A NEW LEAF
Agricultural Network
Exchanging Witnesses
and Leading Experiences
Against the Fraud

Technical and innovative tools and methods in support of CAP

Geo referencing methods/LPIS

Polish experience

Padova, May 27th 2015

This event is supported by the European Union Programme Hercule III (2014-2020).
This programme is implemented by the European Commission.
It was established to promote activities in the field of the protection of the financial interests of the European Union.
(for more information see http://ec.europa.eu/anti_fraud/about-us/funding/index_en.htm)'

A NEW LEAF
Agricultural Network
Exchanging Witnesses
and Leading Experiences
Against the Fraud

Polish experience - LPIS

Padova, May 27th 2015

Ms. Anna Czarnacka
Chief expert
ARiMR Poland

This document reflects the author's view and the European Commission is not responsible for the views displayed in the publications and/or in conjunction with the activities for which the grant is used.
The information contained in this publication does not necessarily reflect the position or opinion of the European Commission.

Polish experience - LPIS

ABSTRACT

Presentation refers to Polish experience with LPIS.
Presentation contains:
✓ general information about LPIS – what it is, where and when can be used, UE regulations, orthophotomap, reference system used in Poland
✓ LPIS in Poland – short characteristics of LPIS in Poland, details refer to exchanging an orthophotomap, sources of updating LPIS, extra tools and sources used to verifying GIS data, good practise in Poland
✓ internal quality control of LPIS data - different ways of conducted control done by employees.

Agencja Restrukturyzacji i Modernizacji Rolnictwa

Padova, May 27th 2015

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

Agenda:

1. LPIS – general information
2. LPIS in Poland
3. Good practise
4. Internal quality control

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

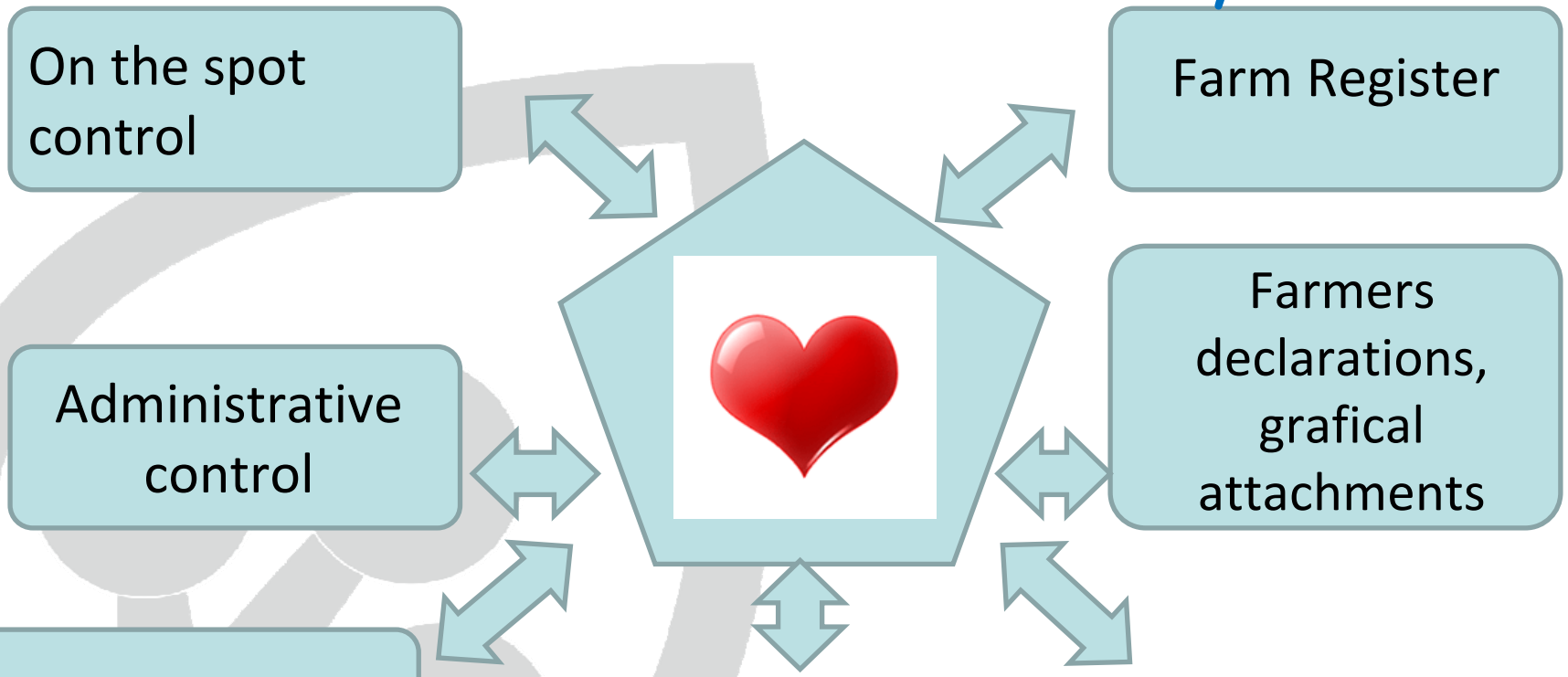
The **Land Parcel Identification System (LPIS)** is the key component of the **Integrated Administration and Control System (IACS)** for area based subsidies. It is the modern supporting tool in the form of a spatial register used within an IACS environment that helps the farmer who intends to apply for aid under any of the area-related aid schemes to identify any agricultural parcels intended to be listed in his annual declaration for EU aid.

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS is the heart of IACS system!



LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS – legal basis

REGULATION (EU) No 1306/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013

Article 68

Elements of the integrated system

1.The integrated system shall comprise the following elements:

a) computerised database;

b) an identification system for agricultural parcels;

c) a system for the identification and registration of payment entitlements;

d) aid applications and payment claims;

e) an integrated control system;

f) a single system to record the identity of each beneficiary of the support referred to in Article 67(2) who submits an aid application or a payment claim.

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS – legal basis

REGULATION (EU) No 1306/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013

Article 70

Identification system for agricultural parcels

1. **The identification system for agricultural parcels** shall be established on the basis of maps, land registry documents or other cartographic references. Use shall be made of computerised geographical information system techniques, including aerial or spatial orthoimagery, with a homogenous standard that guarantees a level of accuracy that is at least equivalent to that of cartography at a scale of 1:10 000 and, as from 2016, at a scale of 1:5 000, while taking into account the outline and condition of the parcel. This shall be fixed in accordance with existing Union standards.

Notwithstanding the first subparagraph, Member States may continue to make use of such techniques including aerial or spatial orthoimagery, with a homogenous standard that guarantees a level of accuracy that is at least equivalent to that of cartography at a scale of 1:10 000 where they were acquired on the basis of long-term contracts that were agreed before November 2012.

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS – legal basis

REGULATION (EU) No 1306/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 December 2013

Article 70

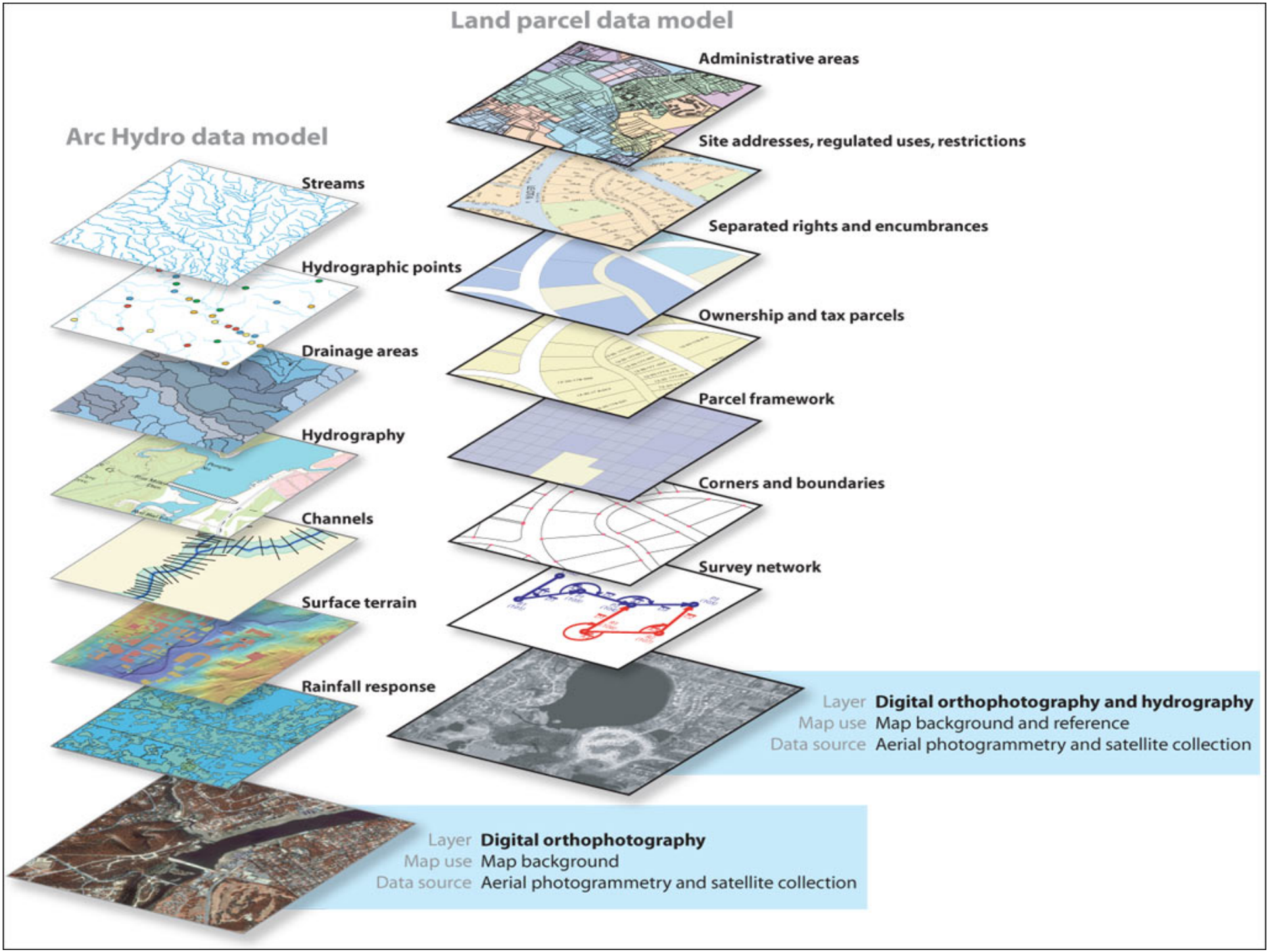
2. Member States shall ensure that the **identification system for agricultural parcels contains a reference layer to accommodate ecological focus areas**. That reference layer shall, in particular, cover the relevant specific commitments and/or environmental certification schemes referred to in Article 43(3) of Regulation (EU) No 1307/2013 that are equivalent to the practices in Article 46 of that Regulation before the application forms referred to in Article 72 of this Regulation for payments for agricultural practices beneficial for the climate and the environment referred to in Articles 43 to 46 of Regulation (EU) No 1307/2013 are provided in respect of claim year 2018 at the latest.

