Current practices on new technologies: potential and obstacles

17 March 2017

From IACS and LPIS to new technologies

- Legislative framework
  - What is IACS?
  - What is LPIS?

- Technological framework
  - VHR, HHR, HR imagery
  - GSAA, UAS, Geo-tagged photos, GNSS, Drones,...
  - Copernicus Earth Observation

- Evolution or Revolution?
  - From controls towards monitoring
Integrated Administration and Control System

- Article 67 of Regulation 1306/2013
  ✓ “Member States shall set up and operate an Integrated Administration and Control System (IACS)”

- Article 68 of 1306/2013 provides all the elements of IACS
  ✓ For example: the Land Parcel Identification System (LPIS) and the farmers register

- IACS covers the whole process from the submission of the aid application or payment claim, administrative and on-the-spot checks to the calculation of aid and the possible application of administrative penalties.

Identification system for agricultural parcels

- Article 70 of 1306/2013:
  ✓ ...shall be established on the basis of maps or land registry documents or other cartographic references and use shall be made of computerised geographical information system techniques (GIS) including aerial or spatial ortho-imagery

- The LPIS is built-up on reference parcels (RP).
  ✓ For each RP a maximum eligible area is established.
    In addition, it contains an EFA theme.

- The LPIS has 2 explicit functions:
  ✓ the unambiguous localisation of all declared agricultural parcels and EFA by farmer and inspectors
  ✓ the quantification of all eligible area and EFA for crosschecks during the administrative controls
**Imagery, data processing, data extraction**

Aerial imagery (for LPIS proposes)
- Spatial resolution (<= 0.5m)
- Radiometric resolution (=>8 bits/channel)
- Spectral resolution (Colour: natural or colour infrared)
- General image quality (Lack of defects and artefacts)
- Cloud Cover (<5-10%)

VHR – Very High Resolution, HHR and HR – (High) High Resolution
- Control with Remote Sensing (CwRS)
  - Parcel measurements, land cover type, greening, EFA, CC with GAEC, SMRs.
  - Land Parcel Identification System Quality Assurance (LPIS QA)

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**Imagery, processing, data extraction**

**GSAA: Declaration of areas**

1. spatially declared agricultural parcel (blue polygon)
2. software calculates the exact area (red circle)
3. calculated area to be used for the aid application

Unmanned Aircraft Systems, Drones,
### SWOT analysis

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>✓ less costly once it runs</td>
<td>✓ difficult to develop</td>
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<tr>
<td>✓ less burdensome</td>
<td>✓ risky to test (corrections)</td>
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<tr>
<td>✓ more cost-effective</td>
<td>✓ IT requirements</td>
</tr>
<tr>
<td>✓ availability of frequent TS</td>
<td>✓ need of EC approval</td>
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<tr>
<td>✓ keeping control on land change</td>
<td>✓ how to follow up</td>
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<tr>
<td>✓ regional statistics</td>
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- **Total territorial coverage**
- **Total monitoring**
  - Evidence that the policy works!
- **Enabling factor to switch from a corrective towards a preventive approach**

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
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</thead>
<tbody>
<tr>
<td>✓ Big brother</td>
<td>✓ Less costly once it runs</td>
</tr>
<tr>
<td>✓ Small parcels</td>
<td>✓ more cost-effective</td>
</tr>
<tr>
<td>✓ Agri-activity and grassland</td>
<td>✓ availability of frequent TS</td>
</tr>
<tr>
<td>✓ Cannot fully substitute FV</td>
<td>✓ monitoring of activities = Sentinels data</td>
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<tr>
<td>✓ Eligibility criteria</td>
<td></td>
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<tr>
<td>✓ Schemes &amp; management &amp; control system adapted</td>
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<tr>
<td>✓ High requirement for IT systems</td>
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### LPIS and monitoring

- **LPIS update using monitoring [automated]**
  - 3 flags for reference parcels
    - Green (no land use / land cover change)
    - Orange (slight change in land use / land cover)
    - Red (change in land use / land cover)

- **How then to further process the information?**
  - Notification to submit supporting evidence?
  - Farmer responsible for the LPIS update to avoid sanctions?
  - Think about how communicate this to the farmer

- Monitoring of activities = Sentinels data
  - Measurement of areas = conforming (✓) LPIS
Where to use new technologies for monitoring?

Monitoring of grassland mowing/cutting
✓ to help the farmer
✓ sending reminders per e-mail/SMS
✓ as control measure
  ➢ Reliability
Monitoring of catch crops, risk-based
✓ More cost-effective than current approach
Use OTSC monitoring only to check activities
✓ no more area measurement
  (dealt w/ through administrative checks w/ LPIS)
✓ using data from time series
Important to align the policy design w/ controllability

From controls towards monitoring?

Key issues

high assurance for 5% sample
vs
lower assurance for 100% sample

✓ the balance in favor of a monitoring approach depends significantly on the eligibility criteria!
✓ A different set of rules is needed for the monitoring
From controls towards monitoring?

- Definition
  - 100% screening of all parcels based on Sentinels data
  - automated detection/identification system
    - in combination w/ LPIS (conforming ✓) + GSAA data
  - risk-based approach based on monitoring
    - Divide all parcels into three categories:
      Green ⇒ clearly compliant
      Red ⇒ clearly non-compliant
      Orange ⇒ doubtful case

Thank you for listening!