SINERGISE

REPUBLIKA SLOVENIJA
MINISTRSTVO ZA KMETIJSTVO, GOZDARSTVO IN PREHRANO

# Best Practices for Assuring the Quality of LPIS Data


Grega Milčinski, Sinergise

Alenka Rotter, Ministry of Agriculture, Forestry and Food

Zdravko Tušek, Paying Agency for Agriculture, Fisheries and rural development

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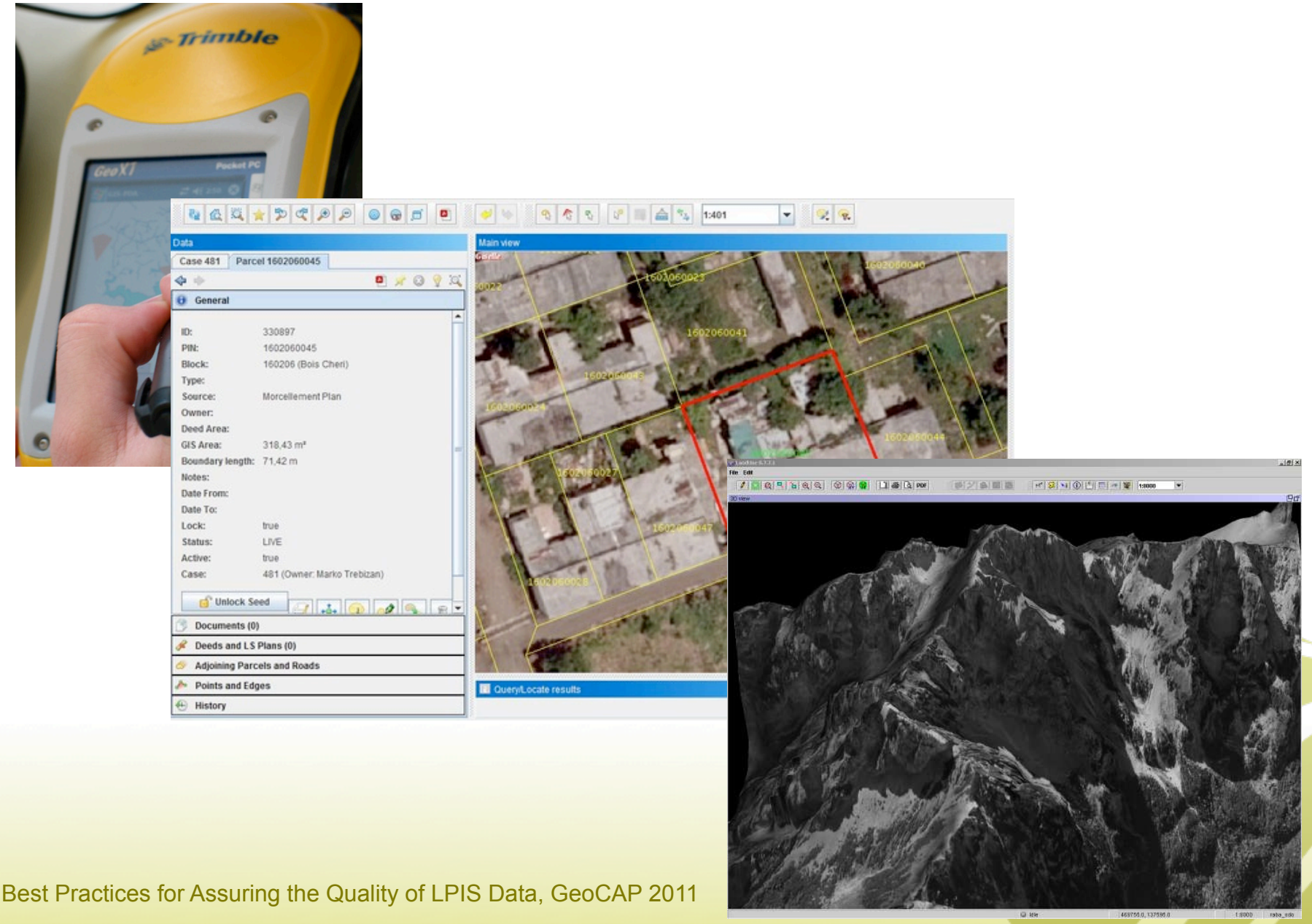
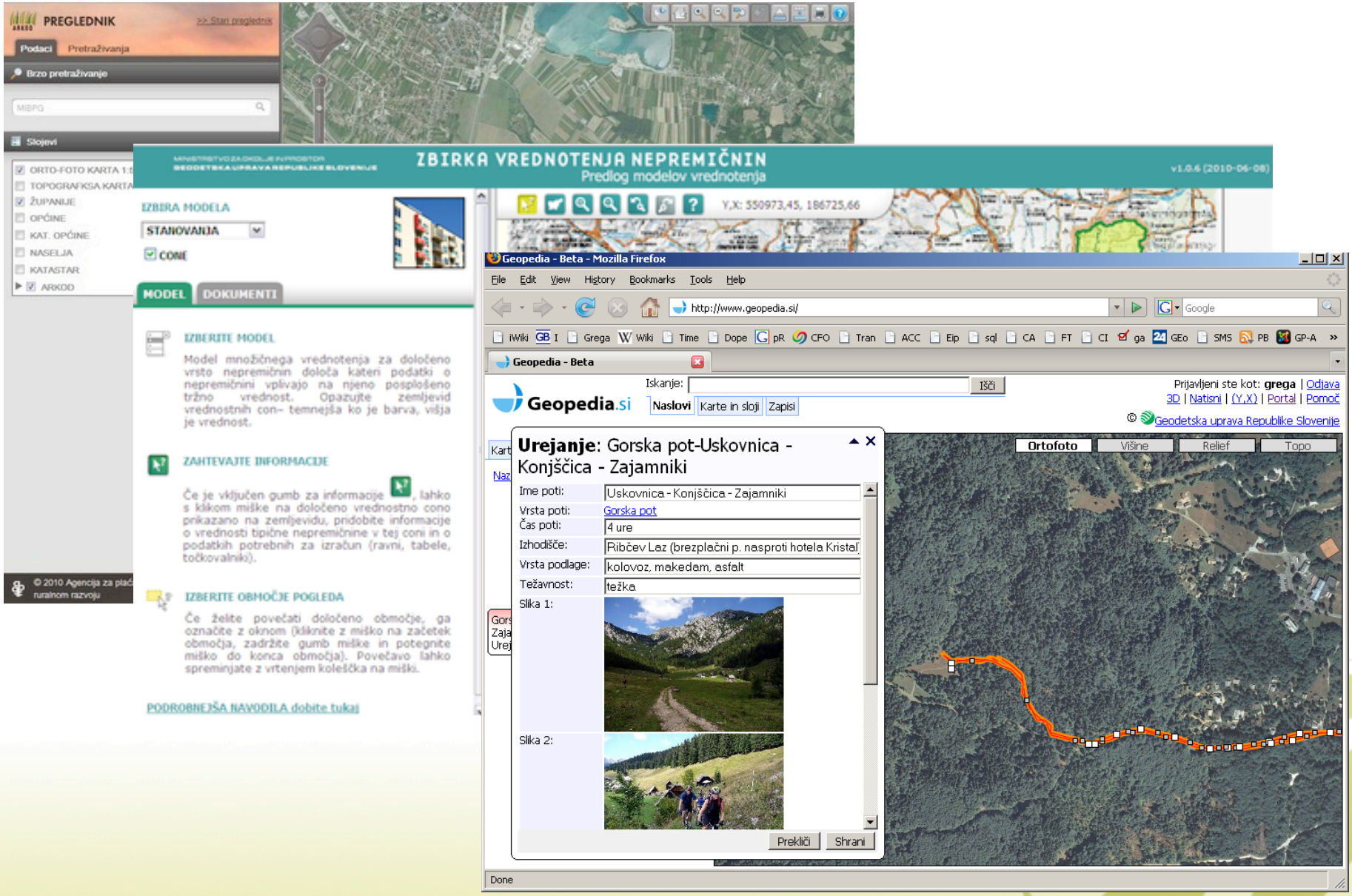
- Occurrence of errors
- Finding errors
- Solving specific issues
- Improvement of the process

# About Sinergise



# About Sinergise



# The importance of quality of LPIS

- EU regulations
- Fair distribution of taxpayer's money
- Avoiding the law-suits
- Use of LPIS data in other systems

# Occurrence of errors

- input data of bad quality
- technical obstacles
- sloppiness of the operators
- random errors
- on purpose

