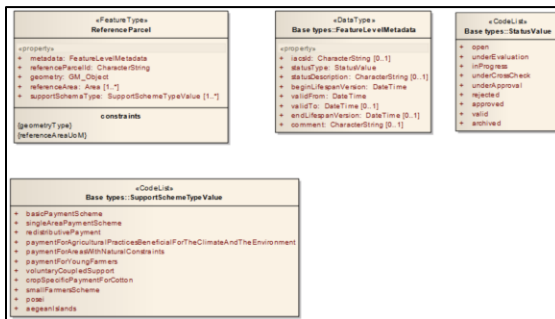✓ LOD Data generation

✓ LOD Data visualization

✓ Integration with other non-INSPIRE services promoted by other DGs

OPEN IACS

Co-financed by the European Union
Connecting Europe Facility

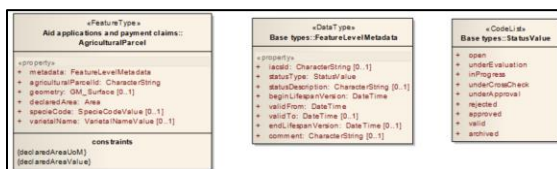Main innovations from Open IACS project

Strategy for Integration with JRC-INSPIRE – Models

Reuse and adapt already existing models

LPIS

GSAA

