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1 LPIS QA Technical Documentation

version 4.3

This is the Table of Contents for the technical documentation for the 2010 implementation of the LPIS quality assessment called for by article 6 of Commission Regulation No 1122/2009.

- You can make a pdf version of this chapter 2 "on the fly".
- You can also make a pdf version of all LPIS QA technical documentation "on the fly".

These "on the fly" documents are **NOT frozen**, and will reflect the content at the time they were created.

Chapter "2. Inspection method" can be frozen based on a formal communication in the DPMM.

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2 Rationale

2.1 Challenge

The importance of the LPIS comes from the requirement that it must channel all area based aids; the corresponding financial value exceeds €39bn for 2010 (ref). For this specific purpose, LPIS quality can roughly be defined as the ability of the system to fulfill two explicit LPIS functions:

1. the unambiguous localisation of all declared agricultural parcels by farmer and inspectors,
2. and the quantification of all eligible area for crosschecks during the administrative controls by the paying agency.

Failure of an LPIS in the unambiguous localisation induces risks for double declaration of land and for ineffective inspections; inadequate quantification of eligible area renders the crosschecks ineffective for preventing and identifying over-declarations by farmers. Both failures involve financial risks for the EU Funds.

Furthermore, any well functioning LPIS will greatly facilitate operations by farmer, inspector and paying agency, resulting in a better overall performance. Obviously, a better LPIS substantially improves IACS effectiveness and management of EU Funds.

2.2 Measures

Both Member States and the EU have therefore a keen interest in demonstrating the quality of the LPIS and in addressing quality issues, if any. Such processes of planned and systematic quality demonstration form the hearth of a quality assurance (QA) system. A QA framework relies on mutually agreed quality testing between ?consumer? (the European Commission) and ?supplier? (the Member State). A test or series of tests assesses compliance for each specified quality requirement.

A distinction is made between ?prime? and ?secondary? quality elements. The prime elements are those that the European Commission considers fundamental for a correct LPIS operation and which are applicable to all LPIS systems. Secondary quality elements might not be applicable for all systems, but may provide additional substantive indications for analysing and remediating issues identified on the prime quality elements.

The Commission Regulation (EC) No 1122/2009 calls for an annual reporting on the seven prime quality elements. For each element, one or more measures, holding the inspection procedure a conformance levels has been designed.

A discussion document elaborates on these LPIS properties and the reasons they are considered essential for a good functioning and proposes a methodology to implement and integrate an adequate quality policy in the regulatory framework.

All prime quality elements have thus been developed into quantitative measures and the test results therefore represent an objective and comparable information on the different LPIS. The main application of this quantitative information is to provide an instrument for achieving business process improvement. Essentially, this quality assurance framework constitutes a yearly check-step within the commonly known plan-do-check-act (PDCA) cycle.

2.3 Implementation

To be practical, the LPIS Quality assurance framework was built using existing components, thus avoiding difficult implementation phases and other risks inherent to any new development. It also enables an easier adoption of the technologies by the Member States, who perform the actual inspection work. The resulting framework combines the following components:

- GI methodology for description of data, inspection procedures and reporting,
- Industry practices and standards for acceptance sampling and decisions
- CwRS data and CAPI know-how as a source for observations of external information
- Current Regulations as instrument for reporting procedures

Go forward to Inspection method to see the details.

Go backwards to Table of contents.
3 Inspection method

3.1 The common Inspection method (what should be done and how?)

ISO 19105:2000(E) Geographic information ? Conformance and testing, specifies the framework, concepts and methodology for testing and criteria to be achieved to claim conformance of a data set. A first step of any data conformance testing relates to "managing the requirements".

- The functional requirements of an LPIS are laid down in the Regulations and were translated into the LPIS Core Model (LCM).
- The high-level quality expectations regarding LPIS data are described in a discussion document

These two documents form the basis for the two test suites: Abstract Test Suite (ATS) and Executive Test Suite (ETS), as illustrated by this simplified Conformance assessment process overview.

The inspection process involves three activities.

1. at the start, produce a Feature Catalogue of the Implementation Under Test (IUT). This defines and clarifies data types and the relationships amongst them.
2. perform an initial ATS. The ATS allows for the verification of model conformance of the LPIS implementation under test through a set of abstract tests.
3. run an ETS annually to inspect the continued ability of the LPIS data to unambiguously geographic locate agriculture fields and to quantify the area of eligible land. The ETS operates on measures for the seven prime quality elements.

3.2 ATS, ETS and quantitative spatial data quality elements

ISO 19113:2002(E) establishes the principles for describing the quality of geographic data and specifies components for reporting quality information. It also provides an approach to organizing quantitative information in five data quality elements. If one tentatively maps how these five are addressed in either test suite, the results could look like:

The Abstract Test Suite tests model conformity, i.e.

- logical consistency: the degree of adherence to logical rules of data structure, attribution and relationships (compared to the LCM)
- completeness: presence and absence of features, their attributes and relationships

The LCM ATS describes the applicable tests to verify whether your LPIS was designed correctly.

The Executable Test Suite (ETS) manages the inspection of the actual (LPIS) data values for:

- thematic accuracy: accuracy of quantitative attributes and the correctness of non-quantitative attributes and of the classifications of features and their relationships.
- temporal accuracy: in particular temporal validity or validity of data with respect to time
- completeness: presence and absence of features, their attributes and relationships.

in accordance with the instructions and guidelines of the quality framework set in ISO 19114, 19113 and ISO/TS 19138.

These ETS activities are performed within three phases:

1. sampling: Sample pre-selection
2. inspection: ETS
3. reporting: ETS result analysis

The Commission Regulation 2010R146 calls for an annual report to be produced and delivered to the Commission upon completion of the ATS and ETS inspections. The report allows the MS to convey its findings to the European Commission. It holds a predefined mandatory data part and a conditional textual part.

Go forward to Initial ATS Conformance Testing to see the details.

Go backwards to Table of contents.
4 Initial ATS Conformance Testing

4.1 Objectives

The main aim of the LPIS-ATS is to provide a comprehensive test suite that enables conformity testing of the various LPIS implementations developed to address the common requirements laid down in the CAP regulations EC 2009R73 and EC 2009R1122 and their supporting working documents. The **LPIS Core Conceptual Model** (LCM Technical Specification) has been designed to accommodate these regulatory requirements on the LPIS.

The **Abstract Test Suite (ATS)** is the set of abstract tests covering all specific requirements to be satisfied for the conformance of an implementation under test (ISO19105). In general, an abstract test is a generalized test for a particular requirement. Abstract tests are independent of the actual implementation values and their positional, temporal or classification accuracy.

An ATS deals with data base structure, logical and conceptual consistency and how the database design is 'fit-for-purpose'. Conformity of the model is a pre-requisite for a meaningful testing of the data values in the ETS.

The **LPIS inspection method** includes a single starting or preparation phase for database testing (see figure below): part A ?Model Conformance Test?, should result in an Implementation Conformance Statement (ICS). This ICS allows the second phase - part B Data Conformance (quality) Test - **Executable Test Suite (ETS)** to start.

A final **Conformance Test Report** draws from both the ATS (part A) and the ETS (part B).

![The LPIS inspection methods (elaborated after ISO19105)](image)

4.2 Methodology overview

The ATS procedure has the following three steps:

4.2.1 Step 1: Preparation

A formal description of the LPIS under test should be prepared as an input to the remainder of the test. There are two document options for this task: an Application Schema OR a Feature Catalogue (FC) of the implementation under test

- An **Application Schema** is a formal description of implementation under test and the preferred data source for the ATS. According to ISO 19101, an application schema is a conceptual schema for data required for one or more applications (implementation). It specifies the spatial and non-spatial objects ?feature types- within the domain-relevant view of the real world as expressed by the information requirements. It is documented in a conceptual schema language (e.g. UML) or encoding standard as GML. Both representation ways of application schemas ? UML diagrams and GML encoding ? were used for the (LCM Technical Specification).

- A **Feature Catalogue (FC)** is a formal description of implementation under test and the main data source for the ATS in case no application schema available. According to ISO 19101 it is a catalogue containing definitions and descriptions of the feature types, feature attributes and feature associations occurring in one or more sets of geographic data, together with any feature operations that may be applied.

The **Implementation Conformance Statement (ICS)** is a description of the options, which have been implemented in the LPIS under test. The ICS accompanies the primary data source: application schema and feature catalogue and may, according to the ISO standard be presented in the form of a plain text document or be generated by a structured questionnaire. In the LPIS QA context, the ICS is used as vehicle to compile and exchange the "ETS eligiblity profile"

4.2.2 Step 2: Testing

The abstract test suite is composed of a series of individual abstract tests, each for a particular requirement.

During this ATS testing, equivalence with features and attributes of the LCM is established with the help of the schema/FC of the LPIS under test. The implementation under test can have more data sets, features and attributes than the LCM, but only those which are conceptually corresponding to the elements of the LCM shall be tested. Testing can be done by simply comparing the model description (FC) against the LCM technical specification or by application schema mapping. Test findings shall be documented in the **ATS-log report**, one record per each test.

4.2.3 Step 3: Reporting

The ATS-log report is a basis for the **ATS-scoreboard and conformance statement report**.

The final ATS reporting package shall hold:

- the input documentation (either application schema OR feature catalogue)
- the Implementation Conformance Statement (ICS) holding the eligibility profile
- the ATS-log report
- the ATS-scoreboard and conformance statement report
5 Preparation

The preparation of the input documentation is probably the most time-consuming step of the ATS. It can trigger several iterations and involves experts dealing with different parts of the IT system.

5.1 Application Schema

How to create data base specification from UML model / application schema?

To create a UML model/application schema, modelling software shall be used (e.g. Enterprise Architect, Altova UModel). This software allows exporting the implementation model/application schema into a database/system specification document. The documentation shall contain:

- the UML diagrams illustrating the overall model and its logical parts,
- the description of each feature type (spatial and non spatial objects)
- a description of feature type properties such as attributes (definitions, data type, allowed values, constrains)
- a description of association dependencies (generalisation, aggregation, composition etc.)

The LCM Technical Specification is an example of such documentation.

The GML application schema for LPIS Core Model can be downloaded from the ftp: LPIS Core Model Schema.

5.2 Feature Catalogue

How to create a Feature Catalogue?

For a template for Feature Catalogue, the template proposed by the ISO19110 (2003) standard can be used: template_FC

This template of the feature catalogue retains the original structure of the ISO standard. However, for the sake of clarity and discussion, additional, 'Non-ISO' ancillary information is included for feature types and feature attributes by means of additional fields that are specific to the LPIS Core Model (LCM). These specific entries are

- LCM_discussion: clarification of the definition.
- LCM_example: exemplary values from a MS implementation (not necessarily a ?best practice? example)
- LCM_reference: reference to the Regulation
- LCM_comment: various comments

The first worksheet of the template contains two tables: FC metadata and FC summary. The FC metadata table contains information necessary for FC identification (name, scope, responsible organisation/person etc) . The table FC summary contains information on content of the catalogue:

- feature types (usually corresponds to spatial or non spatial data set/layer/table);
- the classification of feature types such as core data ?for determination of area of reference parcel-; data for SMR or GAEC; spatial data on rural development; cartographic reference, etc..
- geometry types - such as polygon, line, point, buffer, no geometry (for tables)
- source types - such as maintained by LPIS custodian, external - integrated into LPIS from different sources, shared - on-line link/harvesting/web service to other system(s).

For each feature type in the catalogue you will need to create one separate worksheet! Feature_name X should correspond to the name of the .xls speardsheet where the feature is documented in the FC; The list of the features in the metadata FC_summary table shall corresponds to number and names of features described in catalogue.

The feature worksheet contains two types of tables: one for describing the every feature, another table for describing attribute(s) -one table per attribute. The entries of the attributes in the feature table shall correspond to the names and number of attribute tables. The template_FC contains one prefilled example of a feature worksheet.

5.3 Implementation Conformance Statement

The ICS is a supportive document and is to be provided by the authority claiming conformance with the LCM. This statement involves a mandatory and informative part:

- mandatory, structured part

  ◊ ?eligibility profile? ? conversion table allowing raw ETS observations (mapped land cover features) to be expressed in eligibility terms (see also ETS annex III, table 2);
  ◊ List of applicable waivers, which can vindicate the presence of potential critical defects at reference parcel level (described in Annex I);
  ◊ List of applicable waivers, which can vindicate the "contamination" of the Reference parcel with certain non-eligible features (described in Annex I);
  ◊ Implemented procedure for selecting parcels subject to "permanent physical change that impact on eligibility of land" (see Annex IV);

- informative, textual part (non-exclusive list):

  ◊ type of payment scheme (SPS/SAPS) and presence of other CNDP schemas and coupled payments (title IV);
  ◊ type of Reference Parcel, including national definition translated in to English, history of LPIS system development and upgrades, evolution of parcel definition and reason for changing of type of reference parcel (if applicable);
rules for producing the Reference Parcel identifier;
coordinate reference system(s) (CRS) used for LPIS/ reference parcel layer
flowcharts for operations;
findings of recent audit and mitigation actions, etc.
During ATS testing equivalence of features and attributes of the LCM shall be established in the schema/FC of the LPIS under test. The implementation under test can have more data sets, features and attributes than the LCM, but only those which are conceptually corresponding to the elements of the LCM shall be tested. Testing can be done by simply comparing of the member state model description with the LCM technical specification or by application schema mapping. Tests' findings shall be documented in the ATS-log report, one record per each test.

6.1 ATS Structure

The ATS test has a hierarchical structure. Tests are combined into the modules and sometimes sub-modules. The current version of the LPIS ATS contains three main modules. The last module is further subdivided in three submodules.

A conformance statement ?Conforming/nonConforming? shall be assigned to each test and these are to be aggregated at module level. The ATS assigns a LPIS implementation as ?Conforming?, if all modules are ?Conforming?. For the data entry please use the following template: ATS_template_v3.xls, and then build an XML-file according to the following schema: 4_3_AtsLog_20110120.xsd.

The illustration of individual tests of each module, are provided by the following links:

- A_11 Module: Definition of Reference parcel A_11.pdf
- A_12 Module: Eligibility and Land cover type A_12.pdf
- A_13 Module: Attributes of Reference parcel
  - A_131 Mandatory attributes of Reference parcel A_131.pdf
  - A_132 Attributes for xCompliance A_132.pdf
  - A_133 Specific attributes of Reference ParcelA_133.pdf

6.1.1 Module A_11

Tests of Module A_11 define the type of Reference Parcel in use. It requires the exhaustive definition of the reference parcel with all possible options, given in native language AND translated in English.

Assign ?Conforming? to module A_11 if one and only one of the tests A_1113; A_1114; A_1115; A_1122; A_1123 is 'Conforming'.

6.1.2 Tests of Module A_12 and A_13

Tests of Module A_12 and A_13 deal with the attributes of the reference parcel.