LPIS – general informations

LPIS – all LPIS databases must be established on GIS solutions … so what is this … GIS??

Geographic information system (**GIS**) is a system designed to:

- ✓capture,
- ✓store,
- ✓manipulate,
- ✓analyze,
- ✓manage
- ✓present all types of spatial or geographical data with all necessarily atributes .

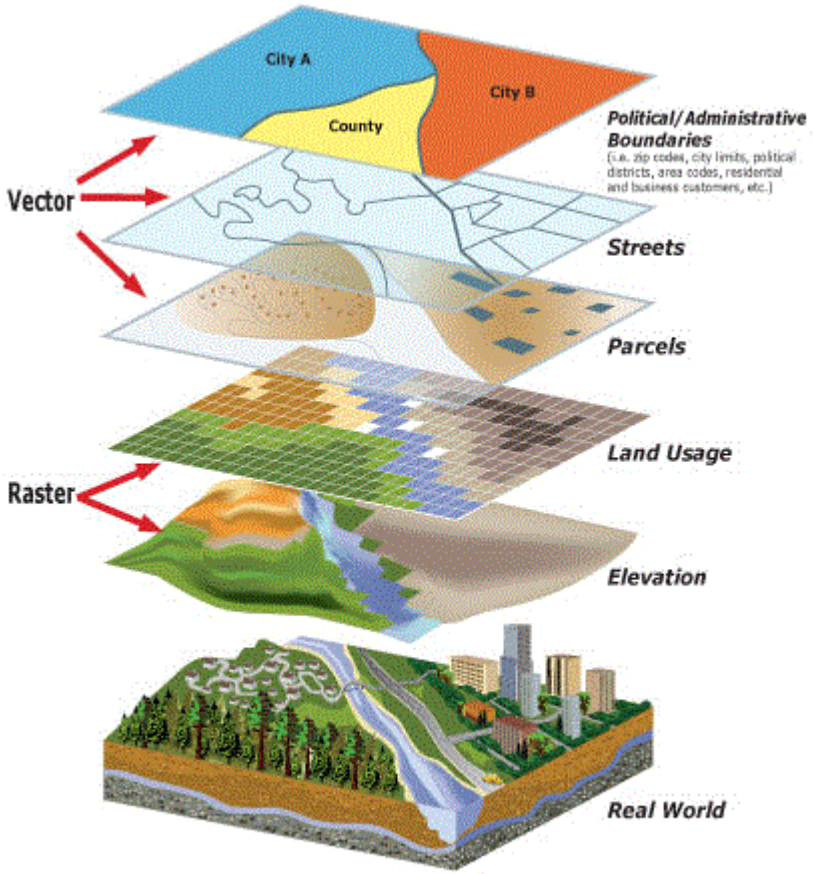

Land parcel data model
Administrative areas
Site addresses, regulated uses, restrictions
Separated rights and encumbrances
Ownership and tax parcels
Parcel framework
Corners and boundaries
Survey network
Layer Digital orthophotography and hydrography
Map use Map background and reference
Data source Aerial photogrammetry and satellite collection
Arc Hydro data model
Streams
Hydrographic points
Drainage areas
Hydrography
Channels
Surface terrain
Rainfall response
Layer Digital orthophotography
Map use Map background
Data source Aerial photogrammetry and satellite collection

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS layers – the heart of LPIS!



LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS layers – the heart of LPIS!

Ortophotomap –

✓digital orthophotomap is the raster,

✓cartometric image of the terrain which was created by the orthogonal projection of aerial photographs or satellite scenes,

✓the quality of the orthophotomap is determined by spatial resolution (ang. GSD), which determines the size of the pixel in the field.

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

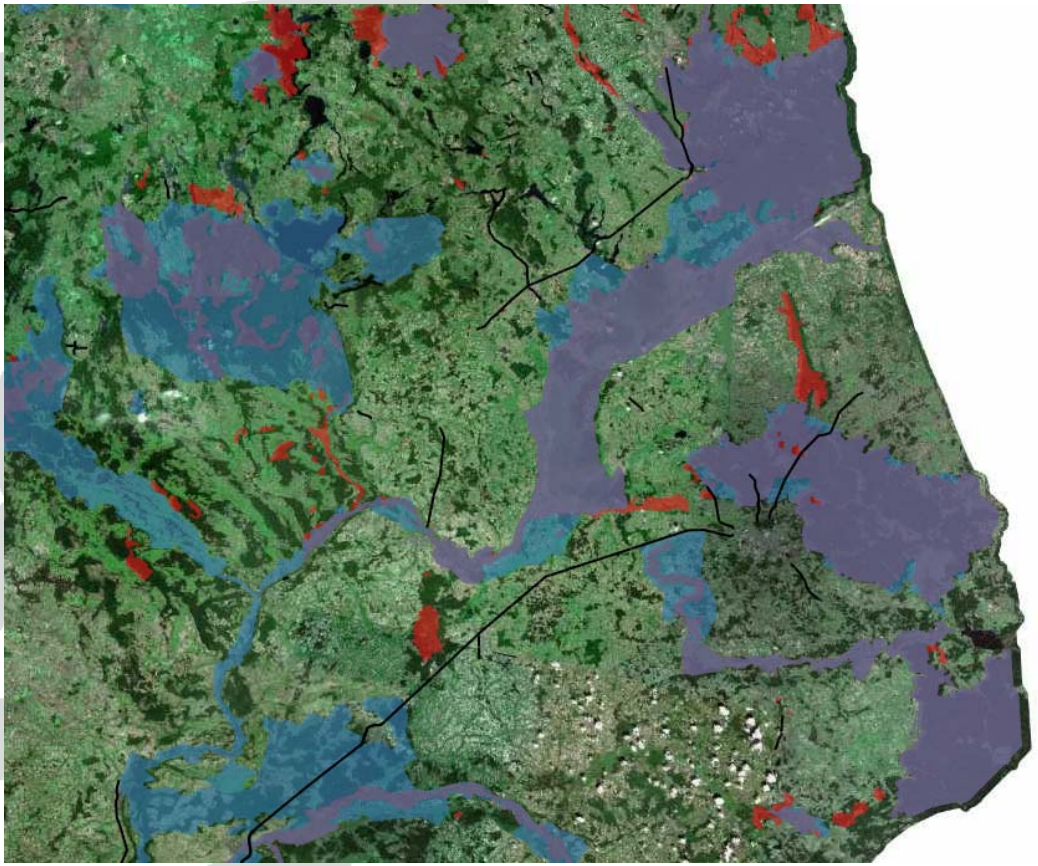
Reference system – cadastral parcel

LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

Additional layers – eg. Natura 2000

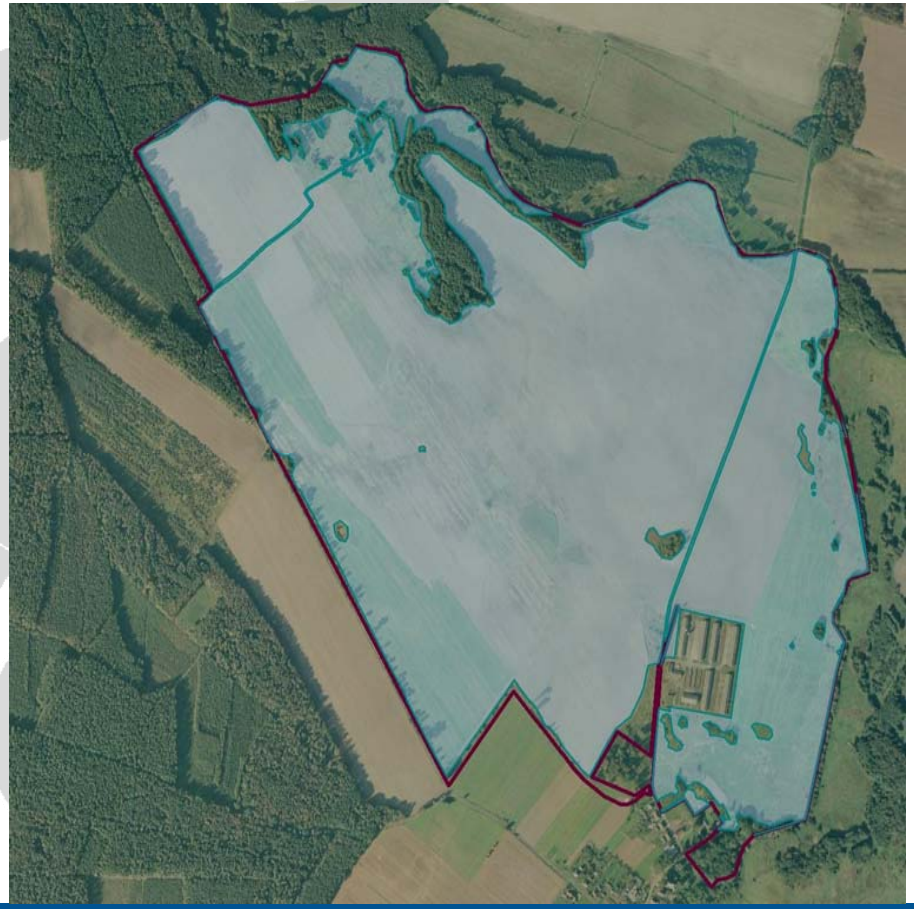


LPIS – general informations

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

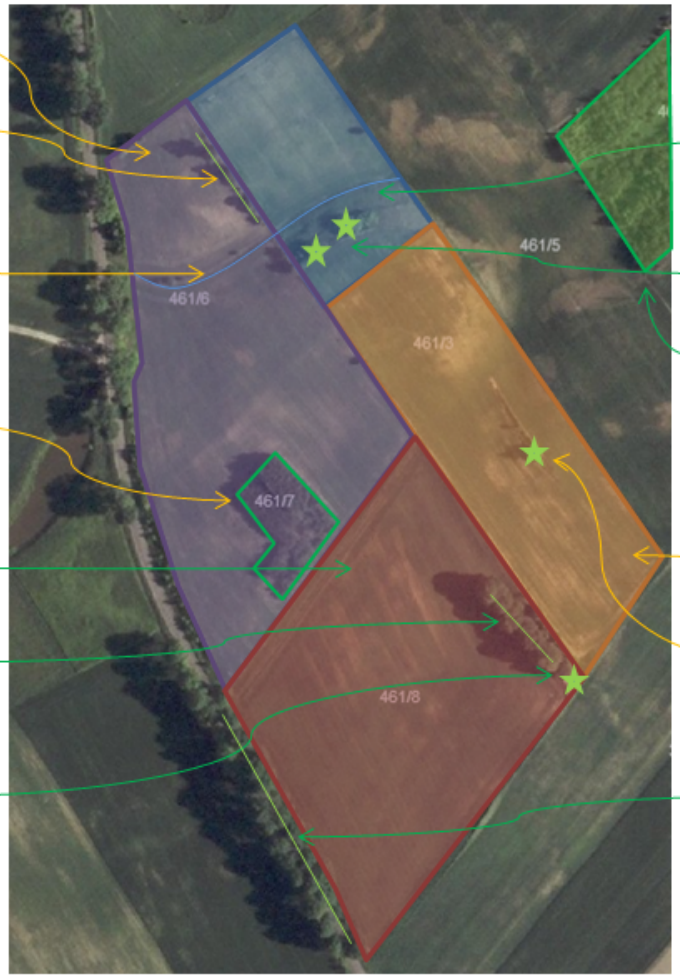
ARiMR

LPIS must provide eligible area of all declared agricultural parcels.