Ontology Generation Rules

Ontology
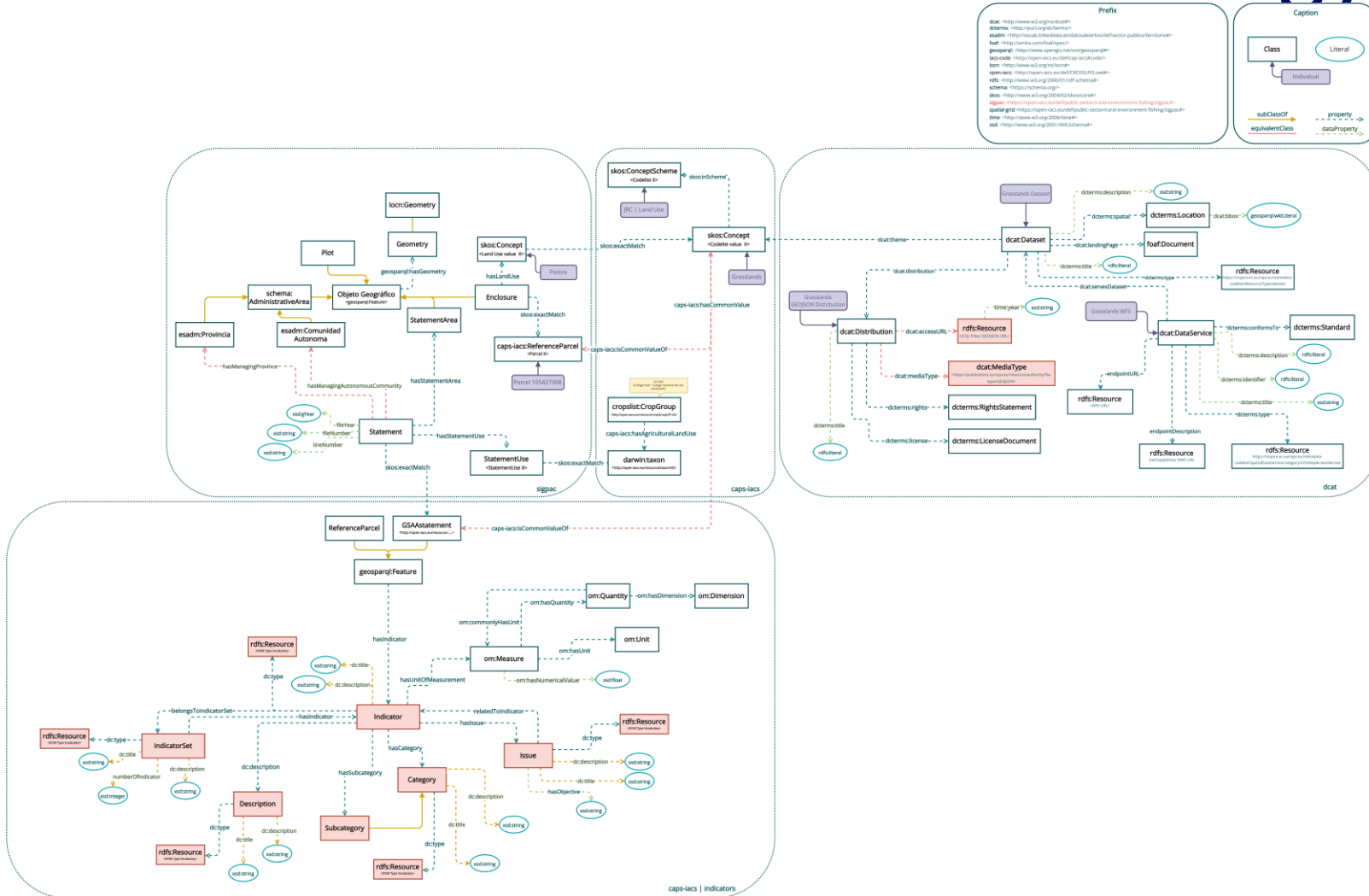
OPEN IACS

Co-financed by the European Union
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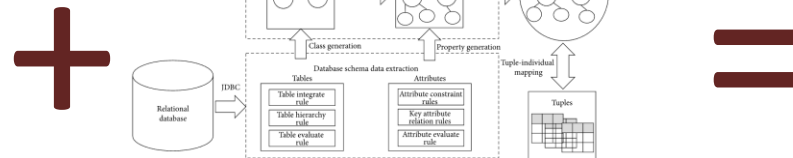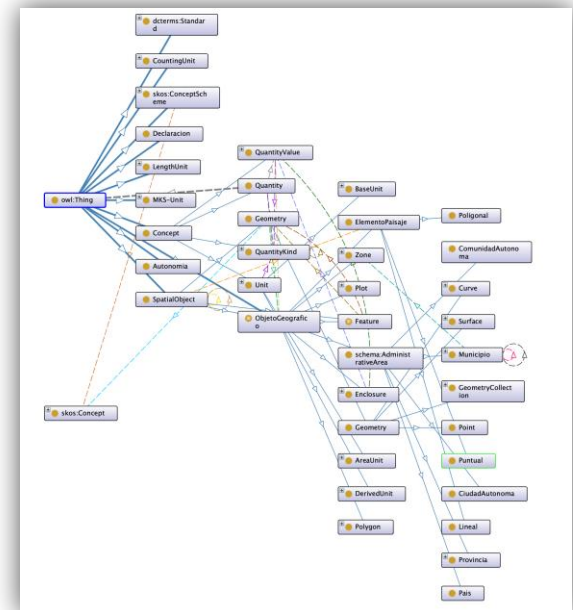
Strategy for Integration with JRC-INSPIRE – Geo-services Ontology

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Strategy for Integration with JRC-INSPIRE – LOD Data generation