Assign ?Conforming? for each test result of the modules A_12 and A_13 if for each element of the LCM, a corresponding feature from the LPIS under testing is found with:

- data set / table
- layer
- attribute
- format
- value
- definition (eng.) feature type definition translated in English, in order to prove semantic equivalence to the element in the LCM.

The records for all tests findings (data set name/ attribute name, format, values and definition) shall be stored in the ATS-log report ATS_template_v3.xls. If needed, additional description can be added in the column behind definition column.

6.2 ICS structure part

6.2.1 Eligibility profile

Follow the instruction of ANNEX III: The concept of land cover and ?eligible hectares" to prepare the eligibility profile, relevant for the agriculture land cover types presented in the LIPS. The template for this eligibility profile is presented at the end of the document (Table 3), and can the retrieved as an XSD scheme from our FTP: 5_1_EligibilityProfile_20111027.xsd.

The use of a correct and complete eligiblity profile in the ETS is critical for expressing raw ETS observations (mapped land cover features) in eligibility terms.

- Complete the eligibility profile table and add this to the ATS report
- Use this eligibility profile for the ETS inspection.

6.2.2 List of applicable waivers

For waivers on potential critical defects, look up the detailed instructions 1 at the end of ANNEX I: Quality Measures. It contains a list of nine waivers [1..9].

Add those waivers to the list where

- the RType corresponds to the outcome of ATS tests A111 and A112
- all general conditions are met by the LPIS implementation under test, as evidenced by your internal documentation
For waivers on contamination, look up the detailed instructions at the end of ANNEX I: Quality Measures. It contains a list of four waivers [A..D]:

- Add waiver C to the list when there is a separate GIS layer to determine (in)eligibility, e.g. as indicated in ATS test A123, or on other documentation
- Add waiver D to the list when there is a separate GIS layer to delineate historical GAC, as indicated in ATS test 122

Waivers A and B are applicable to all systems and require no explicit listing.

### 6.2.3 Implemented procedure for selecting parcels subject to "permanent physical change that impact on eligibility of land"

The quality element percentage of reference parcels which have been subject to change, accumulated over the years relates to the process of Commission Regulation (EC) 2009R1122 art 12.4. When submitting the application form, the farmer shall correct the pre-established form referred to in paragraphs 2 and 3 if any amendments, in particular if any of the information contained in the pre-established forms is incorrect. If the correction relates to the reference parcel area, the farmer shall declare the up-to-date area of each agricultural parcel concerned and where necessary indicate the new boundaries of the reference parcel.

The purpose of the measure (10207) in ANNEX IV: IACS Data Quality Measures is to count those reference parcels where processed applications:

- explicitly call for an correction of the reference area, or
- indicate a change of boundary

by either the farmer, the OTSC inspector or any other IACS/LPIS operator.

If a Member State is able to differentiate the above parcels subject to change further so that it can select only those parcels that were specifically subject to permanent physical changes of the land that impact on the IACS in general and eligibility of the land in particular? from the set of parcels with corrections, it may take just the latter sub-set into account for its annual reporting.

If appropriate, member states shall briefly describe how it is able to select parcel subject to permanent physical changes.

### 6.2.4 Optional textual part

The optional textual describes the various options that are relevant for a better understanding of the LPIS under test.

There are no formal guidelines or templates for the layout and content of this textual part. The textual part shall be produced in Adobe pdf format.

---

Go forward to Reporting

Go backwards to Table of contents.
The ATS shall be performed at the initial phase of preparation of the annual quality assessment (ETS). The ETS is an annual procedure, but the ATS isn't. There is no need to repeat the ATS testing every year, unless there were database structural changes or LCM upgrades (respectively from re-designing the LPIS or changes to the EU requirements).

In the annual LPIS assessment report, it should be mentioned when the last ATS was done and what was the conformance statement.

7.1 ATS reporting

The ATS reporting that is necessary can be divided in two packages: the ATS reporting package that should be sent to the EU and the ATS archiving package, that is to be stored by the member state.

Example for all the files that should be provided in the different packages can be found on the download page: Downloads.

7.1.1 ATS reporting package

The ATS reporting package, to be sent to the European Commission shall consist of:

- ATS-scoreboard (xml) and conformance statement report (pdf)
- the Implementation Conformance Statement structured part (ICS):
  - Eligibility profile (xml)
  - List of applicable waivers (xml)
  - Implemented procedure for parcels subject to change (pdf)
- the ATS-log report (xml)

7.1.2 ATS archiving package

The ATS archive package, to be stored by the Member State shall hold:

- the input documentation (application schema OR feature catalogue)
- the Implementation Conformance Statement (ICS) informative textual part as a supportive document (pdf)

7.2 ATS Scoreboard and conformance stating

The **ATS Scoreboard** represents a summary of the individual modules' **ATS-log** reports. For each test in the ATS, it shall specify a conformity element that can take one of the following values:

- Conforming (Conforming) - the implementation is fully conforming to the LCM specification.
- NonConforming (NonConforming) - the implementation does not conform to the LCM specification.
- Not evaluated (notEvaluated) - conformance has not been evaluated.

See template: 4_3_AtsScoreboard_20110120.xsd.

The ATS Scoreboard differs from the ATS-log report, which contains detailed information on where in the LPIS database elements of the LCM can be found.

7.2.1 Aggregation of results at the modules level

At the module level, the results are as follows:

**Module A_11** can be assigned `Conforming` value if one of the tests A_1113 OR A_1114 OR A_1115 OR A_1122 OR A_1123 is `Conforming` AND A_113 are `Conforming`.

**Module A_12** is `Conforming` if test ALL applicable tests (not optional) are `Conforming`.

**Module A_13** can be assigned `Conforming` if: sub-module A_131 is conforming AND sub-module A_132 is conforming AND sub-module A_133 is conforming

**Sub-Module A_131** is conforming if ALL tests are 'Conforming'

**Sub-Module A_132** is conforming if ALL tests are 'Conforming'

**Sub-Module A_133** is conforming if ALL tests are 'Conforming'

7.2.2 Aggregation of results at the LPIS level

The 'Conclusions' section of the ATS-scoreboard report shall state that either:

- All modules are `Conforming` OR
- Indicate all module(s) which are NonConforming, and explain the (likely) reason for the non-conformance(s), whether an alternative solution does/doesn't exist, and if the existing implementation is appropriate/ not appropriate to enable further testing (within the ETS). Finally, mitigation measures in order to deal with the observed non-conformance may be proposed here.

Go forward to **Annual ETS inspection**
8 Annual ETS Conformance

version 4.3

8.1 Objectives

The core objective of the ETS is to collect the necessary and sufficient information, in order to assess the ability of the LPIS to effectively perform its tasks. This is done through direct observation and analysis of a sample of the registered LPIS parcels against current year’s terrain information.

In this respect, the ETS is targeting, by a qualitative and quantitative inspection process, those key characteristics on the LPIS objects (and their properties), which could provide a verdict on the ability of the LPIS:

◊ to enable the unambiguous geographic location of agriculture fields, claimed for aid by the farmer (identification and position of agriculture parcels)
◊ to quantify the area of eligible land at a parcel level in order to cap any undue payments and to inform the farmer on the land available for claim

Each of these key characteristics, called “prime quality elements”, is assessed on the base of a specific set of measures, defined according to the quality framework set by ISO/TS 19138. The detailed description of the measures is given in ANNEX I: LPIS data quality measures.

8.2 Methodology

The ETS comprises three key phases:

1. **Preparation of the reference ground data and Sampling** - Identification of the areas for inspection (on the base of the ground data available) and follow-up sampling of the reference parcels inside these areas, based on ISO2859-2
2. **Parcel Inspection** - inspection of the selected reference parcels (following the list of pre-defined quality measures), against current year’s ground data
3. **Analysis of observed data** - subsequent processing and analysis of the observations made during the inspection and aggregation of the results.

Additionally:

◊ Some analysis of IACS data is required
◊ Member States operating SAPS with a historical Good Agricultural Condition reference, need to perform a complementary GAC test suite

The elaboration of the ETS package was based on some principle assumptions and considerations, outlined in the Chapter Methodological background.

Each quality measure, implies a specific sequence of observations, which have to be made for every reference parcel inspected. These observations are collected through a land cover interpretation and delineation of the area represented by the reference parcels, either by computer-assisted photointerpretation (CAPI) of current year's orthoimagery (1st approach) or by direct field measurements (2nd approach). The current version of the ETS methodology covers the 1st approach only.

If performed in the office ? the reference parcels are not inspected on the field ? the ETS inspection requires the setting-up of appropriate GIS environment and the availability of two principle input datasets:

- the sample reference parcel data and
- an up-to-date reference orthoimagery.

The EU Member State Administration could use any available orthoimagery in the country, if acquired in the year of the inspection. Alternatively, the Commission can provide very-high resolution (VHR) satellite data, acquired in the frame of the CwRS campaign, considering that the CwRS cycle provides a well-established frame for image capture and time schedule. Upon request, a limited number of dedicated LPIS QA zones can be acquired within this framework.

As most of the process is related to photointerpretation and land cover delineation, certain general mapping rules are defined in advance, but they are not too restrictive in order to give some flexibility to the inspectors to adjust to their particular LPIS environment.

A country specific “eligibility profile” is applied to the land cover features recorded in order to correctly separate the eligible from ineligible land cover. The eligibility profile constitutes a conversion table allowing raw ETS observations (mapped land cover features) to be expressed in eligibility terms. The observations’ database is then cross-checked and processed against the eligibility profile, and the relevant statistics and analyses are generated through simple SQL statements. These yield the scores for each “prime” quality element for the LPIS under test. An overview of the ETS workflow is given on the diagram below.
Overview diagram of the ETS workflow

1. Preparation of Orthomagery and Sample Pre-selection
   - Orthomagery
   - Sample Pre-selection

2. Reference Parcel Inspection
   - Observations on pre-defined quality measures
   - Land cover delineation

3. Analysis of observed data
   - Values on prime quality elements
   - Additional statistics and investigations

Annual reporting on LPIS assessment
This methodological section introduces the key concepts behind the ETS documentation, as well as the two fundamental principles that drove the development of this ETS.

9.1 LPIS

9.1.1 Definition

There is no explicit LPIS definition in the Regulations. However, there is a clear requirement that a LPIS holds:

1. a stable identification of land cover and/or use units (i.e. the basis for eligibility for any scheme);
2. the "eligible hectares" value for area aids, originally delineated (vectorised) by survey compatible with 1:10,000 scale or better, and subsequently updated by the various IACS processes;
3. an inventory of other features that benefit (or preclude the right) from aid, with eligibility (and value) depending on the other aid schemes: this is a database of polygons, lines or even points, that permit (spatial and alphanumeric) queries and data retrieval operations in function of the administrative cross checks required.

Considering the INSPIRE conceptual frameworks on Geographic Information in Europe, we propose to merge these requirement into one definition:

LPIS is the single GIS for IACS

9.1.2 LPIS QA Scope

For the LPIS QA, under Regulation No 1122/2009, only the first pillar of IACS is currently considered, indicated by the first two requirements. In particular any reference parcel that is mentioned on the farmer’s application shall be subject to inspection. This translates to reference parcels that:

◊ were declared during the previous application year
◊ hold a non-zero "maximum eligible area"; i.e. can appear on the pre-printed form or re-enter an application without triggering an additional verification procedure.

9.1.3 Considerations

The LPIS QA scope restricts the LPIS population for the purpose of this LPIS quality assessment to ONLY those reference parcels that comply with one of the two conditions above.

This is not necessarily the complete set of "blocks" that are managed in the "LPIS-layer" of the GIS-environment. It can be a subset, for instance, "blocks" that are completely urban, water or forested AND that have not been declared by farmers should not be subject for quality testing. They should not be considered when constructing the "lot of reference parcels" (defined below).

9.2 Other Key Definitions

For the clarity of further readings, the following basic sampling scheme terms are introduced and explained below for use in the ETS:

- **Lot of reference parcels**: a homogeneous population of reference parcels defined for each country/region (or LPIS).
- **Sample size**: the prescribed number of reference parcels to be tested by the EU Member State, based on ISO 2859/2-1985 (Procedure A, Limiting Quality = 2%).
- **Sample pre-selection**: an ordered list of reference parcels (provided by JRC) to be sequentially inspected. The pre-selection counts roughly three times the prescribed sample size.
- **LPIS Control Zone**: zone used for the ETS parcel inspection, where up-to-date national orthophoto or VHR data, acquired in the frame of the CwRS, is available and considered random with respect of the underlying parcels.

Assessing whether the RP population to be inspected is homogenous and thus constitute a single "sampling lot" relates only to the processes of RP creation and RP upkeep of the reference parcels.

9.3 Principle 1: the sampling plan entails the decision on the quality

ISO2859-2, procedure A is selected as an appropriate sampling plan, offering a cost-effective compromise between the costs of inspection and the probability to come to a correct verdict on the quality.

The plan's probability performance is so that a LPIS with a marginal better quality than the required minimum still has around 5 % probability of been considered too poor, and a LPIS slightly worse than required, has around 10 % probability of being considered adequate. The precise probabilities are indicated in the standard. Better performance on the verdict would require more sampling and thus more resources.

An acceptance sampling plan is a set of rules by which a lot is to be inspected and 'sentenced'. In practice, it determines the sample size in function of the lot (LPIS) size and specifies the lot conformance based on the observed number of non-conforming items (parcels). In other words, given a minimum requirement for a specification, the plan will identify

◊ The sample size (the number of parcels to be inspected)
◊ The acceptance number (the maximum number of non-conforming parcels that are likely to be found in an acceptable lot)

The key elements and operating instructions of the selected sampling plan can be found in the section on the acceptance decisions.
9.4 Principle 2: observations of agriculture land and eligibility for the scheme are distinct

LPIS is the spatial database (GIS) within IACS; its 2 prime functions are

1. a stable identification of the land use - the basis for aid application in any scheme -
2. the correct quantification of the agriculture land (cover) within; - the "cap" for crosschecks in the direct aid scheme -

Contrary to first impressions, eligibility of land for direct aid is not consistent over Europe:

- SPS and SAPS differ: e.g. on household garden, on GAEC conditions;
- Landscape features are eligible depending on national GAEC rules within a scheme.

It is therefore not feasible to develop a common pan-european inspection procedure that directly assesses eligibility. The workaround is to perform the inspection in two steps:

1. observe and measure the features on the land
2. assign eligibility to those features based on the local eligibility profile.

Further details and instructions on the land cover mapping are provided in ANNEX III:

Go forward to Orthoimagery use.
Go backwards to Table of contents.
This section describes the procedures for the definition and selection of the geographical zones in a given LPIS where the reference parcels are subject of inspection. It also outlines the specifications of the orthoimagery, suitable for the reference parcel inspection.

A correct and complete application of the sampling and inspection methodology is crucial to support a general trust in its findings.