- errors happen also due to change of reality

# How to deal with them?

- Regular LPIS update
- Additional processes

# Finding errors – automatic cross-check

- cost-effective as it is computer generated
- LPIS <-> LPIS
  - double declaration
  - topology errors
  - missing/improper attribute data

# Topology errors

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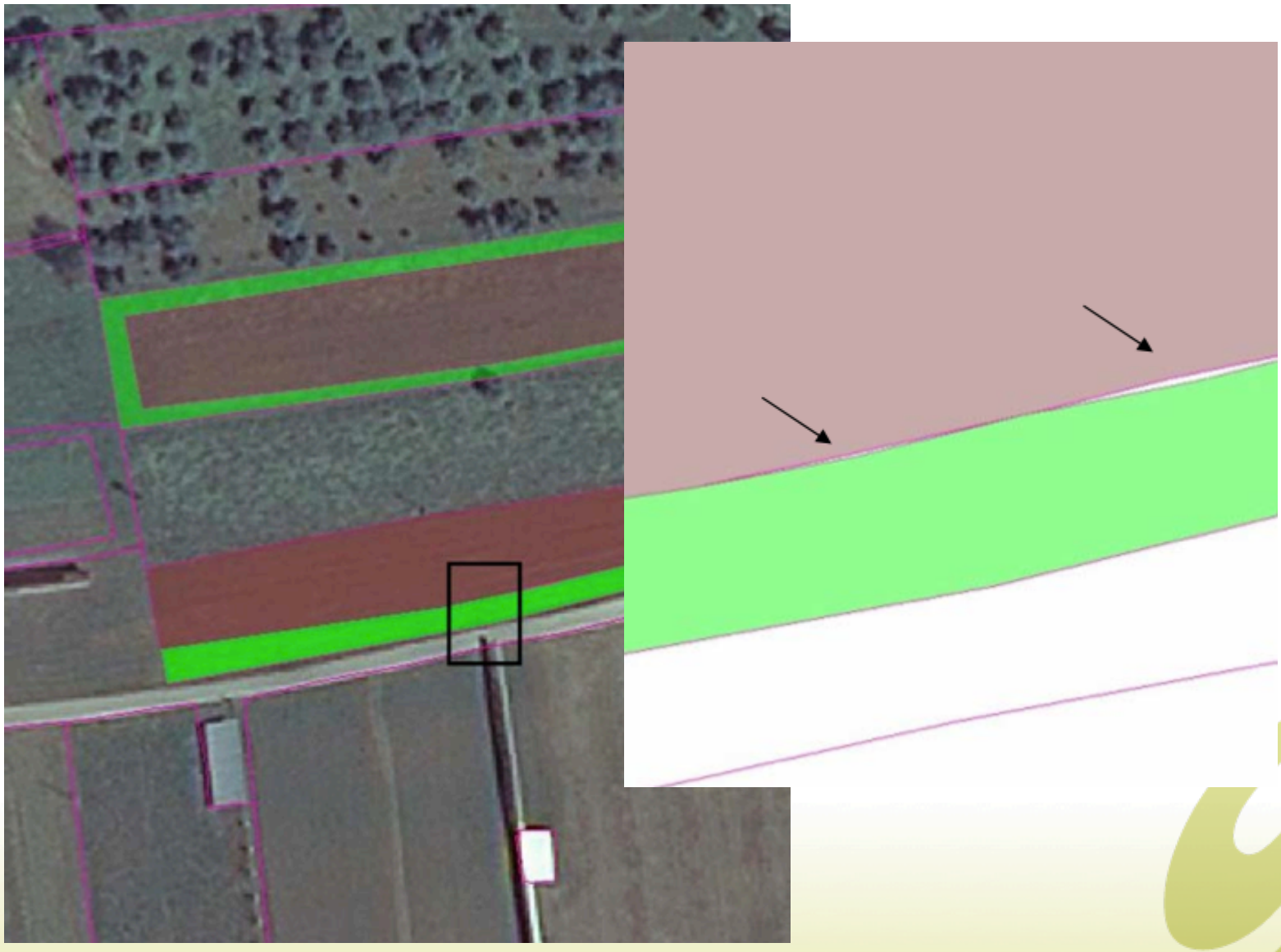

# Finding errors – automatic cross-check

- LPIS < - > land use / land cover
  - Extremely efficient cross-check
  - Up-to-date land cover should be available (whenever aerial imagery is updated)
  - Illegible areas within LPIS parcels
  - Change of borders of LPIS parcel