Servicio ATOM de descarga de datos

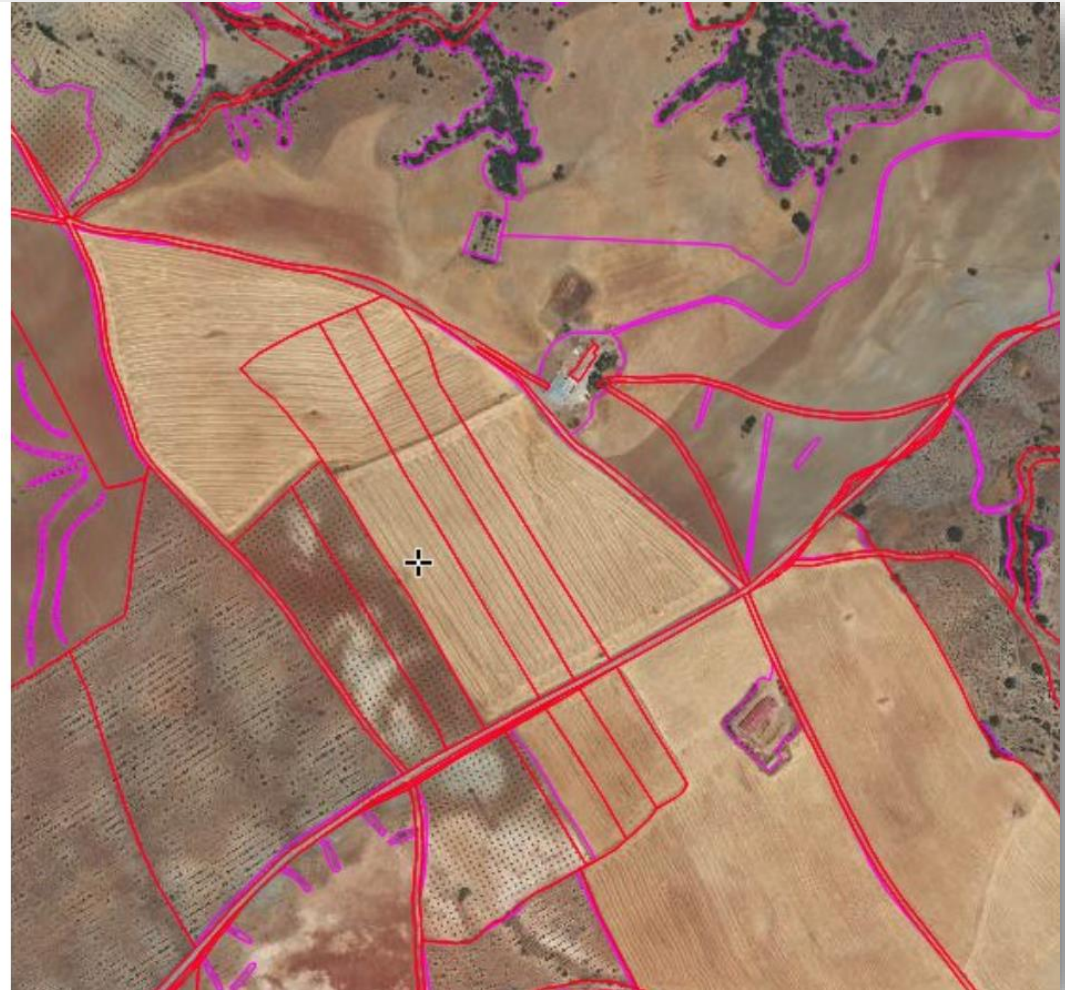🛈 ¿Cómo funciona este servicio?

📅 El conjunto de datos que se ofrece en ese servicio Atom tiene una actualización anual en todas las CC.AA. excepto en Canarias. A continuación se indican las fechas de actualización:

- Todas las CC.AA (excepto Canarias): febrero
- Canarias: febrero, mayo y octubre