### 10.1 LPIS control zone selection

- Analyse whether the LPIS under test can be considered as a single "lot" (homogeneous population), or whether it should be subdivided into several "lots" on the basis of different production processes implemented during the creation of specific parts of the LPIS.
  - If the LPIS under test cannot be considered as a single "lot", decide on the number of "lots".
  - For each "lot of reference parcels", randomly define geographic control zones, according to the following principles:
    - the number, position and area of the zones should ensure that the total number of reference parcels inside is at least 3 times the "Sample size" requested.
    - they are covered by a current year's orthophoto suitable for LPIS update or are planned to be covered by such orthophoto well in time for this year's LPIS assessment.

When no such orthophoto is available or planned for the zones, a timely acquisition request for VHR satellite data in the frame the CwRS programme can be considered.

In all cases, to guarantee a representative inspection, the external data should be independent of LPIS creation and already performed maintenance processes. In this respect the Member State should ensure that the definition of the CwRS zones, if applied for the LPIS QA, is independent from the LPIS status and properties, as well from any reference parcel characteristics. We repeat this is an important condition for considering those zones as randomly selected for the LPIS assessment.

In this respect, a particular attention should be paid to CwRS zones, covered with aerial acquisition, as the planning of the aerial orthophoto can be often linked with a dedicated refresh of problematic or updated parts of the LPIS.

MS Administrations not participating in the CwRS programme of the EC can order specific acquisitions for the LPIS assessment through the EC services. By default, they will have the responsibility to process/orthorectify the VHR data. The procedure of the raw VHR image ordering and delivery will be discussed and agreed with each MS Administration, bilaterally.

Once defined and selected by the EU MS, the resulting zones should be reported to the EC, as the "LPIS control zones" for the year of the assessment. The MS Administration should provide the geographic position and extent of the "LPIS control zones" in the appropriate geodata format and the EPSG identification or the parameters of the coordinate reference system applied.

The LPIS control zone can be changed during the inspection campaign, only if:

1. JRC has used the full LPIS to produce the new sample pre-selection.
2. Timely availability of the imagery for the alternative zones can be guaranteed.

More information on zone definition for the CwRS programme can be found on: Zone Definition for the CwRS campaign

### 10.2 Considerations regarding the orthoimage specifications

#### 10.2.1 Ground Sampling Distance - Spatial Resolution

As stated in Art. 17 from COUNCIL REGULATION (EC) No 73/2009, the minimum scale for the cartographic information used to create and update the LPIS is 1:10,000, which corresponds to an orthoimagery of at least 1 meter spatial resolution. The specifications of any VHR data used in the CwRS programme is compliant with the cartographic standard of 1:10,000. However, the surveys done by JRC last years, indicated that the EU MS Administrations use for the LPIS maintenance, orthoimagery with a superior spatial resolution. Most of the EU countries, rely on orthoimages with ground sampling distance (GSD) of 50 cm or less, thus resulting in cartographic scale of about 1:5 000 or larger for the spatial data recorded in the LPIS.

#### 10.2.2 View angle

The findings of the recent ETS pilot study indicate that, under some field conditions, the ETS parcel inspection could be less than optimal when the imagery is acquired with significant off-nadir angle (more than 30-32 degrees), independent from its spatial resolution. This is because oblique acquisition results in larger ground sampling distances and also increases the probability of occlusions of the land under inspection, caused by tall features (buildings, hedges, forest belts, tree lines, etc.).

#### 10.2.3 Mapping Unit Size

The ETS inspections methodology requires mapping of individual land cover features such as landscape features which are by definition smaller than the agricultural parcels whose area is determined at crop group level during the CwRS operations. Smaller mapping units require a smaller ground sampling distance.

Furthermore, mapping this variety of land cover features requires multispectral imagery.

A theoretical study on the effects of Ground Sampling Distance and polygons size on the inspection precision can be found in this presentation.
10.2.4 Practical considerations

To address these considerations, please consider the following recommendations, regarding the orthoimagery, applied in the ETS of the LPIS assessment:

1. pay attention when using LPIS control zones, covered with orthoimagery, acquired with off-nadir angles of more than **30 degrees**. Depending on the landscape and reference parcel structure and if justified, you might decide to skip the use of such zones, prior to the ETS inspection.
2. use, if possible, orthoimagery with spatial resolution **better than 1 meter**.
3. use the full spectral range of the imagery. If infrared channels are available, they should be used. Often, the proper land cover delineation for the ETS inspection requires the full use of the spectral information.
4. consider the acquisition date. As no crop identification is required, LPIS QA imagery could allow for much larger acquisition windows than CwRS imagery. Still, the date has an impact on the interpretation. Each MS should assess this aspect for its observations and decisions.
5. consider consulting any available ancillary images or vector data, such as supplementary HR data acquired during the CwRS campaign.
6. as with any photointerpretation, consider a rapid field inspection if the available information in the office is not conclusive.
7. consider your LPIS population under the zone: it goes without saying that smaller parcels are more precisely measured with higher spatial resolution imagery.

10.2.5 Recommended CwRS VHR imagery

In the light of above-given requirement and taking into account the available VHR satellite, used in the CwRS, the following satellites and configurations are considered suitable for the LPIS QA in any condition:

- **Sensors**
  - Quickbird, GeoEye-1 and Worldview-2. These sensors are suitable by default for all conditions and are labelled as "prime LPIS QA" sensors.
  - IKONOS and Kompsat-2. These sensors can be used under certain conditions (explained below) and are labelled as "secondary LPIS QA" sensors.

- **View angle**
  
The table below give the recommended range for the off-nadir/elevation angles for each of the sensors.

<table>
<thead>
<tr>
<th>Satellite (Sensor)</th>
<th>Recommended Maximum off-nadir angle (in degrees)</th>
<th>Recommended Minimum elevation angle (in degrees)</th>
<th>LPIS QA Label</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>IKONOS</td>
<td>26</td>
<td>61</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>QUICKBIRD</td>
<td>30</td>
<td>58</td>
<td>Prime</td>
<td>-</td>
</tr>
<tr>
<td>GEOEYE-1</td>
<td>30</td>
<td>56</td>
<td>Prime</td>
<td>-</td>
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<tr>
<td>KOMPSAT-2</td>
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<td>60</td>
<td>Secondary</td>
<td></td>
</tr>
<tr>
<td>WORLDVIEW-2</td>
<td>30</td>
<td>56</td>
<td>Prime</td>
<td>-</td>
</tr>
</tbody>
</table>

- **CwRS Image Use**
  - The CwRS zones, acquired by "primary LPIS QA" sensors can always be used.
  - The CwRS zones, acquired by "secondary LPIS QA" sensors can automatically be used for the LPIS QA in the following cases:
    1. All CwRS zones in the LPIS ?lot?, are acquired by the "primary LPIS QA" sensors.
    2. There are not enough CwRS zones in the LPIS ?lot?, acquired by the "prime LPIS QA" sensors, to ensure the number of pre-selected parcels and to guarantee the randomness of the parcel selection.
    3. There are no ?coincidental? suitable archive data available acquired by the ?prime LPIS QA? sensors over alternative areas that could become alternative LPIS QA zones.
  - In addition, CwRS zones, acquired by "secondary LPIS QA" sensors, should also be used when the practical considerations above have not given any counter-indication against their use. Typically this is the case of large homogenous fields with few vertical features within a level landscape.

10.3 Notes

The above-mentioned recommendations are relevant for the ETS parcel inspection ONLY, and not the orthoimagery used in the LPIS update.

The specification of the orthoimagery for LPIS update should be consistent with the following two articles:

- Specification of the orthoimagery use for the LPIS
- Common Technical Specifications for the 2010 CwRS Campaign
This section describes the procedure for the generation of a random sample of reference parcels from an LPIS under test. This sample is to be inspected in the ETS (Executable Test Suite).

11.1 Overview of data exchange and sampling

Creating the sample pre-selection requires:

1. Creation of a point representation from the reference parcel polygons (by MS);
2. Conversion of reference parcels' point data into a harmonised data structure: GML-file (by MS);
3. Reception and analysis of reference parcel data (by EC);
4. Clipping of reference parcel data with the LPIS Control Zones (by EC);
5. Determination of the sample size for the ETS inspection, based ISO 2859/2-1985, procedure A (by EC);
6. Generation of a sequential list of randomly selected reference parcels (by EC);
7. Reception of the pre-selection list in an XML format (by MS).

This methodology is presented in Figure 1, below.

![Figure 1. Workflow of the ETS sampling methodology.](image)

**Member States:**

- shall do steps 1 and 2;
- can do Step 4 after bilateral agreement with the JRC;
- shall receive the sample pre-selection list in step 7.

11.2 Instructions on data exchange

A web-application is available at: https://lpis.jrc.ec.europa.eu/lq/index.php to facilitate and assist Member States in the LPIS QA implementation. This platform is used for:

- upload of LPIS GML data (MS-to-JRC);
- download of Sample Pre-selection XML data (JRC-to-MS).

To correctly implement the data exchange procedure, please follow the indicated steps.

**STEP 1: Create an account**

1. Fill in the template: Account_data.doc and send it to Piotr.Wojda@jrc.ec.europa.eu by May 7th 2010
2. You will receive by e-mail your login and password, usually within 48 working hours

**STEP 2: LPIS-GML data upload:**

How to create a GML file - refer to the following section: Creation of a valid GML

1. Prepare your LPIS point zero state file (see example: 4_3_LpisPointZeroState_20101220_example.gml valid against the xsd schema: 4_3_LpisPointZeroState_20101220.xsd)
2. Validate your LPIS point zero state file (standard XML validation for well-formedness and validity)
3. Compress the GML file with a ZIP algorithm
5. Select the LPIS context you want to work in (See Figure 1: in the left-upper corner, if more than one available, there will be a drop-down list)
6. Select ?File transfer? (See Figure 1) and then choose your compressed zip file to be uploaded.
7. Add optionally a description to your file.
8. Click ?Save?.
9. You will receive an e-mail notification when the upload process is finished. The e-mail will arrive usually within 48 working hours
STEP 3: The sample pre-selection process

1. JRC will generate a sample pre-selection randomly and prepare an XML file containing an ordinal number and a reference parcel ID for each of the parcels to be inspected. This file is structured according to the xsd schema: 4_3_LpisSamplePreselection_20101221.xsd
2. You will be notified by e-mail when your sample pre-selection is ready for download (after May 17th 2010)

STEP 4. Sample pre-selection download:

2. Download all xml file(s) available to you
3. When orthoimagery becomes available, start the ETS inspection procedure on the pre-selected reference parcels, given in the xml files.

Important notice when using aerial LPIS QA Control Zones:

If you plan to use aerial photography for this year’s quality assessment, a shapefile with your planned or available zones should be delivered IMMEDIATELY after STEP 2 of the above data exchange procedure. Please contact JRC if this is the case

For satellite VHR CwRS and LPIS QA Control Zones acquired by the JRC, shapefiles are already available to the JRC: In this case, no upload or communication is required.

Go forward to Inspection

Go backwards to Table of contents.
12 Inspection

version 4.3

12.1 Introduction

This section describes the sequence of actions (events), which has to be performed during the inspection of the reference parcels from the pre-selection set.

In order to guarantee the successful conduction of the inspection procedures, the following prerequisites have to be met and verified:

- The ATS of the LPIS data model should be performed in advance and yielded a "Conforming" statement.
- The sampled LPIS data should be readable and complete.
- The reference orthoimagery should be readable and should be compliant with the relevant technical specifications.
- Both datasets, as well as any ancillary data available should be in the same national coordinate reference system.
- The proper GIS environment must be available.
- The national or region-specific "eligibility profile" must be prepared and available.

Member States shall verify that the above prerequisites are met.

12.2 Important considerations

The following points need to be considered, order to ensure the reliability of the results from the ETS inspection:

- ETS applies two data quality scopes regarding the sets of reference parcels for which quality information is reported. The two sets are defined as follows:
  - Total population: All reference parcels, declared on the farmer’s application OR holding a non-zero ?maximum eligible area?.
  - Sub-population: All reference parcels which hold a non-zero ?maximum eligible area?.
- The actual land to be inspected and mapped for each reference parcel should be the land represented by the Reference Parcel, according to its definition. It will be named as Land Under Inspection (LUI). LUI is not equal to the land enclosed (clipped) by the reference parcel vector boundary.
- Some (cadastral) systems support multi-polygon cadastral parcels. Derived reference parcels will represent more than one distinct LUI.
- Operator ALWAYS re-delineate from scratch the land cover on the area represented by the reference parcel (even in case when the primary visual check doesn’t reveal changes on the land in respect to the ?quotas quo? recorded in the LPIS).
- Operator uses the description of the agriculture land cover classes in the eligible profile, to define the interpretation keys for the land cover mapping.
- EU Member State Administrations should provide the list of eligible landscape feature, together with the mapping instructions and specifications, as a part of the Eligibility Profile.
- The visual scale should be larger than 1: 5 000. Different visual scales could be used depending on the minimum mapping unit, defined for the different land cover features. The visual scale should not be larger than 1:1 000.
- All area values shall be reported in square meters, rounded to a meter.
- The specifications of the VHR orthoimagery used for the inspection, shall be compliant at least with the Common Technical Specifications for the 2010 CwRS Campaign (see http://mars.jrc.ec.europa.eu/mars/content/download/1654/9010/file/CTS2010.pdf).
- The geometric and radiometric quality of the VHR orthoimagery, is preferred to be according to: http://marswiki.jrc.ec.europa.eu/wikicap/index.php/Orthoimage_technical_specifications_for_the_purpose_of_LPIS

12.3 ETS parcel inspection

Member States shall perform the following data preparation and inspection procedure.

12.3.1 Data preparation

- Retrieve the necessary orthoimagery
- Retrieve the relevant LPIS sample pre-selection
- Retrieve the relevant ancillary data
- Check for data completeness and geometric consistency
- Check the results of the ATS and for the availability of the Eligibility Profile
- Check for completeness and geometric consistency of the vector and raster data
- Refine the Inspection Environment
- Sort the parcel pre-selection by ordinal number

12.3.2 Inspection procedure

- Perform a prior feasibility check
- Select sequentially the Reference Parcel from the ordered list of the sample pre-selection (starting always from the first one).
- Check the value of the maximum eligible area recorded in the LPIS.
- Navigate through the data (LPIS vectors, orthoimages) using the GIS tools and interface, in order to locate the selected Reference Parcel.
- Set the appropriate visual scale
- Analyze visually if the parcel can be inspected based on the available image information by confirming there are no clouds, missing parts or artifacts covering the area represented by the parcel (LUI).
- If the area represented by the parcel (LUI) can be inspected, add the parcel to the sample and go ahead with the inspection procedure. If not, identify and record the reasons why it can not be inspected, skip the parcel and proceed to the next Reference Parcel from the ordered list of the pre-selection set.
- Inspect the Reference Parcel
1. The inspection cycle continues until the prescribed number of reference parcels that has effectively been inspected (a required sample size) is reached.

### 12.4 Technical documentation on ETS

The detailed description of the ETS inspection procedure is organized in 3 different parts (documents), which initially were called "Annexes", as they were the supporting documents to the original proposal for the LPIS QA Framework made in 2009.