# Cross-check LPIS <-> land cover

**Seznam kontrol**

**Iskalnik**

| | KMG_MID | Tip | Šifra | Datum | Opis kontrole |
|---|---|---|---|---|---|
| | 100471994 | ERR | GERK-00014 | 05.05.10 00:16 | Raba GERK-a ne ustreza veljavni rabi za vrsto kmetijskega gospodrastva |
| | 100471994 | ERR | GERK-00061 | 05.05.10 00:17 | GERK_PID 4204541: Obstaja sosednji GERK 4204539 z enako vrsto RABE ( ? Združiti ) |
| | 100471994 | ERR | GERK-00061 | 05.05.10 00:17 | GERK_PID 4204539: Obstaja sosednji GERK 4204541 z enako vrsto RABE ( ? Združiti ) |
| | 100471994 | ERR | GERK-00061 | 05.05.10 00:17 | GERK_PID 4168774: Obstaja sosednji GERK 4168772 z enako vrsto RABE ( ? Združiti ) |
| | 100471994 | ERR | GERK-00061 | 05.05.10 00:17 | GERK_PID 4168772: Obstaja sosednji GERK 4168774 z enako vrsto RABE ( ? Združiti ) |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4683992 ne ustreza dejanski rabi za 1221,8 m2: 1221,8 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4639927 ne ustreza dejanski rabi za 2701,71 m2: 2701,71 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4639813 ne ustreza dejanski rabi za 4941,45 m2: 4941,45 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4610428 ne ustreza dejanski rabi za 6,09 m2: 6,09 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4609941 ne ustreza dejanski rabi za 553,57 m2: 553,57 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4514675 ne ustreza dejanski rabi za 7292,83 m2: 7292,83 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4514673 ne ustreza dejanski rabi za 41,09 m2: 41,09 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4514631 ne ustreza dejanski rabi za 768,67 m2: 768,67 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4260057 ne ustreza dejanski rabi za 4171,37 m2: 4171,37 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4204541 ne ustreza dejanski rabi za 50,87 m2: 50,87 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4204539 ne ustreza dejanski rabi za 38,48 m2: 38,48 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4168774 ne ustreza dejanski rabi za 431,97 m2: 431,97 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:17 | Napaka - raba GERK-a 4168772 ne ustreza dejanski rabi za 78,69 m2: 78,69 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4089472 ne ustreza dejanski rabi za 116,45 m2: 116,45 m2 |
| | 100471994 | ERR | GERK-90064 | 05.05.10 00:16 | Napaka - raba GERK-a 4005510 ne ustreza dejanski rabi za 184,81 m2: 184,81 m2 |