LPIS – general informations

EFA – Guidelines for farmers



Arable land

Trees in line – EFA
(on arable land)

Ditch – EFA
(on arable land)

Trees in group - EFA
(<3000m²; on arable land)

Permanent grassland

Trees in line – not EFA
(not on arable land)

Isolated tree – not EFA
(not on arable land; but ladndscape feature – GAEC7)

Permanent grassland

Ditch – not EFA
(not on arable land)

Isolated trees – not EFA
(not on arable land)

Trees in group – not EFA
(not on declared parcels)

Arable land

Isolated trees – EFA
(on arable land)

Trees in line – not EFA
(on the road lane zone)

A NEW LEAF
Agricultural Network
Exchanging Witnesses
and Leading Experiences
Against the Fraud

ARiMR

LPIS in Poland

Padova, May 27th 2015

LPIS in Poland

The biggest LPIS database in Europe!
LPIS system based on Cadastre.

Area of Poland	–	312 000 km^2
Reference parcels	–	34 696 000
Reference parcels (SAPS)	–	10 407 689
Reference area (SAPS)	–	141 000 km^2 (45%)
Number of farmers (Farm Register)	–	2 000 000
Average size of the holding	–	10,23ha (increasing)
Number of applications (SAPS)	–	1 373 000
Number of agricultural parcels (SAPS)	–	9 935 315
Average number of LPIS updates	–	210 000

LPIS in Poland

We may mention the following sources of the update:

I. Exchange of an orthophotomap;

II. Changes from the farmer's application along with the attachment;

III. Results of on-the-spot controls;

IV. Update of SWDE vector and descriptive data;

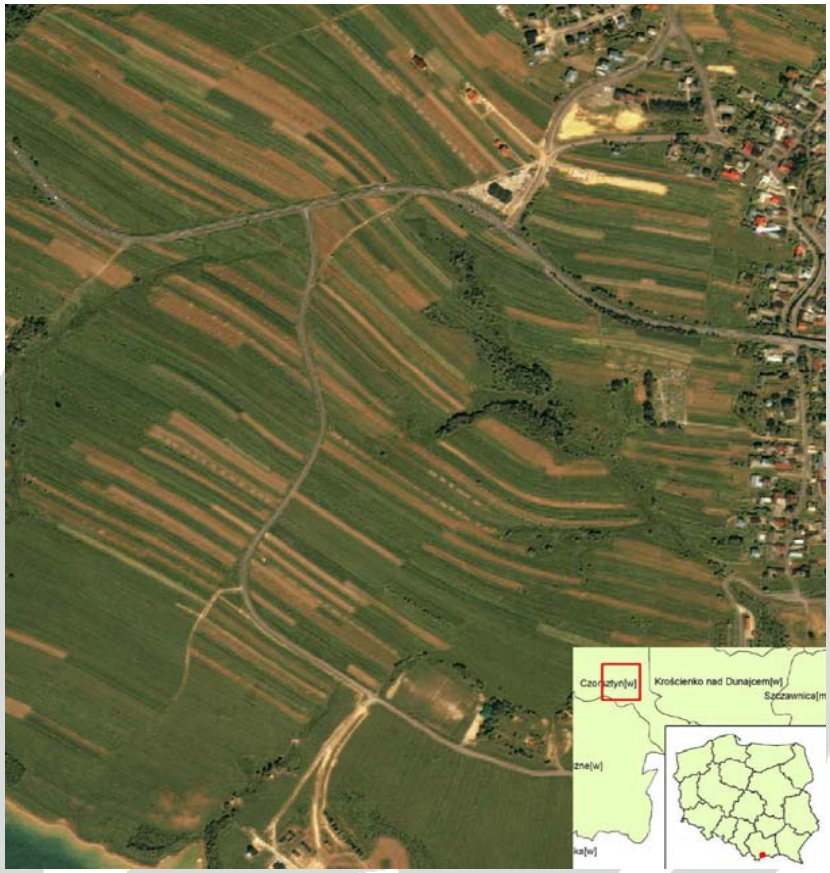
V. Other information from the farmer.

LPIS in Poland

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

Ortophotomaps in Poland



LPIS in Poland

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

Ortophotomaps in Poland

Ortophotomaps parameters – 100% coverage in 3 years	
Area	**312 000 km^2**
Ortophoto resolution	**25 cm/50 cm**
Spectral range	**RGB and (IR)**

<u>Tender informations</u>:

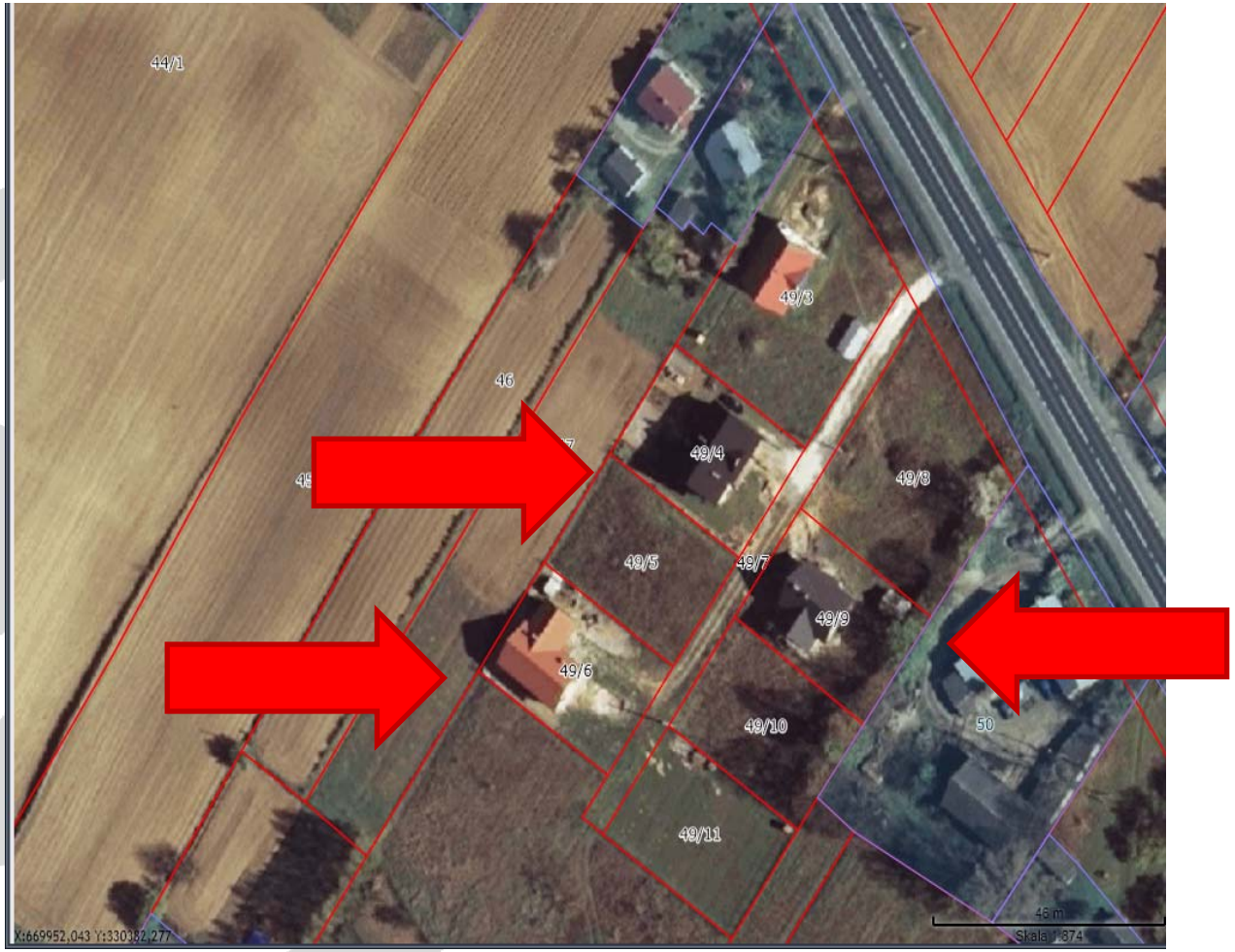
- exchanging in 3 years cycle
- partly - 30 % per year
- Import ends at 20 of November each year