**ANNEX I: LPIS data quality measures** contains the definition and comprehensive description of the quality measures of the LPIS data, which provide the necessary and sufficient information to properly evaluate the performance of a given LPIS. They are defined on the base of the principles and templates of ISO/TS 19138. There are two group of quality measures, stated in the document:

- quality measures at reference parcel level (with prefix RP_ in the Alias Name) - they are subject of the ETS parcel inspection
- quality measures at sample level (with prefix LPIS_ in the Alias Name) - they are derived from the "RP_" measures through pre-defined SQL statements of the database, which contain the observations made during the ETS inspection.

**ANNEX II: ETS inspection procedure** describes the workflow, given above. The operator's steps and events are grouped into Action Packages, following the structure of an UML Activity Diagram, developed to visualize the sequence of the process from business use case point of view.

**ANNEX III: The concept of land cover and "eligible hectares"** describes the concept of the land cover mapping used in the ETS and the way to express the raw ETS observations (mapped land cover features) in eligibility terms, using an eligibility profile to perform the conversion. A brief introduction of the FAO Land Cover Classification System, used in the semantic description of the agriculture land cover, that might represent eligible land, is also given. A template of an eligibility profile is available at the end of the document (Table 3), but can the retrieved also as XSD scheme from XSD schema of the Eligibility Profile.

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Go forward to **Analysis of observed data** to see the details.

Go backwards to **Table of contents**.

--Pavel 18:30, 22 February 2010 (UTC)
13 Analysis of observed data

13.1 Introduction

This section explains the processing steps applied on the raw observation data, collected during the parcel inspection. These can be categorized in 3 distinctive groups:

- calculation of the values of the data quality measures at reference parcel level (explained in Annex I)
- validation and further investigation of the nature of particular findings (including the generation of complementary statistics)
- calculation of the values of the quality elements at LPIS sample level, on the base of the values retrieved at reference parcel level

13.2 Data processing/extraction at reference parcel level

13.2.1 Calculation of the maximum eligible area (MAE) using the eligibility profile

The calculation of the maximum eligible area is based on the input ("DQ_value") from the following data quality measures:

- RP_MEA (RP true eligible area) - 10102
- RP_ELF (RP landscape elements area) - 10104_2

The key component allowing the raw ETS observations (mapped land cover features) to be expressed in eligibility term is the eligibility profile. It is in fact, a conversion table, translating the results of the land cover mapping into "eligible hectares or features found?.

The eligibility profile is embedded into the ETS inspection, in a way that allows an automatic calculation of the maximum eligible area for each mapped land cover feature on the base of the geometric area of the feature and its land cover class definition. The identification and mapping of any landscape features is managed in the eligibility profile as well.

A brief description of this procedure is given below:

1. For each agriculture land cover feature, which might represent eligible land, found on the LUI:
   1. Assign to Land cover feature X, the correspondent <Land Cover Class> from Table 3, Annex III
   2. Get from Table 3 the <Eligible Hectare Factor> for the given <Land Cover Class>
   3. Calculate the eligible area by applying the formula - <Eligible area of land cover feature X> = <Geometric area of the land cover feature> x <Eligible Hectare Factor> / 100
2. Do the same for the eligible landscape features found on the LUI
3. Sum up the eligible area of all agriculture land cover and eligible landscape features and report the value in square meters, as <Eligible area observed>

As the eligibility profile is a prerequisite for the correct conduction of the ETS, it shall be prepared in advance.

A template for the eligibility profile is given in [1]

More information on that subject can be found on [2]

An example of the implementation of that procedure is given in Practical guidelines and examples.

13.2.2 Investigation of the nature of the "potential" critical defects

A special attention should be given to the data quality measure RP_CRA (RP Critical Defects), as the occurrence of these can eventually be confirmed as non-compliances with the specifications that obstruct the use of the parcel regarding:

- either the functions of unambiguous localisation of agricultural parcels, or
- the unique identification for crosschecks of claims.

As the detection of defects is performed the closed ETS environment, this CAPI environment alone can be too restrictive to confirm a usage problem. Therefore, the final confirmation is subject to a subsequent analysis. For this reason, these defects are called "potential defects", as inside the operational IACS environment such "defects" can be completely feasible and accepted.

Potential defects are further investigated in order vindicate those which do not violate the conceptual schema of the dataset (LOT) under inspection and at the same time, meet certain pre-defined external and local ETS conditions for each of the potentially applicable waivers. In such a way the Member State can eventually justify the absence of true defects at parcel level, and revoke ?non-conforming? status of the Reference Parcel.

A detailed description (No.1) of this check and the list of pre-defined waivers, which could vindicate the observed "potential" critical defects, is given in ANNEX I: LPIS data quality measures.

More information of the type of "potential" critical defects is given here.
13.2.3 Evaluation of the area based non-conformance of the Reference parcel

1. The conformance of the Reference parcel is related to the correctness of the "maximum" eligible area recorded (<Eligible area recorded>) in the LPIS for that parcel, and it is expressed by the data quality measure RP_CNF (Area purity) - 10102_2.

The values for RP_CNF is automatically derived from the following statements:

- \( \frac{\text{<Eligible area observed>}}{\text{<Eligible area recorded>}} \times 100 \)
- \( \frac{\text{<Eligible area observed>}}{\text{<Eligible area recorded>}} \)

2. In addition, all reference parcels having occurrence of ineligible features in the LUI, are checked for contamination based conformance, regardless how correct the "maximum" eligible area is recorded. A brief description of this procedure is given below:
   1. Recover the abundance of non-agriculture land cover features per land cover type, from RP_CNT (quality measure 10105).
   2. Flag the ?Reference parcel as ?contaminated? if for any of the given types, the value is other than 0.

A detailed description (No.2) of this check and the list of pre-defined waivers, which could vindicates the observed contamination, is given in ANNEX I: LPIS data quality measures .

Parcels flagged as non-conforming require further investigation and explanation regarding the cause of their non-conformance.

13.2.4 Categorization of the non-conforming Reference Parcel

If the reference parcel is not conforming, an investigation of the possible cause of the non-conformity is needed. This is expressed by the data quality measure RP_CEA (RP cause of anomaly) - 10107.

There are three issues that result in a reference parcel being flagged as non-coforming

1. the reference parcel holds an unwaivered potential critical defect
2. the difference between the eligible area observed and recorded exceeds the threshold
3. the LUI contains unwaivered contaminations of ineligible area

The operator needs to investigate the reason for non-conformity and expressed it using the pre-defined ordered list given in the quality measure. He can assign, to each non-conforming Reference Parcel, one or more given pre-defined causes, starting from the first cause listed at the top and going sequentially to the last one at the bottom. In some cases, he needs to consult the LPIS data Model and the results from the ATS.

A detailed description (No.3) of set of actions, the operator should perform to explain the observed non-conformity, is given in ANNEX I: LPIS data quality measures.

13.2.5 Evaluation of the "incorrectly declared" Reference Parcels

The number of Reference Parcels, which are incorrectly declared, are relevant for the data quality element LPIS declared area (10206).

In this respect, for each Reference Parcel, the difference between the area declared <Area declared> and the area observed <Eligible area observed> needs to be calculated. A consultation with the reporting on Sub-module A_1316 "Farmed area" might be needed.

13.2.6 Consolidation of the data collected for the other quality measures

Although not used in the calculation of the maximum eligible area, some of the other data quality measures at reference parcel level provide important information on parcel properties, which can be used, if further analysis is needed.

Different statistics at LPIS sample, supporting the core part of the report can be provided from these quality measures, such as:

- diversity of the land cover inside the reference parcels
- percentage of reference parcels containing "eligible" landscape features
- type non-agriculture land cover found in the reference parcels having "potential" or "unwaivered" critical defects
- etc.

Also, the data collected at reference parcel level, is essential during the "screening" that the Commission can perform on the ETS observations (delivered by the Member State), in order to check the validity of the ETS inspection.

13.3 Further processing towards reporting of non-conforming numbers at LPIS sample level

The data quality values ("DQ_value") for the quality measures directly linked to quality expectations can be processed automatically through a series of (pre-defined) SQL queries of the ETS observation database collected at parcel level. There can be one or more data quality measures at reference parcel level, which are included as arguments in a certain SQL statement for a particular LPIS quality element (see the example below). It should be stressed that, depending on the quality measure (at LPIS sample level), the relevant SQL query is applied either on the "Total population", or on the "Sub-population" of reference parcels. See ANNEX I for more information.

How the results of these derived quality measures are finally evaluated is presented in the acceptance decision section.
Data quality measures, related to the primary key element "Maximum eligible area"

<table>
<thead>
<tr>
<th>Quality topic</th>
<th>Description</th>
<th>Observation and Reporting Level</th>
<th>Measures</th>
<th>Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total eligible area</td>
<td>Maximum quantity of land that can be claimed by farmers (e.g., eligible hectares upon which entitlements can be activated (LPS))</td>
<td>Reference Parcel Level</td>
<td>8095.2 – RP true eligible area</td>
<td>Informative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reference Parcel Level</td>
<td>8095.3 – RP diversity</td>
<td>Informative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reference Parcel Level</td>
<td>8095.4 – RP landscape elements</td>
<td>Informative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reference Parcel Level</td>
<td>8095.4.2 – RP landscape elements area</td>
<td>Informative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LPIS Sample Level</td>
<td>80281 – LPIS eligible area</td>
<td>Conformance level</td>
</tr>
</tbody>
</table>
14 Analysis of IACS data

version 4.3

14.1 Introduction

This section explains the processing steps for the quality elements: percentage of reference parcels which have been subject to change, accumulated over the years; and rate of irregularities determined during on-the-spot checks.

These measures rely on mining data from the IACS database, and not on observing the current status of the terrain.

The detailed description of both measures is stored in Annex IV

14.2 Percentage of reference parcels which have been subject to change, accumulated over the years

According to the source of anomalies (messages on changed land cover) and the actions taken upon their receipt, five approaches can be distinguished for managing land cover changes in the LPIS:

1. farmer's declaration and subsequent update
2. inspector's findings and subsequent update
3. collecting land changes from third parties and subsequent sporadic update
4. periodic monitoring and systematic update changes based on recent imagery (incl. improvement schemes)
5. systematic refreshes or full overhauls of the LPIS data

As it is considered the administration's duty to provide correct and current information to the farmer in support of the aid application process, any occurrence of the first and second approach could be counted as an indication of failure to timely manage the land changes.

The member state shall, for the reference parcels declared during the current application year:

1. Determine the rate (in percentage) of reference parcels with land cover changes indicated by the farmers. (i.e. count the number of reference parcels with change indicated by the farmers and divide it by the total number of reference parcels in the LPIS)
2. Determine the rate (in percentage) of the reference parcels with land changes observed during OTSC inspection. (i.e. count the number of reference parcels with change identified by the inspectors and divide it by the total number of reference parcels inspected via classical OTSC or CwRS)
3. Select the maximum of both rates.
4. Add this maximum to the cumulated rate from all previous years, starting from 2010 or the year of the last systematic update of the LPIS.
5. Record all previous and the current cumulated value[1] in the scoreboard

14.3 Rate of irregularities determined during on-the-spot checks

A high rate of irregularities determined during the OTSC is equally considered an indication of the failure of the LPIS to correctly support the farmer's aid application process. Its effect is expressed in area terms using the OTSC reported "area not found" from all aid applications of the current year, inspected under the OTSC random sample

The member state shall, for all aid applications inspected under the random OTSC sample of the current year:

1. Sum up the "area not found" from every aid application with irregularities regarding eligibility conditions.
2. Divide this sum by the total area declared from all applications in the random OTSC sample.
3. Report the resulting rate in the scoreboard.

[1] The value will be reset to zero after the next systematic update of the LPIS
15 Acceptance decisions

version 4.3

15.1 Sampling schema table

The rules and criteria for acceptance or rejection of the lot are determined by our choice of acceptance sampling schema. This is ISO2859-2: Sampling procedures for inspection by attributes, Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection. The schema (procedure A) determines the sample size \( n \) based on the LPIS (lot) size and provides an acceptance number \( AC \). If the inspected sample counts more than \( AC \) non-conforming items, the LPIS is considered of failing quality.

For details look to table 1 that provides the sample sizes \( n \) and acceptance number \( AC \) for any given LPIS size and various values of LQ. The table indicates that for a LPIS with more than half a million parcels, under LQ=2, a sample of 1250 parcels should be inspected and of this 1250, no more than 18 non-conforming parcels can be present.

<table>
<thead>
<tr>
<th>Lot size</th>
<th>1,25</th>
<th>2,00</th>
<th>3,15</th>
<th>5,00</th>
<th>8,00</th>
<th>12,50</th>
</tr>
</thead>
<tbody>
<tr>
<td>501 to 1200</td>
<td>170</td>
<td>125</td>
<td>125</td>
<td>80</td>
<td>50</td>
<td>32</td>
</tr>
<tr>
<td>AC</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1201 to 3200</td>
<td>200</td>
<td>200</td>
<td>125</td>
<td>80</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3201 to 10000</td>
<td>315</td>
<td>200</td>
<td>200</td>
<td>125</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>10001 to 35000</td>
<td>315</td>
<td>315</td>
<td>315</td>
<td>315</td>
<td>200</td>
<td>125</td>
</tr>
<tr>
<td>AC</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>35001 to 150000</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>315</td>
</tr>
<tr>
<td>AC</td>
<td>3</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>150001 to 50000</td>
<td>800</td>
<td>800</td>
<td>800</td>
<td>500</td>
<td>500</td>
<td>315</td>
</tr>
<tr>
<td>AC</td>
<td>5</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>18</td>
</tr>
<tr>
<td>&gt; 500000</td>
<td>1250</td>
<td>1250</td>
<td>800</td>
<td>500</td>
<td>315</td>
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<td>10</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

15.1.1 Practical considerations

This choice for ISO2859-2 Procedure A, was driven by the following considerations:

1. Inspection by attributes: pass/fail for each inspected item (parcel)
   - please note that this is not the case for quality element 1 which is in fact a variable
   - also note that requirements are expressed as percent non-conforming items?; as a result every inspected item (parcel) either passes or fails if the non-conforming attribute occurs. Each parcel counts only once (two non-conformities in a single parcel are counted as one)

2. Limiting quality: the product is expected to be ?better? than the specified quality. The quality is expressed in terms of LQ in the various measures of Annex I.
   - please note that the LQ value is not equal to the expectations expressed in the discussion document. In fact, the specified LQ are higher than the expectations; e.g. the expectations ?shall hold no more than 1 %? is expressed as a LQ=2. In the example above, we can indeed observe that 18/1250 is larger that the 1% quality expectation..