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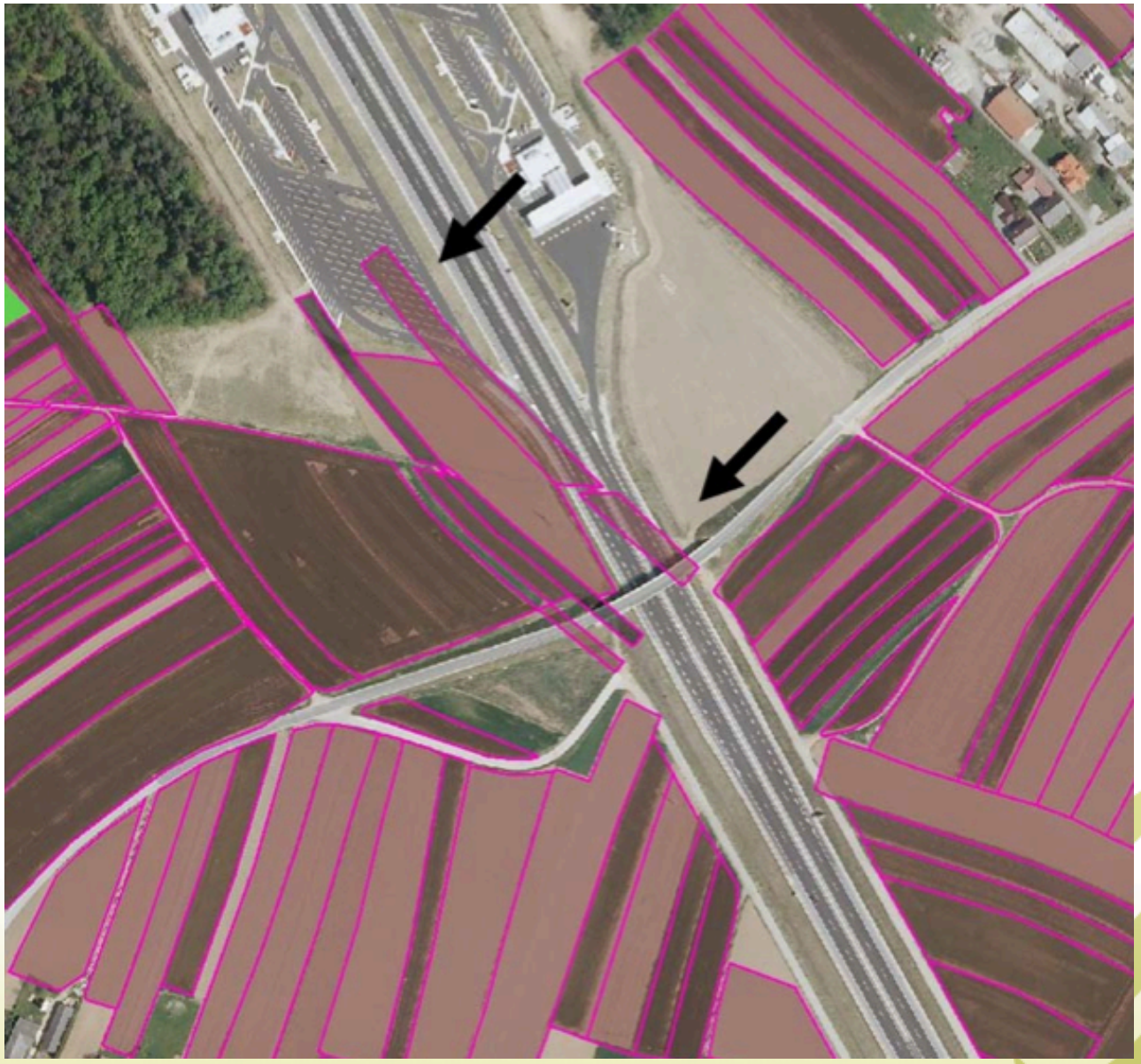
# Finding errors – automatic cross-check

- Other data sources
  - forest cover
  - highway paths and roads
  - building registry
  - habitats
  - football stadiums
  - airplane fields

- be aware about the quality of these data (including meta-data)