🕐 Se recomienda realizar la descarga fuera del horario comprendido entre las 8:00 y las 18:00.
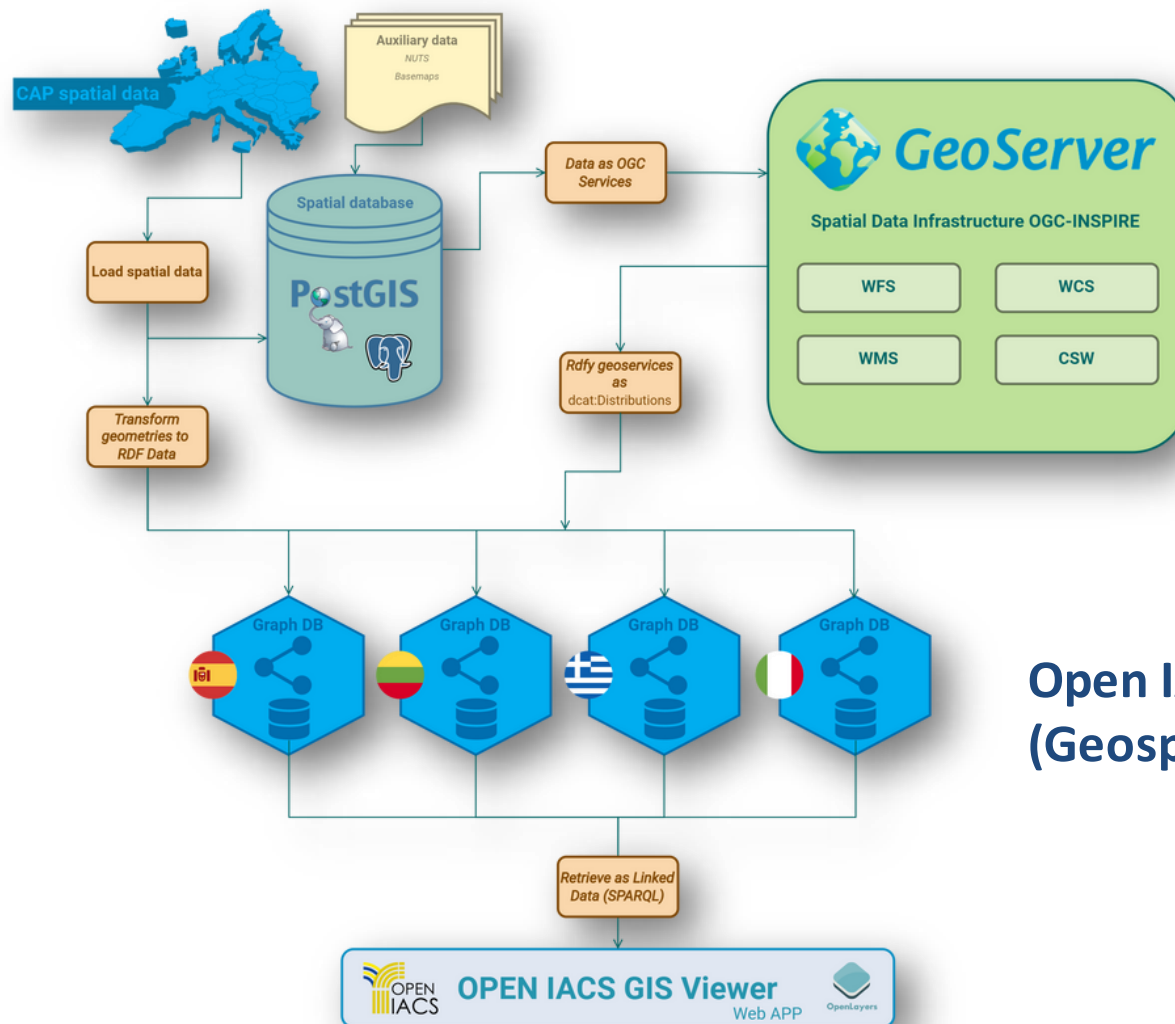
Si desea descargar los ficheros Atom del FEGA debe leer y aceptar las siguientes condiciones:

LEER Y ACEPTAR LAS CONDICIONES

https://www.fega.gob.es/orig/

OPEN IACS

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Main innovations from Open IACS project

Strategy for Integration with JRC-INSPIRE - LOD Data visualization

Open IACS Geospatial Data
(Geospatial Consortium)

Main innovations from Open IACS project

Agenda

1) Objectives and current results of the project.

2) Publication of IACS Linked Open Data

3) Relating IACS Linked Open with External Data Sources

4) Integration of Open IACS results with INSPIRE.

5) **Key Issues of the Next Version.**

OPEN IACS

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Next Steps

- From Organizational Perspective
  - New entities interested in joining Open IACS network
- From Data Perspective
  - Livestock related datasets –> High Value Datasets
- From Indicators Perspective
  - Integration in the GIS Web Viewer
  - Release the access to LOD Data
- From GIS Web Viewer Perspective
  - Improve User Experience