3. Isolated lot: there is no direct feedback to the production process. Indeed the LPIS under inspections are not sequential lots that form the output of an ongoing production process

   The ETS deals with expectations for 7 distinct quality elements which bear different levels of expectation. To deal with this potential complication, three choices were made:

1. The more strict the expectation (or the lower the LQ), the larger the sample needed.
   - the most demanding quality element determines the final sample size

2. For practical reasons, a single inspection procedure is proposed. In this respect, do not stop inspecting attributes for a particular quality element, if its individual sample size has been reached. In stead we proportionally adjust the Acceptance number for that element to match the full sample size.
   - as a result, the less strict quality elements (with higher LQ) are oversampled.

3. Variable measurements (like quality element 1) require much smaller samples than attribute counting for the same effectiveness of the verdict.
   - as a result, the quality elements that are expressed as variables are oversampled

Oversampling does mean a little bit more inspection work, but adds to the robustness of the verdict.
15.2 IACS data

Quality elements 6 and 7 rely on mining data from the complete IACS database, and not on observing a randomly selected sample of reference parcels. As a result, there is no scope for applying the decision rules from ISO2859-2 and findings can be directly compared to the quality expectations.

15.3 LPIS QA instructions

Please remember that the number of inspected parcels has been determined by indexing on LQ 2.

The Member State shall, for quality element 5:

1. use table 2 to determine quality expectations expressed as Limiting Quality for a particular quality element;
2. use table 1 to determine the sample size and acceptance number for a particular quality element;
3. when the prescribed sample size is smaller than the actual sample size as inspected during the ETS, increase the found acceptance number proportionally to the ratio of final sample size to pre-scribed sample size. Truncate (DO NOT round) to an integer number;
4. when the observed number on non-conforming parcels exceeds the Acceptance number from 2/ (or 1/) above, assign "non-conforming" to that element on the scoreboard

The Member State shall for quality elements 1 and 7

1. use table 2 to determine quality expectations for a particular quality element;
2. assign "non-conforming" to either element when its reported value exceeds the expectation.

For the 2010 report, there are no formal expectation thresholds applied on the scores for quality elements 2, 3, 4 and 6. The Member States shall report the inspection results via the ETS scoreboard and summarily report on the analysis of this findings, but no acceptance decision is applicable for quality elements 2, 3, 4 and 6

Table 2: Quality elements and corresponding ETS quality measures.

Consult the "DQ_ConformanceLevel" attribute within the ETS measure to identify the expectation and/or limiting quality value.

<table>
<thead>
<tr>
<th>quality element</th>
<th>ETS measure</th>
<th>table</th>
<th>annex</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1 The correct quantification of the maximum eligible area</td>
<td>10201</td>
<td>10</td>
<td>I</td>
</tr>
<tr>
<td>E2 The proportion of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account</td>
<td>10202</td>
<td>11</td>
<td>I</td>
</tr>
<tr>
<td>E3 The distribution of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account</td>
<td>10203</td>
<td>12</td>
<td>I</td>
</tr>
<tr>
<td>E4 The categorisation of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account</td>
<td>10204</td>
<td>13</td>
<td>I</td>
</tr>
<tr>
<td>E5 The occurrence of reference parcels with critical defects</td>
<td>10205</td>
<td>14</td>
<td>I</td>
</tr>
<tr>
<td>E6 The occurrence of reference parcels with critical defects</td>
<td>10206</td>
<td>15</td>
<td>I</td>
</tr>
<tr>
<td>E7 The percentage of reference parcels which have been subject to change, accumulated over the years</td>
<td>10207</td>
<td>16</td>
<td>IV</td>
</tr>
<tr>
<td>E8 The rate of irregularities determined during on-the-spot checks</td>
<td>10208</td>
<td>17</td>
<td>IV</td>
</tr>
</tbody>
</table>

15.4 Further reading

Further information on the effectiveness of the verdict and especially the link between LQ and AQL can be found in this presentation.
16 SAPS with historical GAC restrictions

16.1 Introduction

This section is relevant only to LPIS implementations from SAPS member states with a representation of historical eligibility (Article 124 of Regulation EC No 73/2009).

The LPIS ETS assesses the recorded LPIS information against current observations on the land under inspection (LUI). For SAPS countries (other than Bulgaria and Romania), the maximum eligible area of the reference parcel is further restricted to the land under Good Agricultural Condition on the reference date, irrespective of its agricultural production on that date. This condition cannot be identified on the terrain, but should be recorded in the LPIS.

Essentially, as far as SAPS eligibility is concerned, the spatial extent of the reference parcel has been “frozen” or delimited to the historical GAC mask. This leads to a concept of ?land under historical GAC? or LUHG. Results for the first four quality elements can be affected by this alternative land concept and the testing results should be re-evaluated.

This re-evaluation can be performed by some “GIS post-processing” of the ETS observations recorded on the LUI, resulting in a supplementary report for the LUHG.

16.2 Methodology

The detailed technical documentation is compiled in Annex V. This holds:

- supplemental ETS measures to process the available ETS observations
- an appropriate flow of events, to:
  - clip the ETS observations
  - re-evaluate the cause of non-conformity at reference parcel level
  - re-perform the data analysis
- a reporting template on the resulting data for a supplemental scoreboard.

16.3 Instructions

In addition to the common ETS (for the LUI), Member States operating SAPS with a historical GAC mask shall also perform the supplemental ETS of Annex V (relating to the LUHG).

Go forward to Annual reporting

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17 Annual Reporting

version 4.3

17.1 Purpose of the report

The report allows the MS to convey its findings to the European Commission. It holds a predefined data part and a free-text textual part.

17.2 Data part

Notwithstanding the high impact of LPIS in financial terms, the quality inspection itself was based on a relatively small sample of parcels based on a well-considered compromise between inspection costs and probability of drawing a false conclusion (ISO 2859-2).

It is therefore imperative that the Commission is able to re-perform the ETS to verify that the sample was drawn in a random manner and that the inspection procedure was correctly implemented. This is not different from the EC audit procedure of the OTSC inspection through the control files of farmer claims.

17.2.1 The ETS reporting package

To enable verification of the inspection method applied, the ETS reporting package, to be sent to the European Commission, to the unit responsible for IACS, shall hold:

1. A statement on the ATS conformity, if the LPIS conceptual model has NOT been changed since previous year (pdf)
2. The ETS scoreboard, holding the summary of findings (XML: 5_1_EtsScoreboard_20111207.xsd)
3. ETS observations: raw observations (observed values) for all measures on all inspected parcels of the sample (XML: 5_1_EtsObservations_20111027.xsd)
4. ETS inspection measurements: geographical features mapped during the ETS inspection for all measures on all inspected parcels of the sample (XML: 5_1_EtsInspectionMeasurements_20111027.xsd)
5. Orthorectified imagery access via an INSPIRE compliant WMS. If a Member State doesn't yet have such online service available: delivery of the orthorectified images to JRC's CID portal (5_1_OrthoimagerySet_20111027.xsd; 5_1_OrthoimageryUrl_20111027.xsd)
6. List of SQL statements used to analyse and process the data quality measures of ANNEX IV
7. Rapid Field Visit form containing a description of a field visit and a link to its graphical documentation (XML: No such file!)
8. Sample pre-selection status containing a list of the inspected and skipped (with a valid reason) reference parcels (XML: 5_1_LpisSamplePreselectionStatus_20111027.xsd)
9. LPIS polygon zero state: extract from the LPIS data under inspection, i.e. reflecting the state at the first step of the ETS (GML: 5_1_LpisPolygonZeroState_20111027.xsd):
   ◊ the selected reference parcels (geographical and alphanumerical attributes)
   ◊ boundaries, identifier and reference area of any parcel within a distance of 100 meters from the boundary of the inspected parcel

Member states operating SAPS with historical GAC restrictions, shall in addition report:

1. the historical image extract (georeferenced image in zipped archive) This upload is temporarily suspended for 2010, awaiting an easier image access solution
2. GAC vector data for the inspected parcels (historical GAC mask) (GML: 4_3_GacMask_201111206.xsd)
3. ETS observations GAC: raw observations (observed values) for all GAC-related measures on all inspected parcels of the sample (XML: 4_3_EtsObservationsGac_20101220.xsd)
4. ETS scoreboard GAC: the supplemental scoreboard (XML: 5_1_EtsScoreboardGac_20111027.xsd)

17.2.2 The ETS archiving package

The ETS archiving package, to be stored by the Member State, shall hold:

1. inspection records, i.e. the observation logs, source data and ancillary data used for filling in the tables of raw observations
2. an ETS inspection log: i.e. documentation on the environment, tools and activities involved during the inspection

17.2.3 Note

All elements of the ETS reporting package can be easily exchanged with the help of technical templates. These templates are available from the LPIS QA download pages.

17.3 Textual part

The assessment report shall contain a summary of the member states' analysis of its scores for each of the 7 quality elements, in particular relating the scores to the MS context. This assessment report should hold not more than 3 pages (scoreboard is separate)

Where appropriate, i.e. when either of quality elements E1, E5 or E7 fails to meet the acceptance threshold, a plan with the remedial actions and the timetable for their implementation shall be added. This summary plan shall build upon the analysis and differentiate between 2011 and after actions. Special consideration shall be given to ongoing refresh projects, if present. The remedial action plan shall hold not more than 2 pages.

The remedial plan should be inspired by the PDCA (Plan, Do, Check, Act) cycle, so possible chapters are:

1. check: explain the observed failure to meet the expectation; provide results of additional tests or outcome of a study for a better understanding
2. act: correct obvious failures; implement immediate mitigating actions
3. plan: explain what the MS intends to do on the long run to address issues not dealt with by the immediate actions

30
17.4 Delivery instructions

For the 2010 implementation, the following delivery instructions apply:

- The ATS scoreboard, the ETS scoreboard, the assessment report and, where appropriate, the remedial action plan shall be emailed to agri-direct-support@ec.europa.eu by 28 February 2011 at the latest in both Adobe PDF and MS Word DOC format.

- Orthorectified Imagery should not be uploaded but access should be provided via an INSPIRE compliant web mapping service. If a Member State doesn’t yet have such online service available, it may deliver the orthorectified images to the JRC. The following instructions and delivery dates apply:

  1. EU-financed: 31 December 2010 through delivery to CID by CwRS contractors: the CwRS contractor should follow CID’s instructions of the imagery delivery CTS2010
  2. MS-financed: 31 March 2011 through provision of an appropriate URL for the WMS or delivery to CID: For the latter, please follow the procedure described in non CwRS image delivery

- The ETS reporting package and ATS reporting package shall be uploaded on the LPIS QA portal by 30 April 2011 at the latest
These steps describe the process presented in the 2011 LPIS workshop in Amsterdam (see delivery packages presentation).

Illustrations and flow-charts will be added to this article soon.

18.1 **Step 1: Preparation for data exchange**

1. Prepare all necessary files for ATS (Reporting on ATS conformance) and ETS packages (Annual LPIS assessment report).
2. Validate your XML and GML files using the XML Validator tool.
3. (optional) Compress the GML file with a ZIP algorithm.
5. Verify the LPIS Authority set in the left-hand side context menu, under the name of your Member State.

18.1.1 **Step 2: LPIS Implementation version registration**

6. Register an LPIS Implementation Version (already registered versions will be indicated in a table).
7. Link registered implementation versions with the pre-defined lots and save your choices.

18.1.2 **Step 3: ATS package upload**

8. Select your implementation version for which you want to upload an ATS package. All mandatory items will be listed with asterisk.
9. Select items to be uploaded from a drop-down menu and upload a selected file. Wait for the confirmation message. You can navigate to the same page in order to edit or deactivate the file.
10. Approve your package by clicking ?approve button?. If there are missing elements they will be indicated in the appropriate table.

18.1.3 **Step 4: Sampling pre-selection (data for 2010 campaign)**

*Note: This Step 4 was already performed in Spring/Summer 2010*

11. Select a reporting year from a drop-down menu.
12. Select an LPIS lot from a drop-down menu.
13. Upload LPIS point zero state file. If you are using a standard EPSG code, click on the appropriate choice button. If you don't use a standard EPSG code, first upload a projection file through a projection menu. Then connect an uploaded projection file with your GML file by clicking on a drop-down menu.
14. Download the sample pre-selection file that will be generated for you by the application.

18.1.4 **Step 5: ETS package upload**

15. Select a reporting year from a drop-down menu.
16. Select an LPIS lot from a drop-down menu.
17. Select ETS reporting package items to be uploaded from a drop-down menu.
18. Upload files. For GML files the same procedure applies as in point 13 (non-standard EPSG CRS declarations).
19. Approve your package by clicking ?approve button?. If there are missing elements they will be indicated in the appropriate table.

18.1.5 **Step 6: Dashboard verification**

20. Verify the status of your uploaded files for your packages: pending and approved filed will be indicated in yellow or green respectively.
19 delivery

NOTE: This instruction only applies to imagery that was not acquired by the JRC under its annual CwRS or LPIS QA campaigns. It therefore relates only to the aerial and other imagery that was independently acquired by the Member State for use in support of its inspection of the sample of reference parcels.

For the JRC Imagery, instructions of the Common Technical Specifications for the 2010 CwRS Campaign apply CTS 2010

19.1 Step 1: Document the metadata

Prepare an entry for control zone and preparation of XML file according to the OrthoimagerySet schema, as available on the download article.

This xml-file is a part of the ETS reporting package

◊ ZoneID of this xml is the MS's identification of the zone, analogue to the CwRS zone naming and mostly linked to acquisition processes.

19.1.1 Step 2: Check format

Make sure your image is in one of the supported file formats for the image datasets.

◊ GeoTIFF
◊ ERDAS Imagine (HFA)
◊ ECW

Convert or export your imagery to one of these three formats if needed.

19.1.2 Step 3: Organise your datasets/files per zone

Group all imagery produced in a single CRS that is relevant for a particular ETS reporting package (i.e. LPIS Authority/reporting year). Please note that

◊ a dataset can be provided as a single large image file or as a mosaic of image tiles.
◊ all image tiles of the same dataset must have the same coordinate reference system, else the zone needs to be split up in sub-zones.

To compile your complete dataset:

1. Name the dataset: if you have sub-zones, create a unique ID for each individual dataset, otherwise use the LPIS zone ID;
2. Create a folder with the name determined above;
3. Place all files of the dataset (=same CRS,LPIS,year) into that folder;
4. Place the XML file of step 1 in the folder and rename it to ?lpis_ortho_meta.xml? 

19.1.3 Step 4: Deliver

Deliver the compiled folder(s) either by FTP upload to the JRC CID server or by shipping DVD's:

◊ FTP-upload: This requires the creation of a personal FTP account. Contact Juergen Breunig (juergen.breunig@ext.jrc.ec.europa.eu) and Armin Burger (armin.burger@jrc.ec.europa.eu) by email to create your account. Indicate the approximate amount of data in GigaByte to be uploaded. You will then receive the access details for your account and can start the upload. Please inform the persons listed above by mail of the successful upload of the datasets.
◊ Shipping of DVD's or hard disks: The shipping address is

Juergen Breunig
TP 266
Via E. Fermi 2749
I-21027 Ispra (VA)
Italy

Please inform this responsible person via mail about the shipment (mailto: juergen.breunig@ext.jrc.ec.europa.eu).