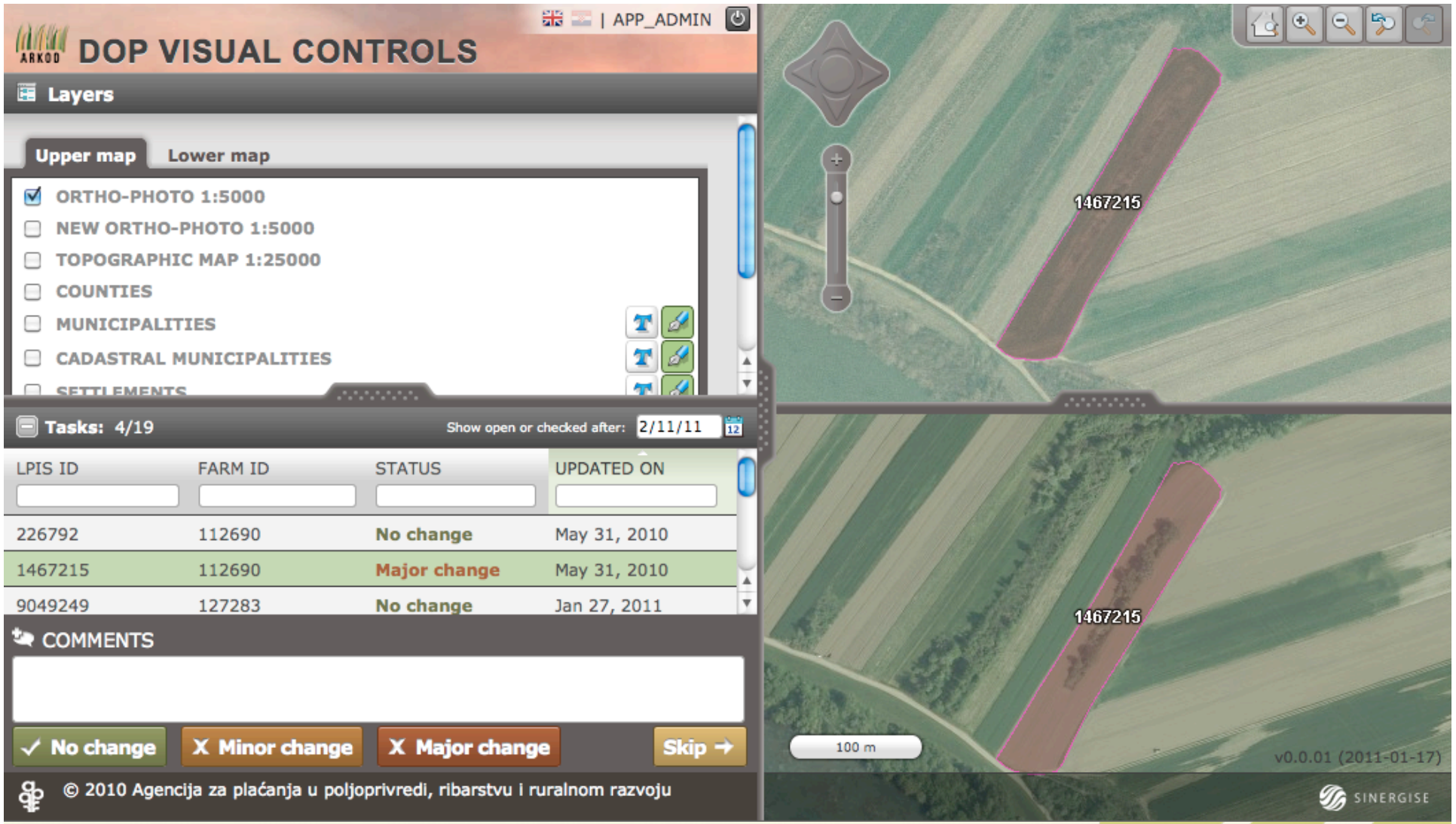
# Finding errors – automatic cross-check



# Finding errors - aerial imagery update

- automatic test not feasible
- 100% administrative control required
- time consuming
  - 30% of parcels every year (several 100.000)
  - usually, there is no inconsistency found
- optimization of the process

# Finding errors - aerial imagery update



# Finding errors - aerial imagery update

- In case inconsistencies are found
  - small ones – parcels are updated by the central unit, farmers are notified after the process is finished
  - large – meeting with famers are automatically scheduled in order to solve these
  - no farmer can submit subsidy claim if there are still pending issues

# Finding errors – visual control

- different levels of operators' skills
- 4-eyes control by central unit operators
  - rejecting entries (request for correction)
  - evaluation of operators (statistics)
- identify problematic operators as soon as possible