LPIS in Poland

Ortophotomaps in Poland - exchange

LPIS in Poland

Ortophotomaps in Poland - exchange

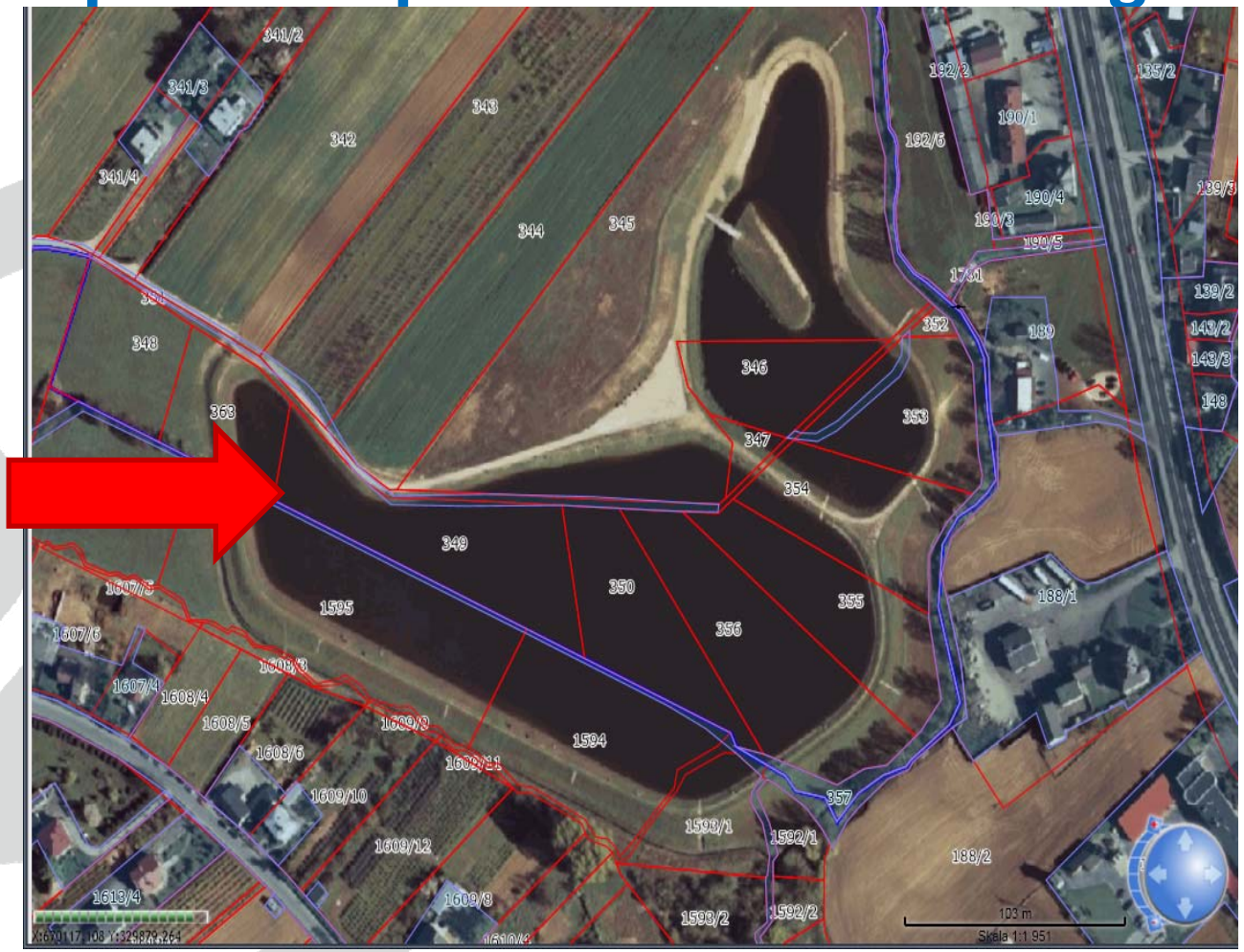


LPIS in Poland

Ortophotomaps in Poland - exchange

LPIS in Poland

Ortophotomaps in Poland - exchange



MAZOWIECKIE / przasnyski / Krzynowłoga Mała

20000000000001426167838

Agencja Restrukturyzacji i Modernizacji Rolnictwa

Dane producenta rolnego	
Numer	
Imię	
Nazwisko/ nazwa	(1)

Działki producenta znajdujące się na materiale graficznym.

ROMANY ZALESIE I KRAJEWO KLÓD.
142206_2.0031.8/1

(2)

Legenda: (3)

- Działka ewidencyjna
- Działka ewidencyjna z wniosku
- Sady
- Tereny zalesione i zakrzewione
- Pozostałe tereny wyłączone
- OR 10
- A — Oznaczenie działki rolnej (patrz instrukcja)
- Deklarowany obszar (zaznaczyć na obwodzie)
- Rów
- Pomnik przyrody
- Zagajniki
- Zalesienia

(4) Data wypełnienia materiału graficznego

Podpis osoby składającej wniosek

Skala 1:5 000

0 50 100 150 m

N

(5) Data przygotowania wniosku:

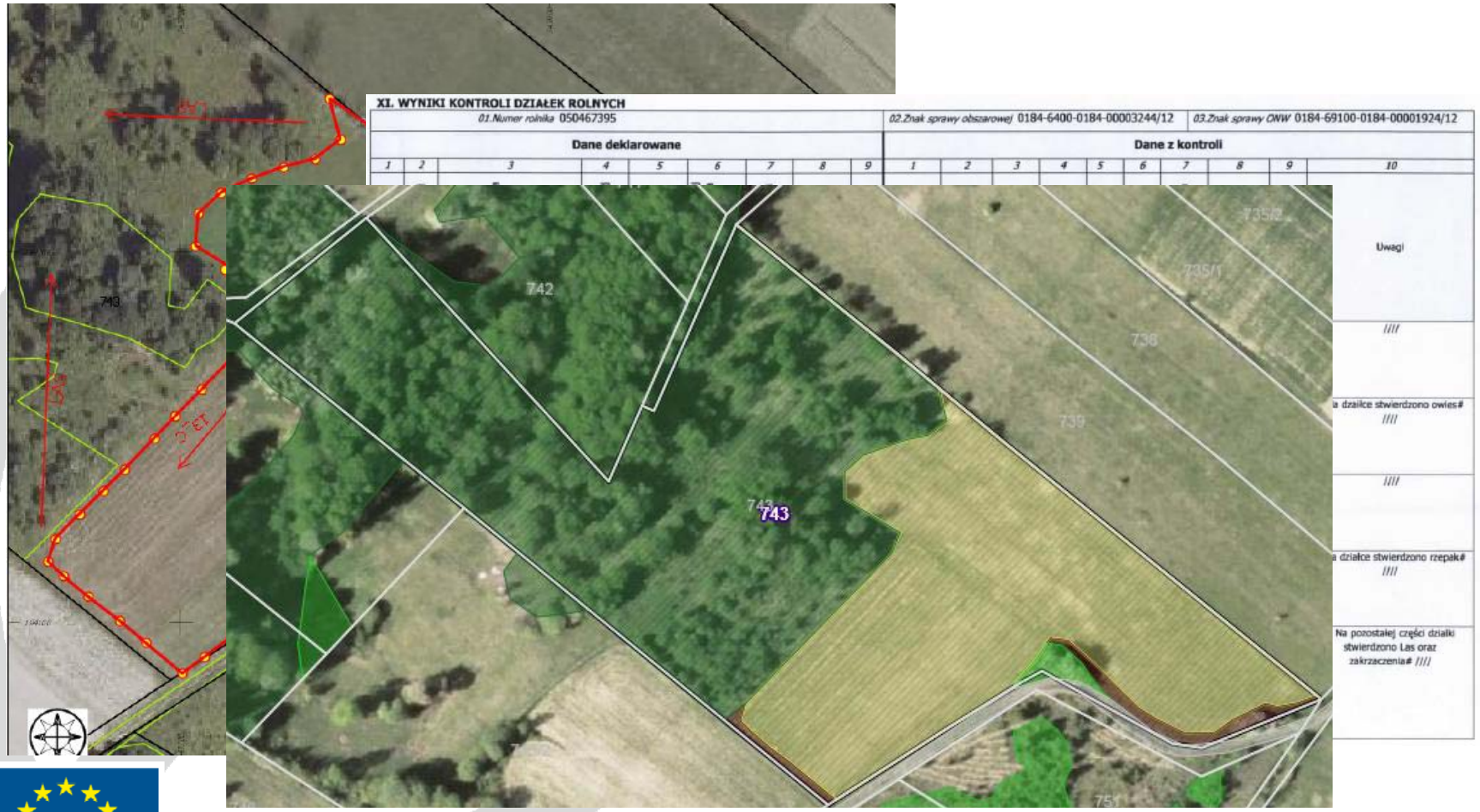
25-11-2011

LPIS in Poland

LPIS must provide graphical material (maps) for on-the-spot checks, in both – Controls with Remote Sensing and Rapid Field Visits

LPIS in Poland

OTSC - results



LPIS in Poland

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

Cadas

Before modi

LPIS in Poland

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

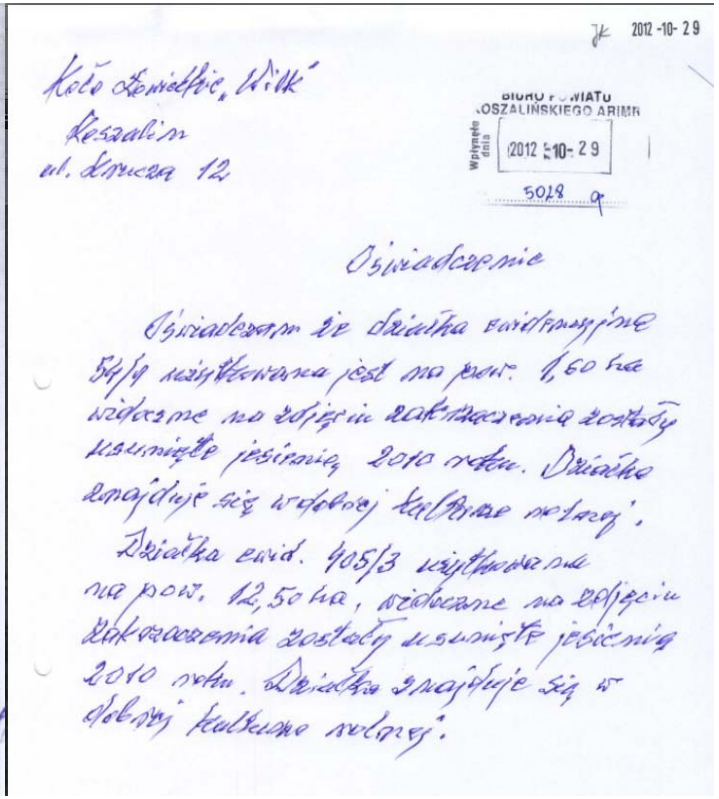
Cada

After modi

Padova, May 27th 2015

LPIS in Poland

Other information from the farmer – for example – statements



JK 2012-10-29

Koło Łowieckie „Wilk"
Koszalin
ul. Krucza 12

BIURO POWIATU KOSZALIŃSKIEGO ARIMR
Wpłynęło dnia 2012-10-29
5018 9

Oświadczenie

Oświadczam że działka ewidencyjna 54/9 użytkowana jest na pow. 1,60 ha widoczne na zdjęciu zakrzaczenia zostały usunięte jesienią 2010 roku. Działka znajduje się w dobrej kulturze rolnej.

Działka ewid. 405/3 użytkowana na pow. 12,50 ha, widoczne na zdjęciu zakrzaczenia zostały usunięte jesienią 2010 roku. Działka znajduje się w dobrej kulturze rolnej.

LPIS in Poland

- ✓ We have created a team of GIS specialists providing LPIS data management since January 2011

- ✓ All staff involved in updating of LPIS reference databases were ARMA's employees (reorganization of the organizational structure / providing professional staff experienced in application handling).

Result:

- GIS team guarantees the possibility of promptly implementation of remedial actions/corrective measures resulting from annually conducted QA_LPIS test
- During 2 years – over 2 000 000 reference parcels updated!