19.1.4 Aftermath

• JRC will return harddisks if the MS provides a shipping address.
• The imagery will exclusively be used for screening of the ETS observations by EC staff and will not be available through the CID portal for any other application.
20 Support

Support (how in practice?)

These pages provide supporting information and templates for the implementation of the ATS and ETS inspection procedures. These pages are meant to be informative only.

◊ The first section provides an inventory of all download files: discussion documents, references, instructions and templates. Check here that you have all information available

◊ The second part covers the tools such as services that are available via the LPIS portal.

◊ The third section offers guidelines and practical examples of the full testing procedure. It provides a deeper practical insight in the testing procedures and clarifies the instructions.

◊ Finally a FAQ-section offers answers to previous questions regarding the LPIS quality assurance framework.

--Wim 17:12, 22 February 2010 (UTC)
21 Download

version 4.3

Technical note: Downloads are realized using FTP protocol, with "Anonymous" login. Please, configure your software correctly if needed.

This section presents a summary of the available supporting documents and templates which are used in the LPIS Quality Assurance Framework. These downloads might be helpful to understand and carry on with the ATS and ETS inspection procedures.

All ETS templates and schemas relate to the current version 4.3 and hold a validity start date. Updates, bug-fixes and minor modifications will be identifiable on this page by a more recent validity start date "- yyyy-mm-dd".

Please verify that you are using the most recent template or schema

Warning: Internet Explorer can store the download in the "temporary internet files" folder. Later on, IE will prefer to access the temporarily stored file upon downloading the revised version from our ftp. To ensure a download, remove the stored file from the folder.

21.1 Documents

21.1.1 Background

The discussion document on LPIS quality elements

- April 2010: printable version
- April 2010: version with revision markup
- November 2009: formerly known as 11164

21.1.2 Feasibility report

The Report on LPIS Quality Assessment feasibility trial is available at LPIS QAF feasibility.

21.1.3 Feature Catalogue documents

UML diagrams and GML encoding for the LPIS Core Model (LCM) are available at: LCM Technical Specification.

The GML application schema for LPIS Core Model can be downloaded from the ftp: LPIS Core Model Schema.

21.1.4 ATS documents

- The LPIS Core Conceptual Model: LCM Technical Specification

21.1.5 ETS version 4.3 documents

- ANNEX I: LPIS data quality measures ANNEX I - 2010-11-18
- ANNEX II: ETS inspection procedure ? Description of the workflow ANNEX II - 2010-11-23
- ANNEX III: The concept of land cover and "eligible hectares" ANNEX III - 2010-11-19
- ANNEX IV: IACS data quality measures ANNEX IV - 2010-11-09
- ANNEX V: SAPS with historical GAC supplemental Test Suite ANNEX V - 2010-11-09

Related guidance

- Common Technical Specifications for the 2010 CwRS Campaign CTS 2010
- Guidelines for Best Practice and Quality Checking of Ortho Imagery, v 3.0 Orthoguidelines
- Zone definition for the CwRS programme Zone Definition for the CwRS campaign
- Example of a design of specific land cover class, using LCCS 2.4.5 Appendix A
- Example of the use of the eligibility profile in the calculation of the maximum eligible area for a given Reference Parcel Appendix B

21.2 Schemas, templates and examples

In order to assure an appropriate file transfer and information exchange between the Member States (Paying Agencies) and the Commission, a Web-based Portal is under development. The data exchange is performed following the established schemas:

<table>
<thead>
<tr>
<th>Name</th>
<th>Reporting package</th>
<th>Description</th>
<th>Schemas/Templates for v4.3</th>
<th>Example</th>
<th>Date*</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPIS Core Model</td>
<td>ATS archiving package</td>
<td>LCM Schema defined as GML Application Schema is used for describing the structure of the LPIS under the Abstract Test Suite.</td>
<td>LCM Schema.xsd</td>
<td></td>
<td>2010 01 01</td>
</tr>
<tr>
<td>ATS-log</td>
<td>ATS reporting package</td>
<td>A template for all tests findings: data set name/ attribute name, format, values and definition (ATS-log report)</td>
<td>AtsLog.xsd illustration template (xls)</td>
<td>AtsLog.xml</td>
<td>2011-01-20</td>
</tr>
<tr>
<td>Component</td>
<td>Description</td>
<td>Example File</td>
<td>Version</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>---------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATS scoreboard</td>
<td>A template for the final ATS-scoreboard</td>
<td>AtsScoreboard.xsd template (doc)</td>
<td>2011-01-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPIS point zero state</td>
<td>A schema for a point representation of reference parcels (point being inside a parcel)</td>
<td>LpisPointZeroState.xsd</td>
<td>2010-12-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPIS sample pre-selection</td>
<td>A schema for a sample pre-selection sent to a MS</td>
<td>LpisSamplePreselection.xsd</td>
<td>2010-12-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPIS polygon zero state</td>
<td>A schema for storing polygons representing reference parcels of a MS</td>
<td>LpisPolygonZeroState.xsd</td>
<td>2010-12-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETS inspection measurements</td>
<td>A schema for storing ETS inspection measurements as geographical features</td>
<td>EtsInspectionMeasurements.xsd</td>
<td>2010-12-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETS observations</td>
<td>A schema for storing ETS observations as simple or complex values</td>
<td>EtsObservationsGac.xsd</td>
<td>2010-12-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ETS scoreboards GAC</td>
<td>A schema for storing GAC ETS observations as simple or complex values</td>
<td>EtsScoreboardGac.xsd</td>
<td>2010-12-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPIS sample pre-selection status</td>
<td>A schema for storing the final status of parcels in the sample pre-selection</td>
<td>LpisSamplePreselectionStatus.xsd</td>
<td>2010-12-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid Field Visit</td>
<td>A file storing observations from a Rapid Field Visit</td>
<td>No such file!</td>
<td>2011-01-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GAC Mask</td>
<td>A schema for storing GAC Mask polygons</td>
<td>GacMask.xsd</td>
<td>2010-12-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waivers</td>
<td>A schema for storing waivers in use</td>
<td>Waivers.xsd</td>
<td>2010-12-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligibility Profile</td>
<td>A schema for storing an Eligibility Profile</td>
<td>EligibilityProfile.xsd</td>
<td>2010-12-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LPIS Common Types</td>
<td>A common schema referred to by other schemas</td>
<td>LpisCommonTypes.xsd</td>
<td>2011-02-24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthoimagery set</td>
<td>A schema for storing metadata about orthoimagery set</td>
<td>OrthoimagerySet.xsd</td>
<td>2011-04-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthoimagery URL</td>
<td>A schema for storing access information to orthoimagery</td>
<td>OrthoimageryUrl.xsd</td>
<td>2011-04-21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waiver proposal template</td>
<td>A template for proposing new waivers, which can vindicate the presence of potential critical defects or a reference parcel contaminated with ineligible features</td>
<td>waiversProposal.xls</td>
<td>2011-05-31</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* The date column represents the last modification date of either the schema or its corresponding example. Please, verify the date indicated in the file name after downloading.

## 21.3 Schema versions log

A list of modification and dates on each of the above schemas can be found in this standalone log.

The schema set change logs are intended for the IT developers’ information only. The article will be updated whenever modifications are implemented to any of the schemas.
22 Tools

22.1  JRC Tools

22.1.1  Web-application for data exchange

A secure web-application is available at: LPIS QA Web-application to facilitate and assist Member States in the LPIS QA implementation. This platform is used for:

- upload of LPIS GML data (MS-to-JRC),
- download of Sample Pre-selection XML data (JRC-to-MS).

To correctly use it, please refer to the sampling pre-selection procedure at: Instructions on data exchange.

22.1.2  JRC custom built tools

JRC offers these tools as demonstration tools only. They help to understand the GML creation process and helps to create a valid GML file from the original Member State data. The tools are in a draft version, therefore some minor problems can occur (if so, please contact the JRC team with a problem description and a bug report as a print-screen).

When an updated version of a tool is available, the corresponding link will be updated. Please, verify if you are using the latest version.

<table>
<thead>
<tr>
<th>JRC Tool</th>
<th>Description</th>
<th>Requirements</th>
<th>Link</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPIS Point Zero State</td>
<td>A customized script that creates a valid LPIS Point Zero State GML file from a point-type shapefile.</td>
<td>ArcMap v9.3: Tested on ArcMap version 9.3 service pack 1</td>
<td>LpisPointZeroStateTool - Installation</td>
<td>2011 07 15</td>
</tr>
<tr>
<td>LPIS Polygon Zero State</td>
<td>A customized script that creates a valid LPIS Polygon Zero State GML file from a polygon-type shapefile.</td>
<td>ArcMap v9.3: Tested on ArcMap version 9.3 service pack 1</td>
<td>PolygonZeroState - Installation</td>
<td>2010-12-23</td>
</tr>
<tr>
<td>ETS Inspection Measurements</td>
<td>A customized script that creates a valid ETS Inspection Measurement GML file from a set of corresponding layers/shapefiles.</td>
<td>ArcMap v9.3: Tested on ArcMap version 9.3 service pack 1</td>
<td>ETS Inspection Measurements - Installation</td>
<td>2011-04-18</td>
</tr>
<tr>
<td>XML (GML) Validator</td>
<td>An application that validates XML and GML files against their schemas.</td>
<td>Microsoft.NET Framework 3.5 or later link</td>
<td>JrcXmlValidator</td>
<td>2010-12-07</td>
</tr>
</tbody>
</table>

22.2  Third party commercial tools

These tools are on the commercial market and may help Member States during the implementation of the LPIS QA inspection or further analyses thereafter.

These are commercial products and the entries are provided for information only. JRC does not "certify" or "guarantee" any of these third party tools.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
<th>Requirements</th>
<th>More...</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDV ETS-reporter</td>
<td>Java-based stand-alone software application that covers the process of the LPIS data quality measures (Executable Test Suite).</td>
<td>Standalone, needs Java 1.6 installed</td>
<td>link</td>
</tr>
<tr>
<td>Sinergise TopoCheck</td>
<td>tool for spatial and meta-data validation of various datasets. It analyses the data and finds inconsistent records, problematic topologies and it also estimates an area uncertainty of each polygon.</td>
<td>Standalone, needs Java 1.6 installed</td>
<td>link</td>
</tr>
<tr>
<td>Abaco QA ETS Exchange</td>
<td>web application providing the import/export of the Commission selected sample according to ETS guidelines</td>
<td>Any J2EE web container, Oracle Spatial 10g or 11g</td>
<td>link</td>
</tr>
<tr>
<td>Abaco QA ETS Inspection</td>
<td>web application managing the Quality Control workload distribution among inspectors. Provides also a tailored ETS GIS editor and the ETS scoreboard in PDF format</td>
<td>Any J2EE web container, Oracle Spatial 10g or 11g</td>
<td>link</td>
</tr>
<tr>
<td>Wageningen UR - Alterra ETS Manager</td>
<td>The ETS Manager is build as an addin for ArcGIS 9.3.1. The current version it taylored to the Dutch and Northern-Irish workflow, but can easily be adjusted according to your specific situation. Multi-user tool for the entire process of LPIS Quality Assessment. Based on file-geodatabase usage. For more detailed information please contact <a href="mailto:Inez.Woltjer@wur.nl">Inez.Woltjer@wur.nl</a></td>
<td>ArcGIS 9.3.1.</td>
<td>link</td>
</tr>
</tbody>
</table>

22.3  Third party free tools

22.3.1  Ogr2ogr

IMPORTANT: The following conversion does NOT give 100% valid GML file, some small changes are still required to tune the file: "ogr" namespace to "cap" namespace, together with "targetNamespace".

Now we are able to convert the newly created shapefile to a GML file. A tool that could be used for this purpose is ogr2ogr, from Geospatial Data Abstraction Library. Basically, one provides ogr2ogr with the input shapefile, specifies the additional fields (other than spatial ones) that are contained in
the GML file, and provides the name of the GML output file:

```
```

The GML file shall be then zipped and shipped through the LPIS QA web-application to JRC.

22.3.2 FAO LCCS

**Software installation setup**

The software is freely distributed by FAO and comes with a self-extracting executable file, which produces the entire set of files necessary to run the setup.

The latest stable release of the LCCS (version 2), currently used in the LPIS QA, can be found [here](#).

**Classification concepts and user manual**

The LCCS software manual provides information on the classification concepts and the practical software use. The first part of the manual fully describes the LCCS used definitions and the conceptual basis. The second part of the manual deals with the LCCS operative use, from installation to extensive explanation of the functioning mode of each one of the program modules.

It is available on the FAO Web site: [LCCS Manual](#).

22.3.3 XML Marker 1.1

XML Marker is a freeware XML Editor that uses a synchronized table-tree-and-text display to show you both the hierarchical and the tabular nature of your XML data.

It automatically produces a tabular display of any selected tag by collecting repeating attribute and tag names and then arranging them into columns. The result is a clutter-free and informative tabular display.

The tool is [here](#) available for downloading.

22.3.4 LPIS-QA-Reporter

In Belgium-Flanders we created a little tool to help creating some xml files for the ETS. Two of the necessary ?ETS Reporting package? xml files are supported at the moment, because they are the most difficult to create manually:

- EtsObservations.xml
- LpisSamplePreselectionStatus.xml

The tool needs a shape file with certain mandatory columns as input (a template shape file and a description of the needed fields is included in the download). Based on this file xml files are generated... Mind: the tool doesn't do an xsd validation, so you still need to use eg. the JrcXmlValidator to validate the xmls!

BTW: This tool is provided free of charge, as is without any guarantees or warranty. The author is not responsible for any damage or losses of any kind caused by the use or misuse of the programs. The author is under no obligation to provide support, service, corrections, or upgrades to the software ;)

If you would like to use the tool and want to be notified of new versions or have any remarks, you can contact me here: plis@regemans@vlaanderen.be [...]

Download the newest version of the tool on this page: [LPIS-QA-Reporter](#).

22.4 Tips and tricks

22.4.1 How to install a JRC ArcGIS script

LPIS Point Zero State and LPIS Polygon Zero State tools consist of several files under a ZIP archive. They run within the ArcMap environment (built for the ArcMap version 9.3). It is a prototype that has not been largely tested yet.

To install the tools in your ArcMap component, you need to:

1. Download the ZIP files from WikiCAP - see above links.
2. Open ArcMap.
3. Go to Tools>Macros>Visual Basic Editor.
4. Import all the files (.cls, .bas and .frm) within Normal Project - Normal.mxt - to make it always available to ArcMap.
5. Make sure the following reference called "Microsoft Scripting Runtime" is checked: Visual Basic>Tools>References>Microsoft Scripting Runtime
6. Save the project.
7. Go to ArcMap, Tools>Customize>[Macros]...find our Tool (indicated as Normal.ToolName.Run).
8. Drag&drop it on your ArcMap toolbar.
9. Click on the button you have just dropped into the toolbar or alternatively, run the tool from Tools>Macros>Macros>[Macro name]>Run.
10. The tool's window should be opened and ready to be used.