# Finding errors – visual control

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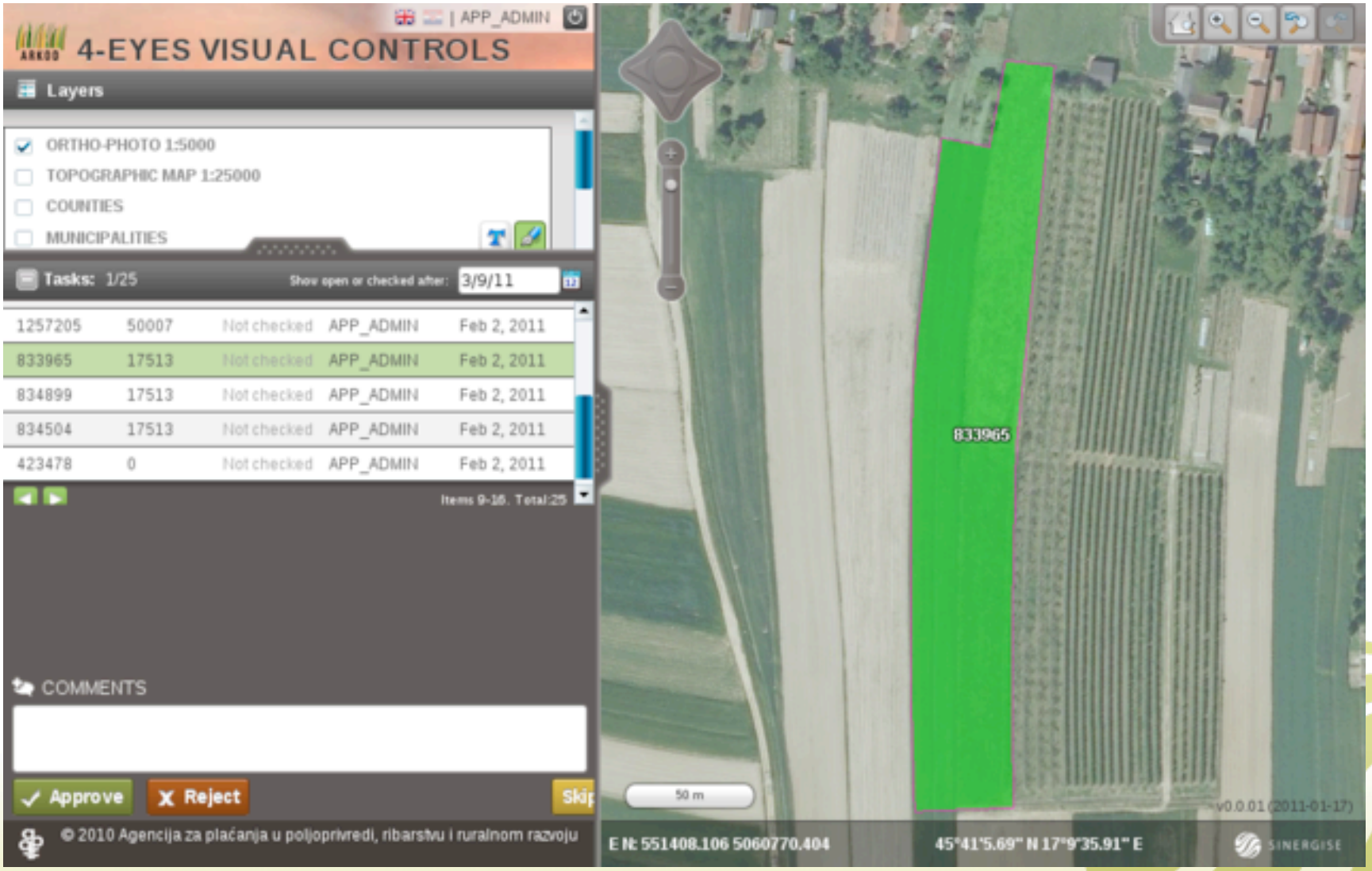