LPIS in Poland

A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

ARiMR

LPIS+ project

ARMA – head office

- 8 employees – one division
- Data upadate management

Regional Offices - 16

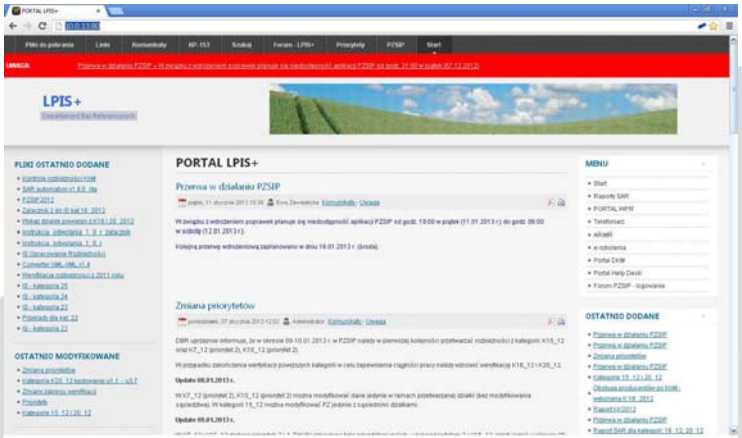
- 32 employees
- Each data modification approval
- Management work at regional level

BP – Poviat Offices- 314

- 360 employees + 170 additional employees
- Data update - directly on LPIS database
- Direct contact with beneficiary

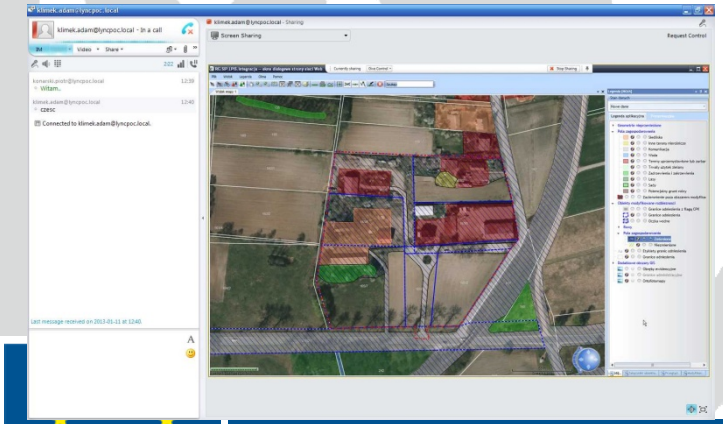
LPIS in Poland

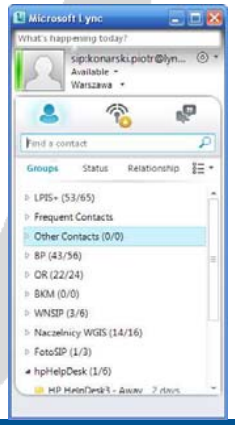
Communication in LPIS+ project



Internal WWW portal with instructions and all important informations.

On-Line reports – statistical information – build on Oracle APEX.





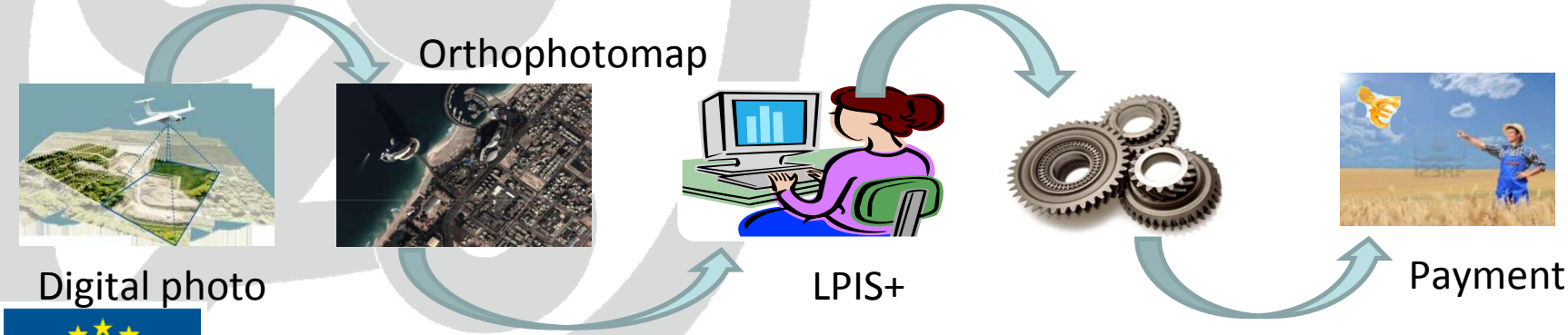
Microsoft LYNC –instant messaging, Voice Over IP and Video conferencing!
Lync gives us opportunity to make online trainings and direct connection between all LPIS+ project participants! Most important tool in whole project!

LPIS in Poland

LPIS - external conditions

Lack of good weather conditions - long winters and cloudy spring and autumn – makes the period in which we have to update the orthophotomaps drastically short - effective up to three months. At this time, we have to make photos for the area about 100 000 km^2 per year.

Ortophoto production time is set in tender procedures -> last stage for each year must be delivered to ARMA since 20-th of November each year. This condition give us opportunity to use at each year most actual orthophotomaps and areas eligible for payment during the proces of administrative controls.



LPIS in Poland

Distribution of LPIS updating costs in subsequent years.

1. Since 2009 the update of LPIS system is carried out by ARMA employees,
2. We use results of QA_LPIS tests to improve the quality of LPIS reference databases,
3. 64% - the reduction of update LPIS reference databases costs from 2012.

Campaign	Average costs of LPIS reference databases updating (Euro)	Updating costs per one holding (Euro)	% of reduction costs (%)
2008	10 750 000	**8,02**	**0%**
2009	10 000 000	**7,46**	**7%**
2010	8 250 000	**6,16**	**23%**
2011	5 592 500	**4,17**	**48%**
2012-2015	3 900 000	**2,91**	**64%**