### 22.4.2 How to run a JRC ArcGIS script (Point/Polygon Zero State)

1. Install a tool correctly.
2. Click on it to open its interface.
3. Select the shapefile/layer you want to convert.
4. Map your corresponding attribute fields.
5. Convert the file by clicking on the Create GML File button.

The **input files** should be:

- for Point Zero State and Polygon Zero State a simple-point-type or simple-polygon-type shapefile with a defined geographic coordinate system or a projected coordinate system.

The **output file** is a GML-file, compliant with one of the following schemas:


### 22.4.3 How to run the ETS Inspection Measurements JRC ArcGIS script

1. Install the tool as described in [1].
2. Prepare your ArcGIS project with layers/shapefiles where each layer/shapefile contains only Agriculture Land Cover Features or only Landscape Features of one geometry type (Figure 1).
3. Prepare the required attributes in all your layers/shapefiles as indicated in Table 1.
4. Click on the installed EtsInspectionMeasurement tool to open its interface.
5. Click on the "Build the mapping" button.
6. (Required) Select the layer/shapefile containing Agriculture Land Cover Features (polygons)
7. (Required) Map the attributes from your layer/shapefile to the GML corresponding attributes
8. Select the layer/shapefile containing Landscape Features (polygons). If you do not have landscape features mapped as polygons, leave it empty.
9. Map required attributes
10. Select the layer/shapefile containing Landscape Features (lines). If you do not have landscape features mapped as lines, leave it empty.
11. Map required attributes
12. Select the layer/shapefile containing Landscape Features (points). If you do not have landscape features mapped as points, leave it empty.
13. Map required attributes
14. Select the layer/shapefile containing Landscape Features (multipoints). If you do not have landscape features mapped as multipoints, leave it empty.
15. Map required attributes
16. Convert your data by clicking on the Create GML File button.
17. Validate your GML file with JRC XML Validator

![Figure 1. Prepared ArcGIS project for ETS Inspection Measurements conversion. Each layer/shapefile contains only one feature type of one geometry.](image)

<table>
<thead>
<tr>
<th>Required GML attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rpID</td>
<td>Reference Parcel Unique Identifier</td>
</tr>
<tr>
<td>landCoverFeatureID</td>
<td></td>
</tr>
</tbody>
</table>
an internal unique identifier of mapped land cover types (i.e. OBJECTID)

<table>
<thead>
<tr>
<th>agricultureLandCoverClassCode</th>
<th>Land Cover Class Code from your eligibility profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>codeSpace</td>
<td>urn:ec:lpisqa:REPORTING_YEAR:YOUR_LPIS_CODE:LOT_NUMBER:EligibilityProfile where you need to replace the bold elements with your actual data, i.e. urn:ec:lpisqa:2010:TEST-LPIS:1:EligibilityProfile</td>
</tr>
</tbody>
</table>

The **input files** should be:

◊ separate ArcGIS layers or shapefiles containing only Agriculture Land Cover Features or only Landscape Features. Please note that each of the layers/shapefile may only contain features of the same geometry type (polygon/multipolygon, line/polyline, point/multipoint) and should have a defined geographic coordinate system or a projected coordinate system.

The **output file** is a GML-file, compliant with one of the following schema:


### 22.4.4 How to create the point representations of the parcels in ArcGIS

In order to determine the points, a command line function from ArcGIS (under the ArcInfo license) could be used: FeatureToPoint  
`d:\workspace.mdb\parcels d:\workspace.mdb\parcels_pt INSIDE`  
The syntax for the command is as follows: `FeatureToPoint <in_features> <out_feature_class> {CENTROID | INSIDE}`

Using the function (choosing INSIDE option), a new shapefile will be created. The only difference is that it will contain some point representation of the parcels instead of polygons, for each of the parcels in the original shapefile.

### 22.4.5 How to open a XML Sample pre-selection in ArcGIS

If you want to relate an XML sample pre-selection file to your ArcGIS project, you need to first open the XML file in the Excell, and then save it in the DBF format. Then, you will be able to relate it to your ArcGIS layers.

Go forward to **Practical guidelines and examples** to see the details.

Go backwards to **Table of contents**.
Downloads:

Download version 2.0 (including template and manual) here: LPIS-QA-Reporter download


Changelog:

- 2.0, released on 27/04/2012
  - First version for 2012 reporting.

Go backwards to Tools.
24 Practical guidelines and examples

This Chapter offers a collection of guidelines and examples for a better and further understanding of the LPIS quality assessment methodology.

Go forward to Examples of parcel inspection.

Go backwards to Table of contents.
25 Screening report

version 4.3
26 How to read the 2010 screening reports?

26.1 Objective of the 2010 screening

The screening of the 2010 ETS-package was designed to

1. evaluate the inspection methodology and feedback issues and examples into an ETS revision
2. identify issues with the application of the inspection methodology for each individual LPIS custodian so they can take remediating actions

It is not intended to validate the 2010 scores nor to validate the analysis report produced by the individual LPIS custodians. JRC made no attempt to link this screening to the 2010 scores.

26.2 Methodology

The screening was performed by doing a visual check on the first records encountered from the sample preselection list (from 'inspected' parcels) or randomly selected records (in the latter case listed at the end of the report). 'Skipped' parcels have been screened regarding their technical reason for skipping, according to their availability.

◊ It follows that the screened parcels are random regarding their location, but that, in case your parcels were not randomly screened, any change you might have applied later during your inspection, will not be detected during our screening.
◊ The screening validates whether the methodology was applied according to the activity diagram of Annex II. Therefore the screening report is activity (=measure) based. If an inspection issue was detected for a given activity, it was counted and the first occurrence of the issue is recorded on the report. A rID of affected parcel (parcels) is given as an example.
◊ The number of inspected parcels actually screened varies from 20 to 125 inspected parcels; the smaller number often relates to packages that presented systematic issues rendering further screening less relevant. A part of the skipped parcels (if available) has also been screened for the validity of their skipping.
◊ In some cases, additional information on the specific nature of the issue observed during the screening, is provided (in blue, italic) in the field "type of issues" of the report.

The screening report indicates what the JRC noticed or detected during the screening process and its observations are at least partly depending on the technical environment, as set up by JRC.

◊ The screening report is intended to be informative, not normative.
◊ Thus follows that MS are invited to fully check the issues listed in the screening report and analyze the report. Only when issues are confirmed, should one make the appropriate arrangements to prevent these from reappearing during the next LPIS quality assessments.

26.3 Report

26.3.1 Identification

◊ The lot and the key numbers of the ETS reporting package and screening are indicated on the top of the report
◊ It will be reported when the ETS package contains more or fewer inspected parcels than the determined sample size, Please note that QE4 (potential critical defects) drives the sample size, all other quality elements still provide valid scores even if some fewer parcels have been inspected.

26.3.2 Orthoimagery

The orthoimages displayed during the screening are those available to JRC via a WMS by CID or by the MS. These portals might present a different version of the orthoimagery actually used for the LPIS QA or the WMS might have induced some loss of information content. Please consider these above interferences when analyzing the findings.

26.3.3 Data processing

Incomplete packages create an extra challenge for the screening and inevitably lead to inconclusive findings. Please make sure the data processing is corrected for the next ETS-package.

26.3.4 Parcel Inspection

The parcel inspection used for the screening corresponds to ETSv4.3. Please be aware that some of the measures and activities are not longer relevant for ETSv5.x. See the release notes and guidance of ETSv5.x for details.

A template of the screening report is available here

26.4 Follow-up

It's impractical to organize a bilateral meeting to discuss issues. If demand for follow-up is high, a special session can be arranged during the Tallinn conference.

Go forward to Discussion pages (shared experiences) to see the details.

Go backwards to Table of contents.
27 Examples of parcel inspection

This section presents an example of inspection of a Reference Parcel. It is limited to the actions applied to data collection only - after the initial inspection feasibility check and prior to the move to the next reference parcel.

Example of a Reference Parcel. LPIS parcel boundary is shown in cyan.
### 27.1 Determination of the agriculture land cover, that might represent eligible land

<table>
<thead>
<tr>
<th>Action</th>
<th>Example</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of individual agriculture land cover features on the land represented by the Reference Parcel. Current year orthophoto (natural color) is used as reference ground data. Additional VHR satellite imagery (acquired in the same year, different month) is used to assess the seasonal aspect of land cover, thought the different stages of the vegetation growth. See &quot;the multi-temporal analysis&quot;</td>
<td>![Image](Agriculture land cover features shown with letters)</td>
<td>Clearly distinct and identifiable agriculture land cover features (A - Arable land; G - Grassland)</td>
</tr>
<tr>
<td>Delineation (from scratch) of the identified individual agriculture land cover features on the land represented by the Reference Parcel, using information from both image datasets</td>
<td>![Image](Agriculture land cover features shown with letters)</td>
<td>Polygons, enclosing agriculture land cover</td>
</tr>
</tbody>
</table>
Contour of the digitized polygon shown in green

Determination of the land cover type

Agriculture land cover features shown with letters

Area of A + Sum Area of G = 112941 + 7257 = 120198 sq. m.

Calculation of the maximum eligible area for the inspected reference parcel, using the country specific eligibility profile. See "Use of Eligibility Profile"
**27.2 Determination the landscape features**

No landscape features in this Reference Parcel.

**27.3 Identification of non-agriculture land cover types and critical anomalies**

<table>
<thead>
<tr>
<th>Action</th>
<th>Example</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determination of the land cover types of the non-agriculture land cover features found on the land represented by the Reference Parcel</td>
<td><img src="contours-of-the-digitized-agriculture-land-cover-are-shown-in-yellow-lpis-parcel-boundary-is-shown-in-red.png" alt="Image" /></td>
<td>Several types of non-agriculture land cover types found: woodland, water body, bare areas, sparsely vegetated bare areas</td>
</tr>
<tr>
<td>Counting the abundance of the individual non-agriculture land cover features</td>
<td><img src="contours-of-the-digitized-agriculture-land-cover-are-shown-in-yellow-lpis-parcel-boundary-is-shown-in-red.png" alt="Image" /></td>
<td>woodland - 1; water body - 1; bare areas - 1; sparsely vegetated marginal areas - 1</td>
</tr>
<tr>
<td>Identification and counting of the occurrence of any potential critical defects, which might obstruct the use of the Reference Parcel</td>
<td><img src="contours-of-the-digitized-agriculture-land-cover-are-shown-in-yellow-lpis-parcel-boundary-is-shown-in-red.png" alt="Image" /></td>
<td>One potential critical defect found. The inspected Reference Parcel has two distinctive and separate parts, which could represent eligible land. It can be initially considered as ?Multi-parcel?.</td>
</tr>
</tbody>
</table>

**27.4 Check the conformance of the Reference Parcel**

<table>
<thead>
<tr>
<th>Action</th>
<th>Example</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Check and report the conformance of the Reference Parcel in respect to the maximum eligible area recorded.

Contours of the digitized agriculture land cover are shown in blue. LPIS parcel boundary is shown in red.

| Area Observed = 94513 sq.m.; Area Recorded = 120198 sq.m.; Area Observed / Area Recorded = 0.79; 21% of ineligible land found; Reference Parcel is non-conformant, as it contains more than 3% ineligible land |

Identify the causes for the non-conformity of the Reference Parcel.

Changes of the underlying land were not applied. Therefore, the initially identified potential critical defect is not a "real" defect in the design, as the reference parcel had correct definition. It was simply not updated.

| Area of the parcel, acquired in 2009 (top). Area of the parcel acquired in the previous years (bottom), image from Google Earth |

Go forward to Specific examples of ETS observations.

Go backwards to Table of contents.
28 Specific examples of ETS observations

This section presents a series of typical examples of ETS observation, grouped thematically. The yellow contour represents the observed agriculture land cover on the orthoimage. The red contours represent LPIS parcel boundary. For more examples and explanations, see also S9_Quality_measures_Milenov.pdf

28.1 Examples of agriculture land cover types that might represent eligible land

- **Permanent crop** (example), LCCS code: 10566-1891-S0610 "Permanent crops (vineyards)"
- **Family gardens** (land cover labelled with K), LCCS code: 11135 "Kitchen Gardens"

28.2 Examples of landscape features

- **Ponds**, LCCS code: 7001-5-U1(3)[Z2] "Ponds"
- **Hedges**, LCCS code: 10176(3)[Z1] // 1021110285 "Hedgerows"
28.3 Examples of non-agriculture land cover

Urban Vegetated Areas (Airport Area)  Wetlands

28.4 Example of parcel with a critical defect having a correct Maximum Eligible Area

A cadastral parcel used as LPIS reference parcel, located inside a large agriculture block. The boundaries of the reference parcel do not follow any distinctive land feature or well identifiable land cover / land use boundary. In stead, the perimeter of this reference parcel just represents legal boundaries of the real property.

In this condition, the reference parcel isn’t suitable for the correct localization of the land for the ETS inspection, but this particular defect does not cause a issue in respect to its maximum eligible area, because the complete parcel and all immediate surroundings are pure agricultural lands. So,

1. the polygon area is accepted as the eligible area observed, and
2. the reference parcel is flagged as

   1. having potential critical defect and
   2. non-conforming as it did not allow for a full external inspection.

28.5 Examples of "potential critical defects, obstructing the use of the Reference Parcel"
28.6 Examples of reference parcels which are NOT having a "potential critical defect" of the "unclear boundary" type

MS have requested clarification on the issue of the potential critical defect "unclear boundary". JRC thinks these parcels are not suffering from this defect, although they have other potential critical defects or are non-conforming on area basis. In any case they require an examination on the cause of their non-conformity.

The RP boundary (red line) completely matches terrain features. There are however several arguments to label it multiparcel.

The unclear part of the RP boundary (red line) is never crossing agricultural land; the unique localisation of agricultural land is not jeopardized.
28.7 Examples of mixed land cover, where application of an appropriate reduction coefficient could be considered to determine the maximum eligible area in accordance with the definitions in R.1122/2009 and R.73/2009.

Grassland with sparse shrubs, LCCS code: 20443-13151-T2 "Permanent pasture (self-seed with shrubs)"

Grassland with bare areas and waterlogged vegetation, LCCS code: 40409-4732 "Temporary flooded open grassland"
29 Sampling: practical considerations

29.1 Additional reading: some detailed considerations on the Sampling procedure

The following considerations are non-essential, but provide some broader context on the sampling plan selected for the LPIS QAF

29.1.1 acceptance sampling for inspection of discrete items in lots

ISO 2859-2 is one of a series of sampling systems, schemes and plans presented in a number of Standards as ISO2859-x, ISO3951-x, ISO8422 and ISO8423. Each standard offers one or more sampling procedures and explains how these are to be used. The technical report ISO/TR 8550 guides towards an appropriate procedure for use in a particular situation.

29.1.2 AQL vs LQ

ISO 2859-2 is indexed on LQ (limiting quality). Many acceptance sampling standards of the series use the more commonly known AQL (acceptance quality limit). The two concepts are different.