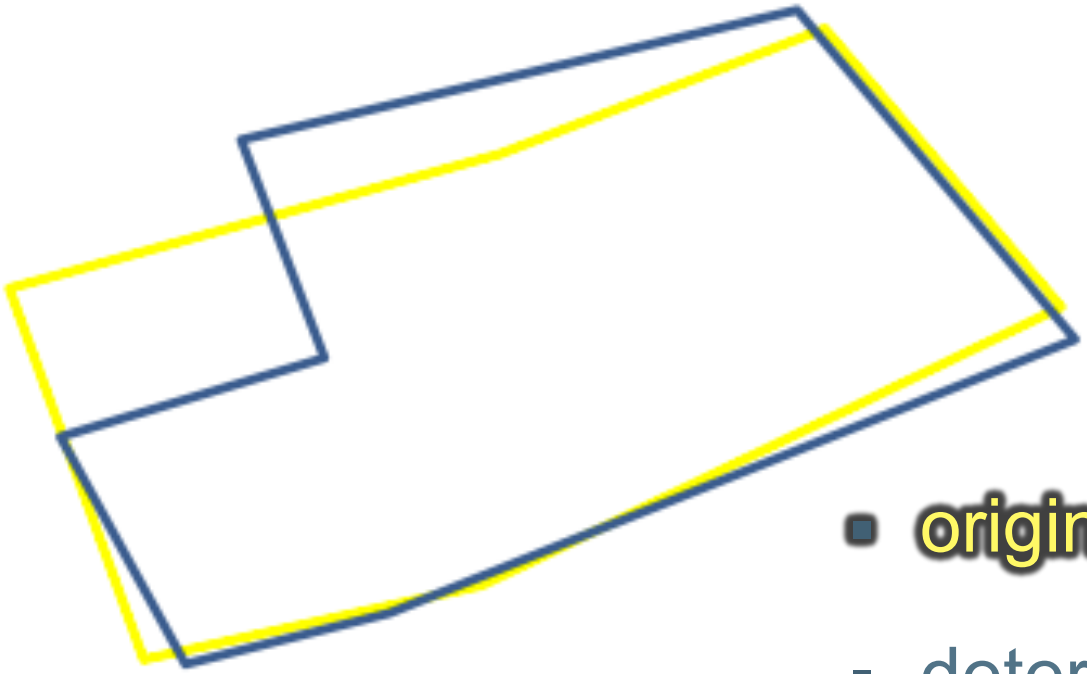
# On-the-spot controls and CwRS

- Update of LPIS based on OTS/CWRS
- Integration with GPS
  - geo-positioned photos
  - detailed information about measured points

# Upgrade of LPIS based on OTS/CWRS

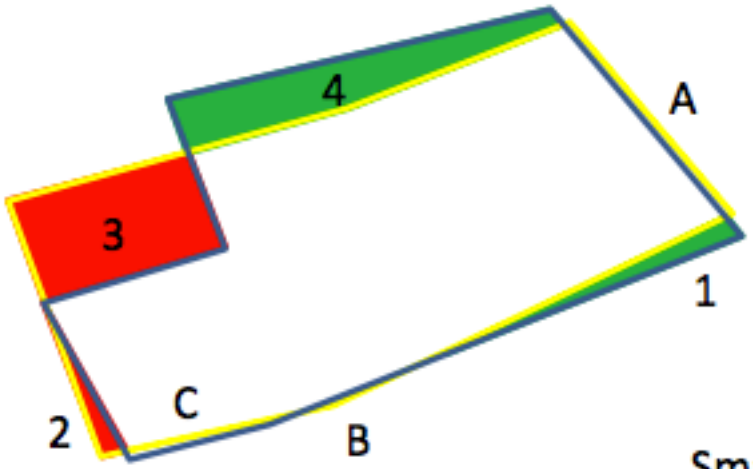
- Slovenia – position, not only area is important
  - 95% of the controls can be updated in the LPIS automatically, without manual work
- Croatia – controls focused to area
  - semi-automatic process for LPIS update

# Semi-automatic update of LPIS based on OTS



- original ARKOD
- determined ARKOD
- by Ekotoxa

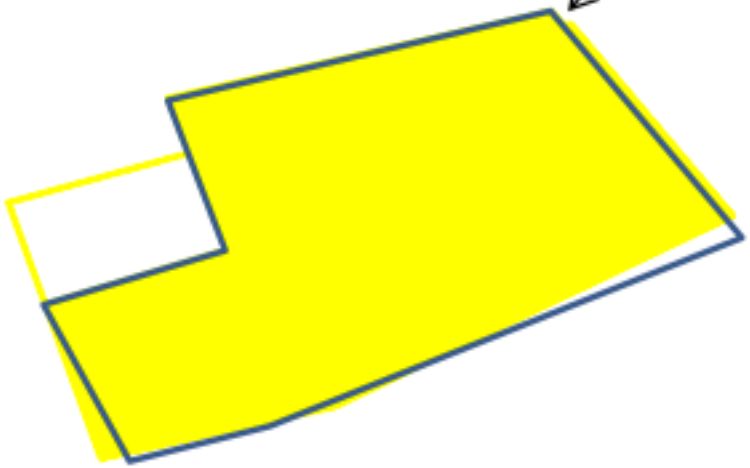
# Semi-automatic update of LPIS based on OTS




Parts that can be added to the ARKOD (1, 4)

Parts that can be deleted from the ARKOD (2, 3)

Small adjustment of resulting shape needed



Updated shape of the ARKOD (only parts 3 and 4 used for the update)

# Integration with GPS

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- outstanding insight in the execution of the control
- photos and original GPS measurements are stored in the system
  - can be used in the following years during digitization with the farmer

# Share data

- Other users will find errors

# Prevention of errors

- Rules for digitization
  - minimum scale
  - perform topology control
  - prevent overlapping (double-declaration)
  - check for minimum distance between points
- Cross-check with other data – on entry
  - land cover

# Future steps

- Image recognition
  - increasing the amount of controls based on aerial imagery and satellite imagery
- Should we actually focus to increase the quality of controls?
  - How much should we worry about positional accuracy (GIS vs “area + rough location”)