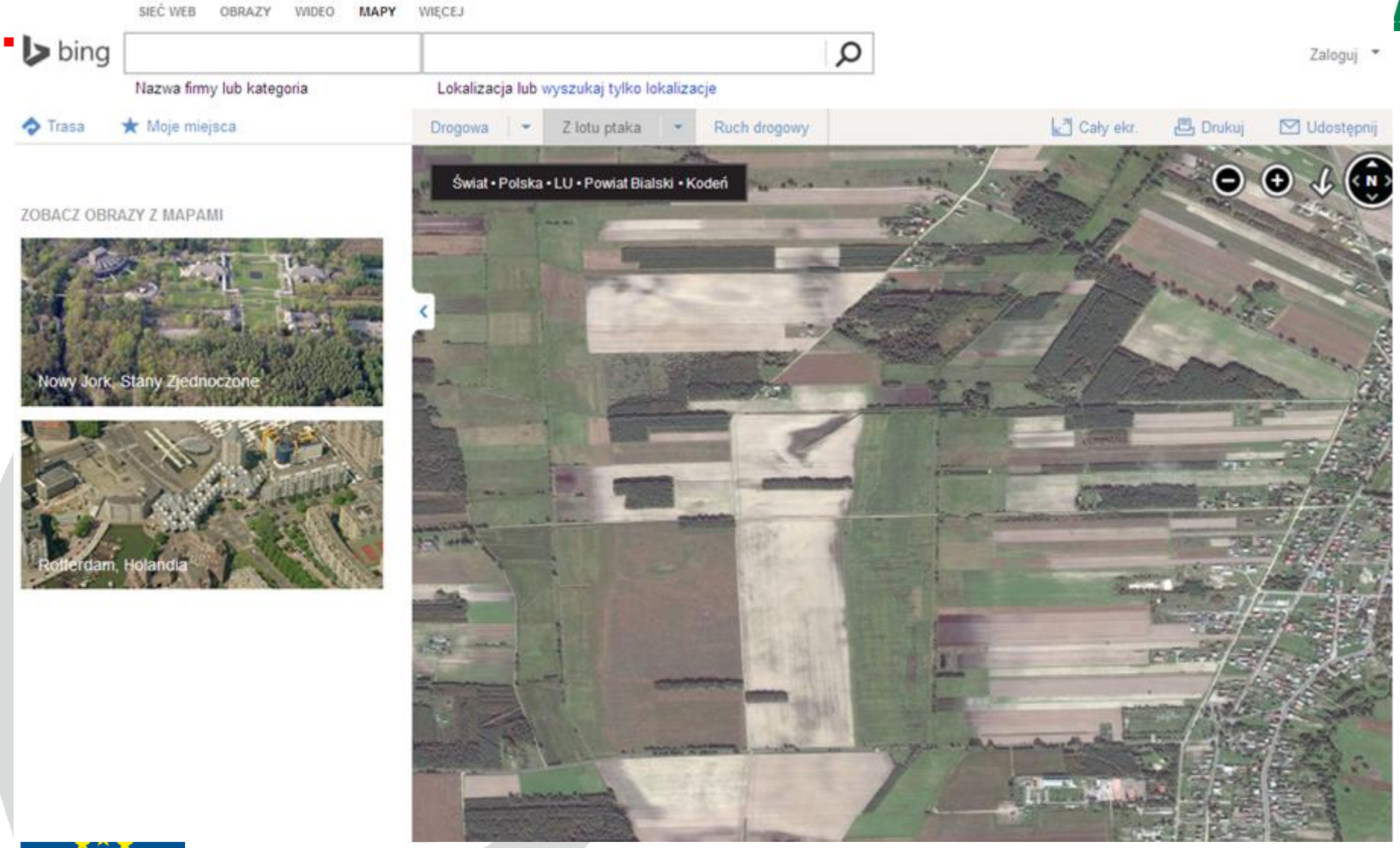
Good practise

Collection of data sources

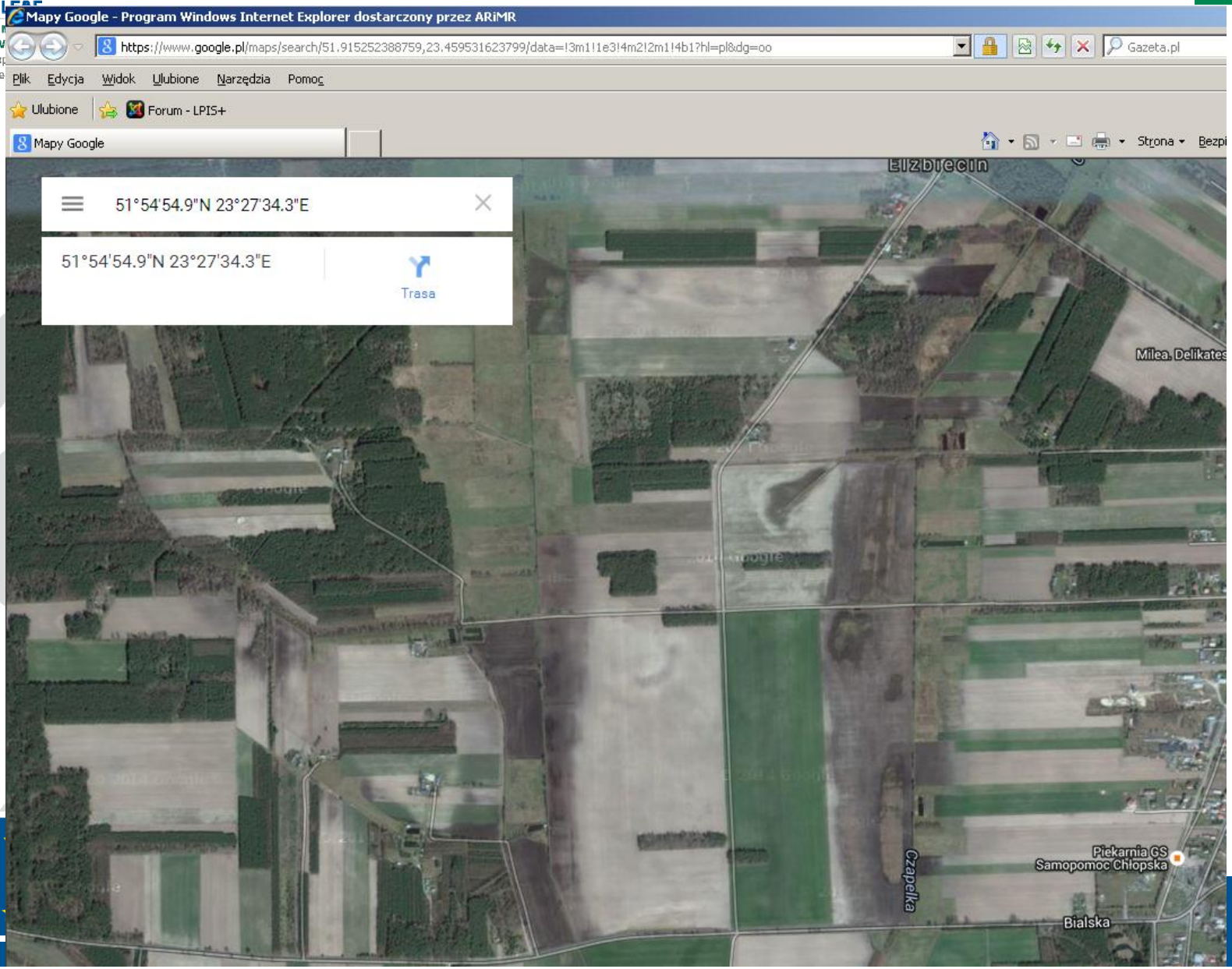
Internal aplication

Browser - Chrome

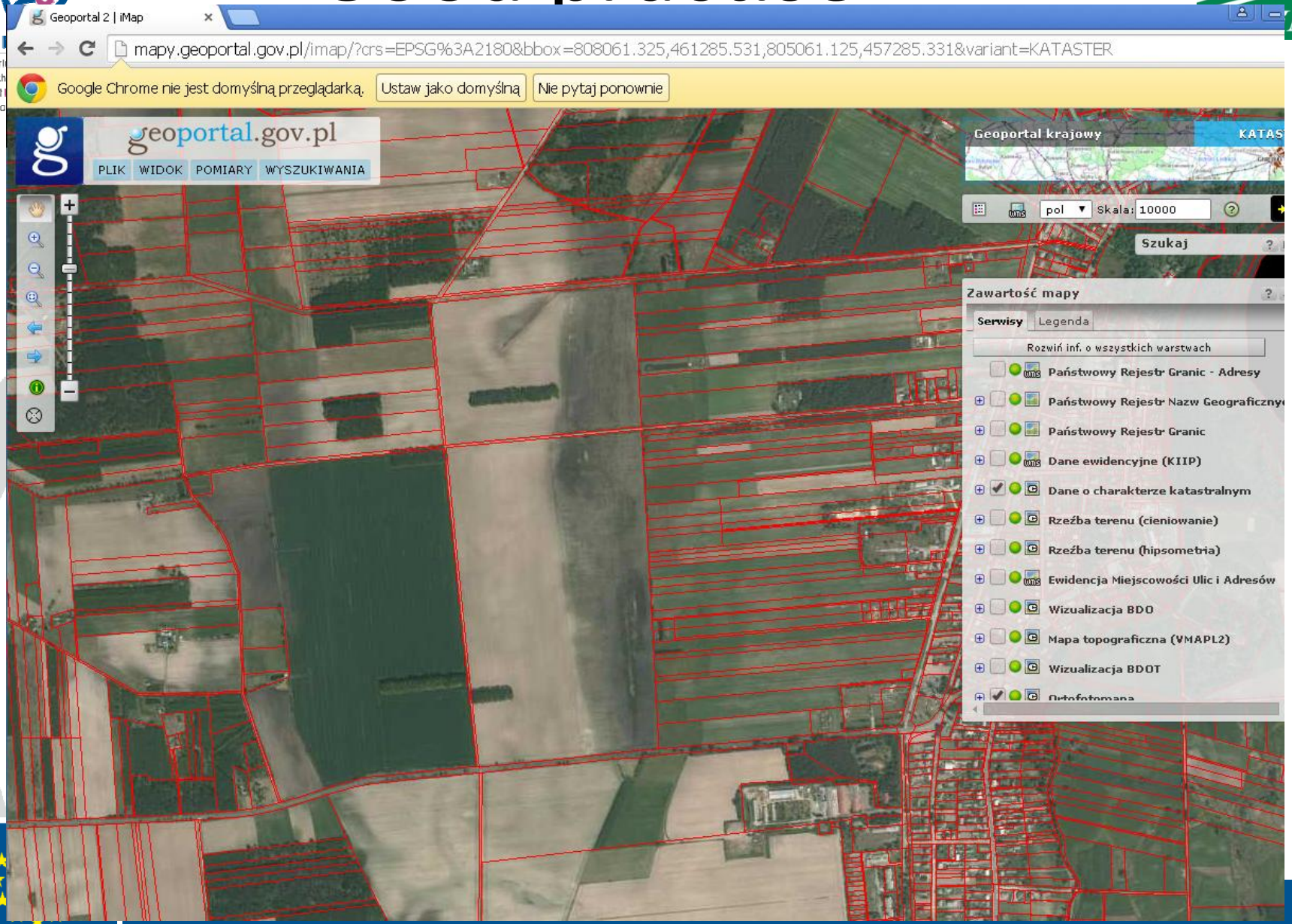
Good practise



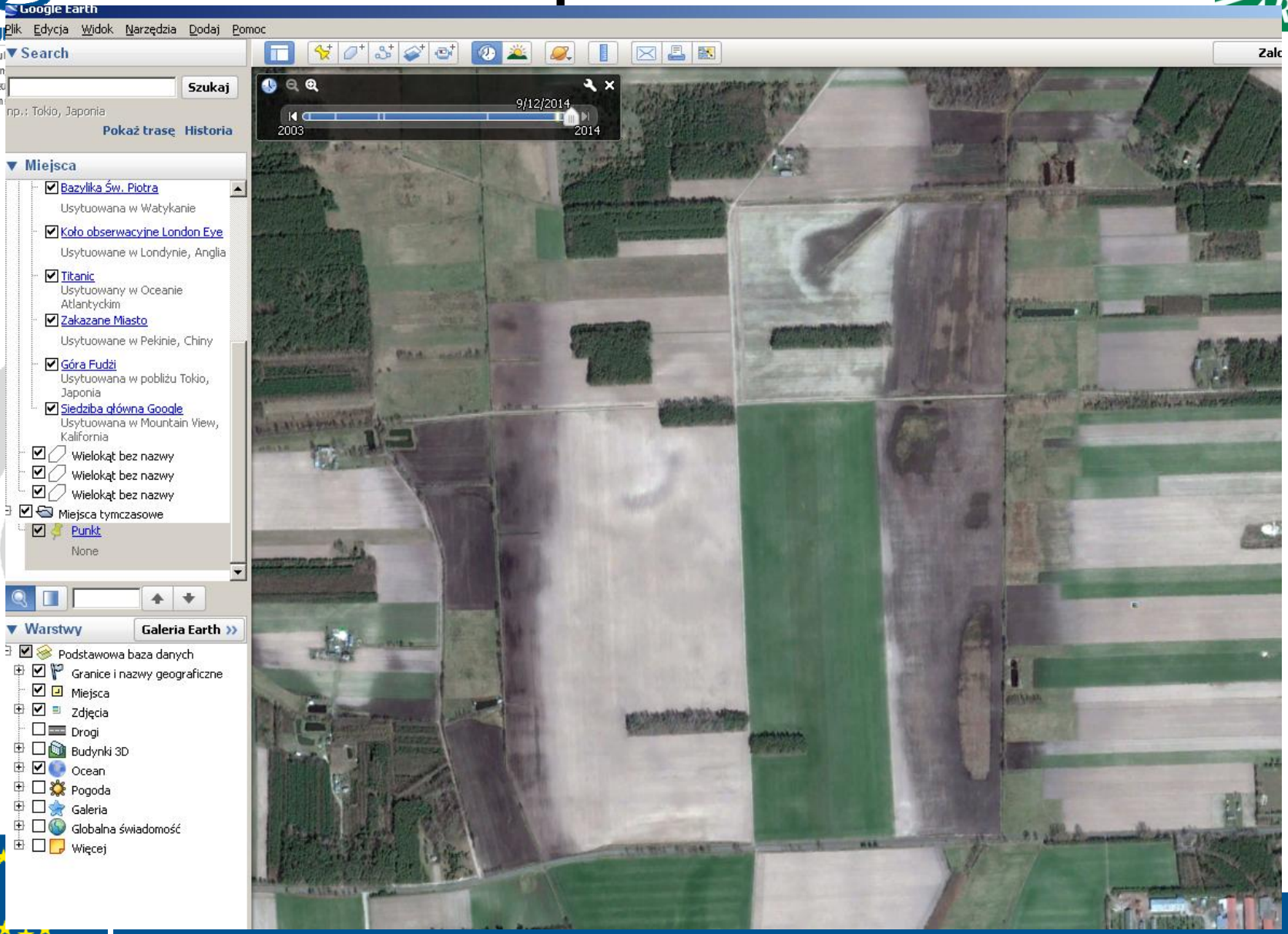
Good practise



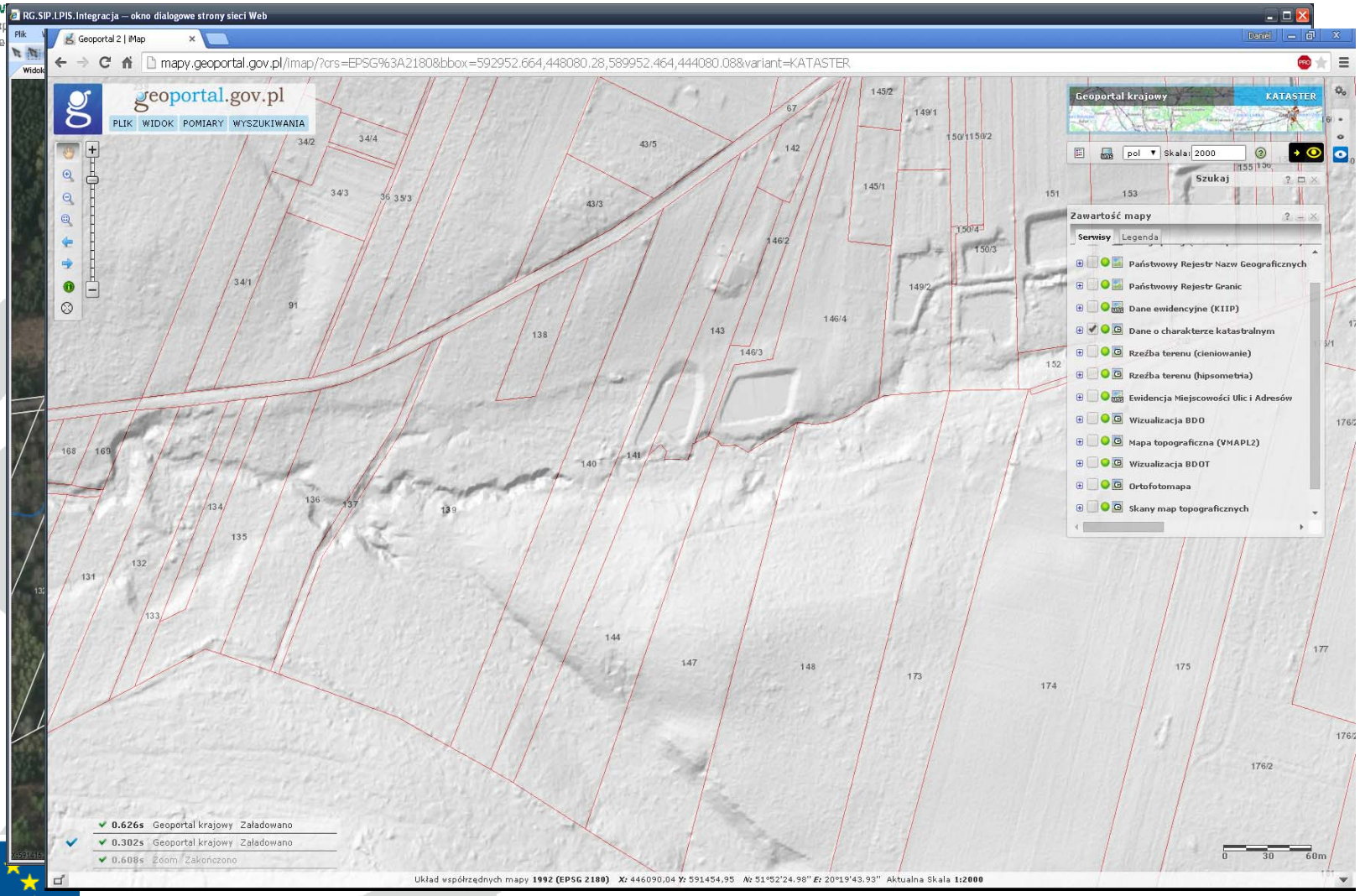
Good practise



Good practise



Good practise



Good practise

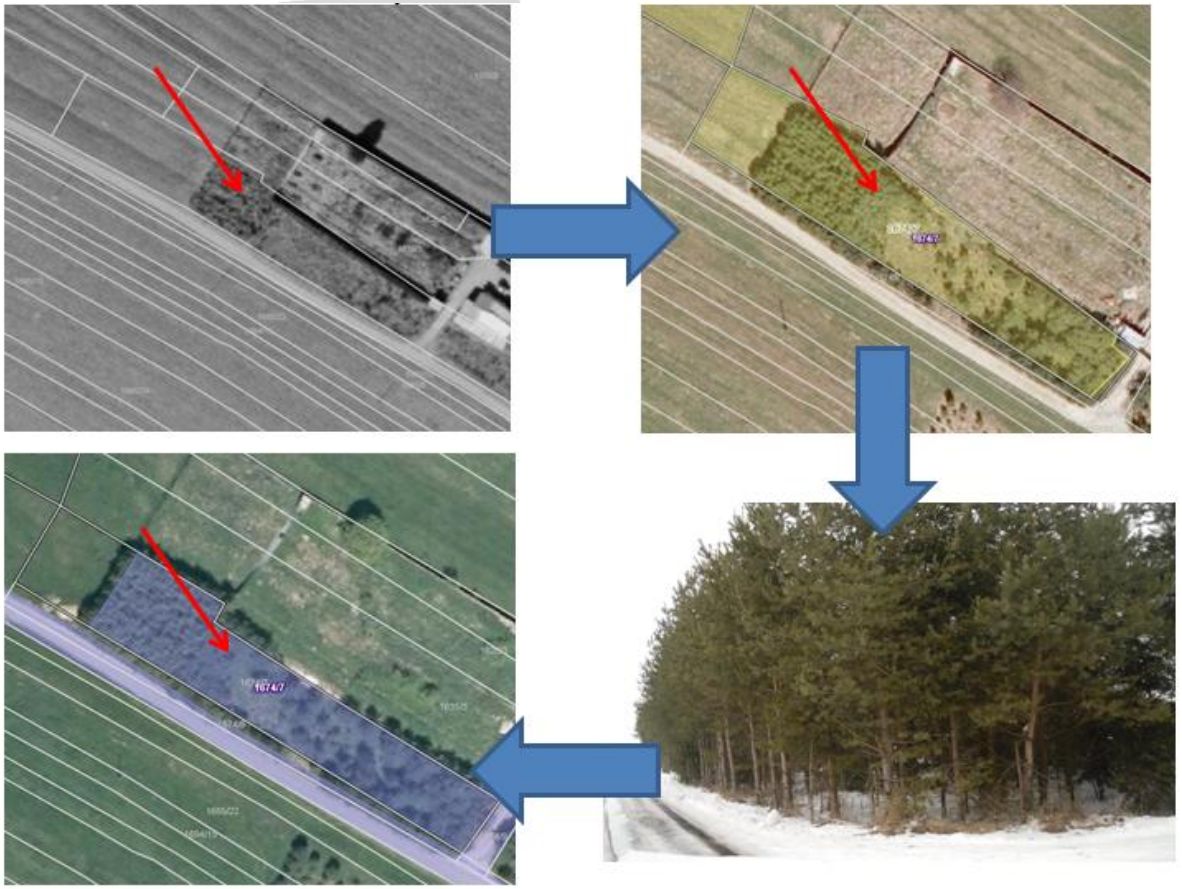
Numerical Terrain Model - Shading

Benefits

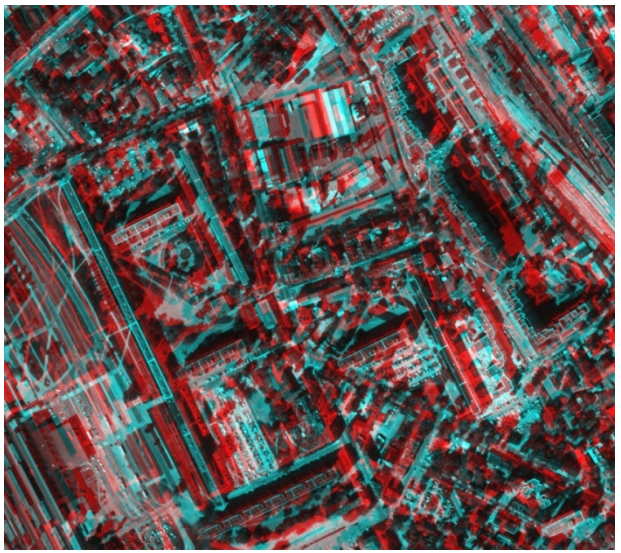
1. Disclose all depressions
2. Easy identification of the positions and sizes for example: ditches, ponds
3. No disturbing objects identification (buildings, trees, etc.)
4. Scalability and correlation with orthophotomap

Good practise – any doubts – rapid field visit

Cadaster- whole parcel – agricultural land, MEA – in the middle of parcel, declaration- hole parcel, extra field visit



Good practise – **Polish LPIS + nearest future**
ANAGLYFIC ORTHOPHOTOMAP-3D



Goals:

✓better photointerpretation

✓increase the accuracy of identifying changes in land use

✓eliminating mistakes and inaccuracies in the calculation of the maksimum eligible area for payments

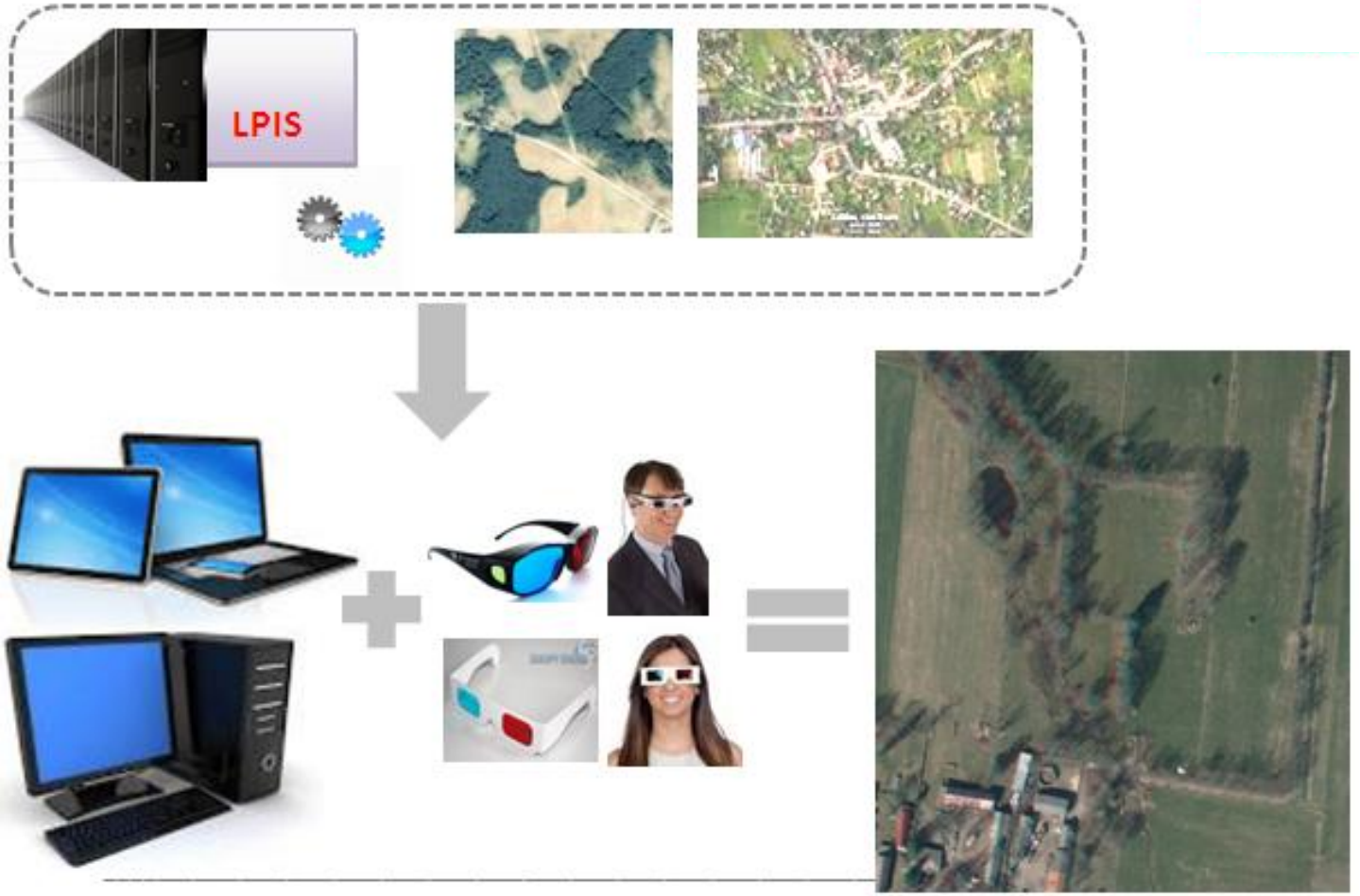
✓easy-to-use search of additional mechanisms exclusion correction and verification, EFA, and other elements identified on orthophotomap

Good practise – **Polish LPIS + nearest future**
ANAGLYFIC ORTHOPHOTOMAP-3D

USE:

- ✓another layer of the LPIS
- ✓a new measurement tool
- ✓identification of land use
- ✓Identification and analysis of spatial objects
- ✓verification EFAand other elements identified on orthophotomap
- ✓Interpretation of relief

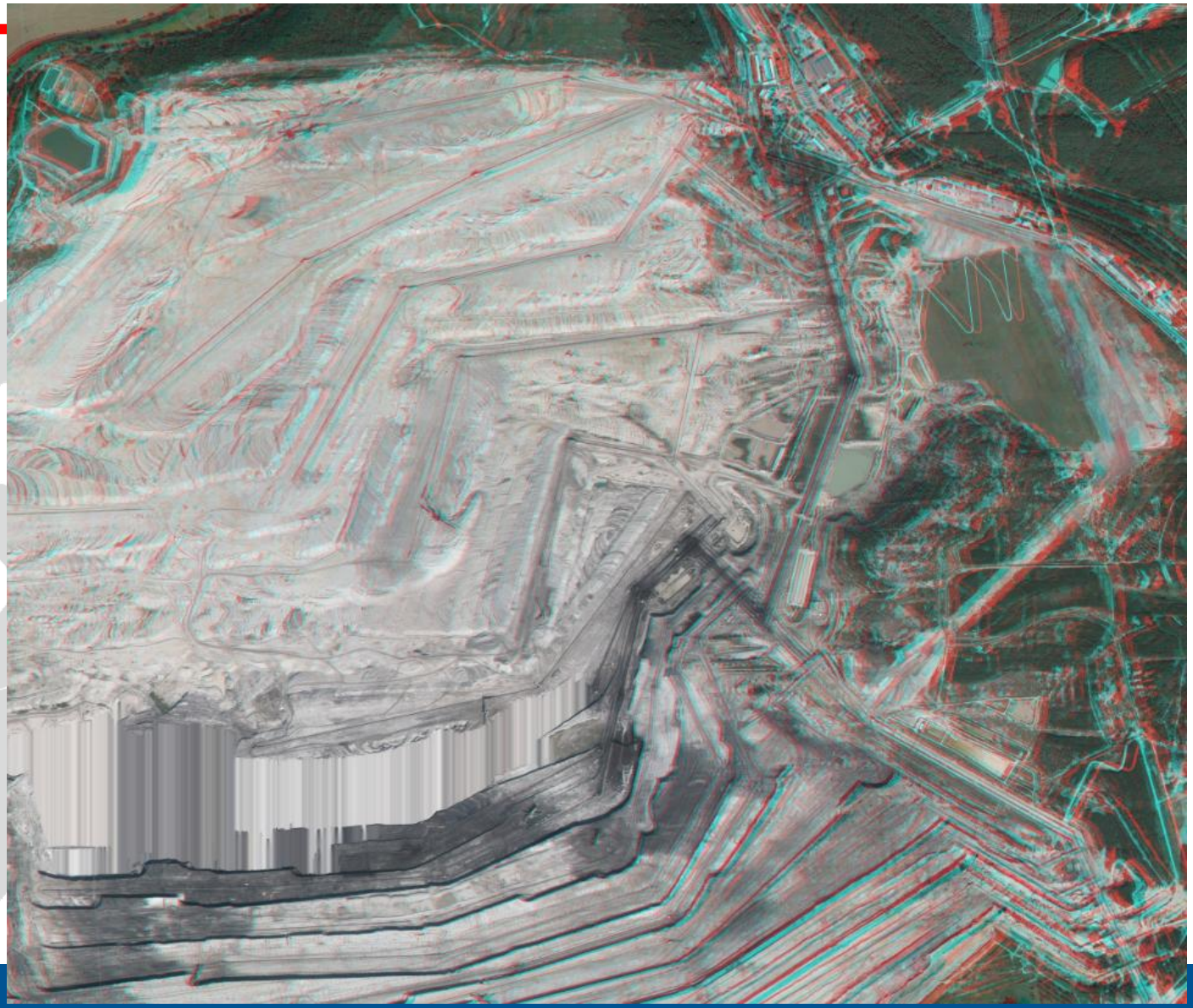
Good practise – **Polish LPIS + nearest future**
ANAGLYFIC ORTHOPHOTOMAP-3D



A NEW LEAF
Agricultural Network Exchanging Witnesses and Leading Experiences Against the Fraud

Good practise – **Polish LPIS + nearest future**

ANAGLYFIC ORTHOPHOTOMAP-3D



ARiMR

Internal quality control

LPIS data quality checks

WJD (Data Quality Check) – external company, 3 years contract -> they can not participate in other ARMA tenders.

Main tasks:

1.Final verification of data quality (orthophotomaps, vectorial data from other external contractors or administration) – data shoud meet the requirements of IACS system!

2.Import data into LPIS database.

Internal quality control

„Double check" verification

Two levels of verification:

-Difference Verifiers – Poviat Offices

-Decision Verifiers – Regional Offices

- ❑ Land use incompatible with orthophotomap
- ❑ Do not include the results of KNM.
- ❑ Do not take into account changes made by the farmer on the graphical attachment
- ❑ Do not take into account the declaration of the farmer
- ❑ Do not take into account the modifications introduced as a result of the appeal against the decision
- ❑ Do not take into account differences duplicated
- ❑ Other identified errors
- ❑ Verification without errors

Internal quality control

„Double check" verification

Results of control:

- ✓confirmation of discrepencies
- ✓rejection of discrepencies
- ✓return for reassessment
- ✓referral to extra field visit
- ✓a small correction can be made by the Decision Verifier

Internal quality control

QA_LPIS_OR - LPIS quality assessment

Main goals:

✓Assessment of quality of modification
✓ Assessment of quality of LPIS data

QA_LPIS_OR is not intended to verify the correctness of the modification made by individual Difference Verifiers

QA_LPIS_OR is carried out in quarterly cycle.

Internal quality control

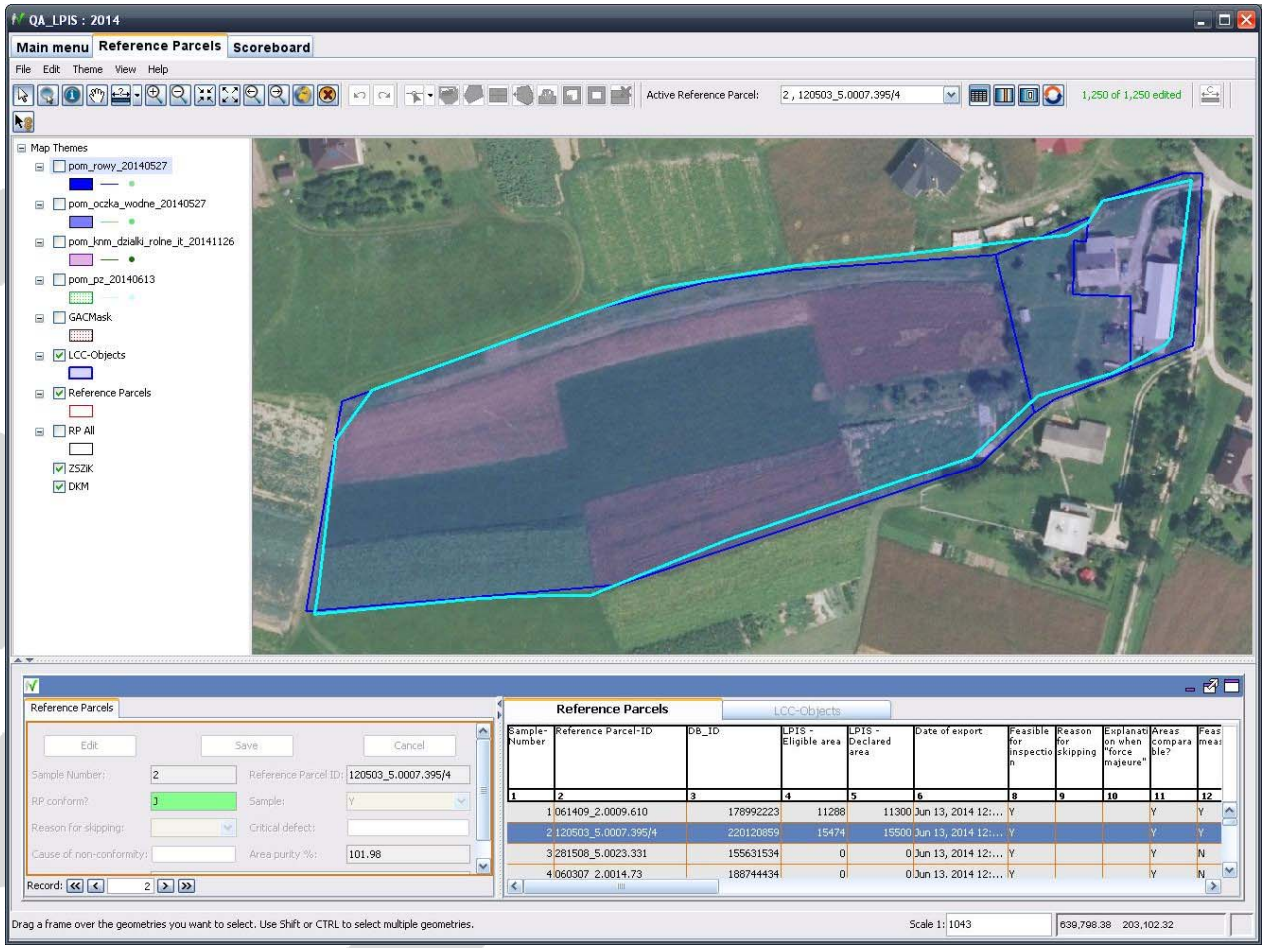
QA_LPIS_OR - LPIS quality assessment

QA_LPIS_OR – 4 stages:

1. Reference parcels selection – define the conditions - 1250 refernence parcels (RP) in each Regional Offices – 20000 RP – in Poland.
2. Vectorisation
3. Regional offices level - analysis and reporting of results achieved.
4. Analysis of results – Head office level

Internal quality control

QA_LPIS_OR - LPIS quality assessment



Internal quality control

Extra procedure – quality control of LPIS data- using visualization

- Take into account – ineligible area for payment and reference boundaries
- Control is carried out in quarterly cycle by Head office employees

Control:

Reference boundaries and ineligible area – consists of the visual and analytical assessment of the accuracy of modifying, taking into account orthophoto and other documentation – results of OTSC, graphical attachments, documentation from cadaster….

Internal quality control

Extra procedure – quality control of LPIS data- using visualization

Main stages:

1. Preparation of criteria for category's selection
2. Preparation list of discrepancies
3. Selection – random selection or risk analysis
4. Assign control for employees and conducting control
5. Preparation of analytical documentation and test report
6. Report and the implementation of corrective actions

Polish LPIS + nearest future

Thank you for your attention…

Grazie per l'attenzione….

Bardzo dziękuję za uwagę….