◊ AQL = quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance
◊ LQ = when a lot is considered in isolation, a quality level which for the purposes of sampling inspection is limited to a low probability of acceptance

AQL provides a guide for the producer on the level or quality he needs to produce so that he can satisfy the acceptance criteria (sampling clause) most of the time for a given desired quality. He must aim to produce better than the AQL. By contrast, the LQ does not provide a reliable guide for the consumer as to the true quality of the accepted lots. Acceptance only indicates the quality of the accepted lot is better than the LQ, it does not say how much better. The limiting quality should be chosen realistically at a minimum of three times the desired quality (often expressed as AQL).

29.1.3 Producer’s risk vs Consumer’s risk

The verdict on a lot can be false in either of two ways.

◊ Occasionally a ‘good’ lot may not be accepted because the sample inspected, though randomly selected, does not reflect the true quality of the lot. The risk of this happening is known as ‘producer’s risk’ (PR). (type I error / ? error / false positive).
◊ Conversely, a ‘poor quality’ lot may pass inspection because of the limited data available in the sample. This eventuality is known as ‘consumer’s risk’ (type II error / ? error / false negative).

The MS require a high probability of acceptance if the quality is good while the Commission would want a low probability of acceptance if the quality is poor. Conventionally these probabilities have been set at 0.95 and 0.10, respectively. This gives a PR of non-acceptance of 0.05 or 5%, and a CR of accepting poor quality of 0.10 or 10%.

These probabilities represent the risk of false decisions for an LPIS that balances around the desired quality. Much ?better? LPIS lots obviously have a much smaller chance to be rejected, ?poorer? lots have a smaller chance to be accepted.

29.1.4 Procedure A vs Procedure B

ISO 2859-2 offers two distinct procedures: Procedure A, to be used when both supplier and consumer regard the lot in isolation and Procedure B, when the supplier regards the lot as just one of a continuing series and wishes to maintain consistent procedures for all customers.

◊ the tables for procedure A (lot in isolation) are based on random sampling from finite lots for both consumer’s and producer’s risk.
◊ for procedure B, tables are based on:
  • random sampling from a finite lot for the consumer’s risk at the LQ,
  • random sampling from a process for the producer’s risk and the tabulated values of the operating characteristic curves.

Applying Procedure B could eventually be considered when a MS considers it continuously captures all updated parcels during its daily operations and is running a formal quality reporting to other LPIS users than the Commission.

29.1.5 Acceptance ? Rejection

In the LPIS QAF, of course, the test result is not mechanically applied i.e. failure to meet a requirement doesn’t involve the literal ?rejection? and re-submitittal of the LPIS or trigger a financial correction. When a LPIS is found not to meet the desired quality, the MS in invited to further investigate the found issues and report on it.

Go forward to  The "Critical Defects" issue.

Go backwards to  Table of contents.
30 The "Critical Defects" issue

30.1 Introduction

As it was stated in the discussion document, critical defects are non-compliances having properties that obstruct the use of the parcel regarding either the functions of unambiguous localization of agricultural parcels or the unique identification for crosschecks of claims.

The nature of these critical defects can be different - non-persistent identifiers, incorrect topology, improper parcel design, etc. Some of them can be easily spotted by spatial or alphanumeric analysis of the geodata stored in the LPIS (for example, errors in topology). Others can be revealed only after an inspection of the Reference Parcel against up-to-date (current year) ground data.

The occurrence of critical defects takes part of the prime quality elements, which were fundamental for a correct LPIS operation and are applicable to all LPIS systems. Therefore the correct interpretation of the observations, related to that quality element, is of crucial importance.

30.2 The "potential critical defects" check, as part of the ETS inspection

The ETS offers an independent opportunity to inspect and validate the systematic occurrence of potential defects. Potential defects indicate an expected failure to perform the anticipated functions within the strict environment of the parcel inspection.

The word "potential" was considered essential in the definition of that measure, as it clarifies that any observations (made on the area of certain reference parcel), that might be seen to obstruct the correct use of the reference parcel, cannot be considered critical by default. They should be then analyzed in the context of the LPIS management and update workflow.

Such findings at parcel level will become an indication of a "real" defect, only when there is evidence that such anomalies are not handled and corrected in the LPIS update cycle prior to the farmer application process and the subsequent LPIS crosschecks.

A provisions list of "potential" critical defects, is given in Table 7 (quality measure 10106: Potential Critical Defects) of ANNEX I of the ETS inspection workflow. It is limited only to those defects that can be spotted during the parcel inspection, using current year reference orthoimagery.

They are as follows:

- **Inability to identify the boundary of the Reference Parcel** - the reference parcel doesn't enclose and identify a distinct unit of land. The land cover features assigned to be the boundaries of the reference parcel, are either no existing (or insignificant) or have been changed.

- **Discontinuity** - presence of internal non-agriculture land cover features, which could adversely affect the integrity and homogeneity of the land represented by the Reference Parcel. An example of that can be a non-agriculture linear feature (road or paths), which can almost of entirely cut the Reference Parcel.

- **Total absence of eligible features (or land)** - lack of agriculture land cover, which might represent eligible land.

- **Multi-parcel** - the inspected reference parcels is in fact a multitude of two or more clearly distinct units of agriculture land, which can be stored as separate reference parcels in the LPIS.

- **Multi-polygon** - A multi-polygon is a situation where one unit of land (identifier) actually contains two separately identifiable units (i.e. should according to the internal rules or even holds the actual polygons). It is common for cadastral systems. The issue with multi-polygon is that it does not allow unambiguous location of the agricultural activity, even if managed by the same farmer.

Some real examples of potential critical defects observed, are given in Specific examples of ETS observations and S9_Quality_measures_Milenov.pdf. An example of a special case of potential critical defect, which can occur in LPIS using cadastral parcels, is given here.

1. This critical defect is valid only for those parcels, holding “non zero” maximum eligible area
31 FAO Land Cover Classification System

version 4.3

31.1 Introduction

The EU Member States are currently using different conceptual frameworks in order to define and map eligibility, combining land cover and land use-related approaches and resulting in different classes, categories and legends, which in some cases are understandable only in a limited country-related context. This is a result of the variety of landscapes, climate, agriculture practices, land management approaches across Europe.

For a common Quality Assessment Framework and the LPIS in general, there is an obvious need for a universal identification of land and this is achieved by a classification of the land cover, rather than the land use. The harmonization of different Land Cover Classification Systems, so that data from multiple sources and data prepared in different application environments can be compared and integrated, is a crucial factor for the LPIS in order to guarantee equal treatment of the EU farmers in respect to eligibility. Any GIS (including the LPIS), in the best case, is an approximation of the reality with an inherited degree of vagueness and generalization of the information, resulting from human interpretation. Thus, the standardizations and formalization of the semantics of "land" is a key factor for proper communication between the LPIS custodian and the LPIS users in respect to the information content stored in the LPIS.

JRC proposes to use the FAO Land Cover Classification System (LCCS) to "map" the land potentially eligible for payment. FAO is the Food and Agriculture Organisation of the United Nations.

31.2 The Land Cover Classification System

The Land Cover Classification System (LCCS) is a comprehensive, standardized a priori classification system, designed to meet specific user requirements, and created for mapping exercises, independent of the scale or means used to map. The classification uses a set of independent diagnostic criteria that allow correlation with existing classifications and legends. It has been developed by FAO/UN.

Land cover classes are defined by a combination of a set of independent diagnostic criteria - the so-called classifiers - that are hierarchically arranged to assure a high degree of geographical accuracy. Because of the heterogeneity of land cover, the same set of classifiers cannot be used to define all land cover types. The hierarchical structure of the classifiers may differ from one land cover type to another.

The last version of the Land Cover Classification System, known as Land Cover Meta Language (LCML), has been issued recently. It addresses this LCML that is also proposed to become a standard in ISO TC211 (under ISO19144).

More information on LCCS, version 2 (currently used in the LPIS QA) can be found on GLCN, from where the software and manual can be downloaded.

A description of the LCCS concept and architecture is available also on: FAO Web site.

More information on the concept of using LCCS in the LPIS QA is given in S9_Quality_measures_Milenov.pdf

An example of specific land cover class, coded with LCCS 2.4.5 is given in Appendix A

Go forward to Practical application of the cumulative change.
Go backwards to Table of contents.
32 Practical application of the cumulative change

32.1 How to apply the measure for "the percentage of reference parcels which have been subject to change, accumulated over the years"?

32.1.1 1. Establish the starting position

The "starting position" is the moment from when a MS should start cumulating the change rates.

The starting position is given by the year of the earliest effectiveDate of any reference parcel within the LPIS QA scope for the current year.

Look into your ATS log of ATS module 131 to identify the effectiveDate-attribute for your system.

32.1.2 2. Collect the observations for the current year

Please apply the Art.6. instructions to obtain the change rates identified by analysing the farmer's declarations and the OTSC/CwRS observations.

32.1.3 3. Cumulate over the previous years

Create a spreadsheet table with the following columns.

- Year
- Farmer's declaration rate of change
- OTSC/CwRS observation rate of change
- Maximum rate (between both rates above)
- Cumulative rate (over the previous years)

Enter the collected rates for the corresponding years and apply appropriate spreadsheet formulas.

32.1.4 Examples and discussion

Two possible situations arise; for these examples, fictitious rates are presented in the tables:

CASE A: There is no continuous, cyclic, systematic refresh program. As a result, the earliest effectiveDate got stuck on the LPIS creation year (or, when appropriate, on the year of a subsequent refresh project).

<table>
<thead>
<tr>
<th>Year</th>
<th>Farmer's Declaration</th>
<th>OTSC/CwRS observations</th>
<th>Maximum rate</th>
<th>Cumulative rate</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td>start of the LPIS</td>
</tr>
<tr>
<td>2006</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>4.60%</td>
<td>2.60%</td>
<td>4.60%</td>
<td>4.60%</td>
<td>first count</td>
</tr>
<tr>
<td>2011</td>
<td>3.20%</td>
<td>4.10%</td>
<td>4.10%</td>
<td>3.70%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>5.60%</td>
<td>6.80%</td>
<td>5.80%</td>
<td>15.50%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>3.10%</td>
<td>5.30%</td>
<td>5.30%</td>
<td>20.80%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>5.20%</td>
<td>4.90%</td>
<td>5.20%</td>
<td>26.00%</td>
<td>threshold exceeded</td>
</tr>
<tr>
<td>2015</td>
<td>4.70%</td>
<td>5.10%</td>
<td>5.10%</td>
<td>5.10%</td>
<td>new start after refresh</td>
</tr>
</tbody>
</table>

In this case A, by 2014, the threshold will be exceeded and an acute refresh project should have been launched. The starting position for the cumulative rate is reset upon completion of this acute refresh.

CASE B: The Member State operates a continuous systematic refresh program that ensures the earliest effectiveDate never outdates the current year with a low number of years. In this particular example, by 2014, the oldest reference parcel would date from 2011.

<table>
<thead>
<tr>
<th>Year</th>
<th>Farmer's Declaration</th>
<th>OTSC/CwRS observations</th>
<th>Maximum rate</th>
<th>Cumulative rate</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td>start of the LPIS</td>
</tr>
<tr>
<td>2006</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>n.a.</td>
<td>n.a.</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>4.60%</td>
<td>2.60%</td>
<td>4.60%</td>
<td>0.00%</td>
<td>reset by earliest effectiveDate 2011 for 2014</td>
</tr>
<tr>
<td>2011</td>
<td>3.20%</td>
<td>4.10%</td>
<td>4.10%</td>
<td>4.10%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>5.60%</td>
<td>6.80%</td>
<td>6.80%</td>
<td>10.90%</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>3.10%</td>
<td>5.30%</td>
<td>5.30%</td>
<td>16.20%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>5.20%</td>
<td>4.90%</td>
<td>5.20%</td>
<td>21.40%</td>
<td>threshold not exceeded</td>
</tr>
</tbody>
</table>

In this case B, the threshold is not exceeded by 2014 as the 2010 observations are discarded as a result of the cyclic refresh activities.

- No acute refresh is required.
- The starting position moves down as the refresh cycles do their work.
- By 2015, the estimated cumulative rate would be 21.40% + 5.20% - 4.10% = 22.50%. The threshold would still not be exceeded and no acute refresh project will be needed. The 3-year refresh cycle is effective for the concerned change rates.
Creation of a valid GML state file

This section is presented to show examples and to assist you with the creation of a valid LPIS point zero state file

### 33.1 Example of a valid LPIS point zero state file

Download an example: 4_3_LpisPointZeroState_20101220_example.gml The GML file content is illustrated below:

```xml
<?xml version="1.0" encoding="utf-8" ?>
<cap:FeatureCollection
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
lpis_code="TEST-LPIS"
lpis_lot="*"
reporting_year="2010">
  <gml:boundedBy>
    <gml:Box srsName="EPSG:4326">
      <gml:coord>
        <gml:X>10.131254635</gml:X>
        <gml:Y>34.055141255</gml:Y>
      </gml:coord>
      <gml:coord>
        <gml:X>14.144205386</gml:X>
        <gml:Y>44.831708765</gml:Y>
      </gml:coord>
    </gml:Box>
  </gml:boundedBy>
  <gml:featureMember>
    <cap:ReferenceParcel fid="F0">
      <cap:geometryProperty>
        <gml:Point srsName="EPSG:4326">
          <gml:coordinates>12.970463244,44.292817075000002</gml:coordinates>
        </gml:Point>
      </cap:geometryProperty>
      <cap:rpID>GH832_A.0305.14/7</cap:rpID>
      <cap:referenceArea>54.231</cap:referenceArea>
    </cap:ReferenceParcel>
  </gml:featureMember>
  <gml:featureMember>
    <cap:ReferenceParcel fid="F1">
      <cap:geometryProperty>
        <gml:Point srsName="EPSG:4326">
          <gml:coordinates>13.016643059,44.277870450000002</gml:coordinates>
        </gml:Point>
      </cap:geometryProperty>
      <cap:rpID>FD832_A.0305.14/3</cap:rpID>
      <cap:referenceArea>2.9903</cap:referenceArea>
    </cap:ReferenceParcel>
  </gml:featureMember>
</cap:FeatureCollection>
```

Figure 1. Example of an LPIS point zero state file.

### 33.2 Content of a GML file

The INSPIRE Directive, imposes the GML format for the exchange of geospatial data. The following GML Application Schema is defined for LPIS point data 4_3_LpisPointZeroState_20101220.xsd. It must be referenced inside the GML:

```xml
xmns:cap="http://ec.europa.eu/dgagri/cap"
>
The GML file created by each LPIS custodian should contain, sequentially the following elements:

```xml
<cap:FeatureCollection
<cap:ReferenceParcel fid="F0">
<cap:geometryProperty>
<cap:Point srsName="EPSG:4326">
<gml:coordinates>12.970463244,44.292817075000002</gml:coordinates>
</cap:Point>
</cap:geometryProperty>
<cap:rpID>GH832_A.0305.14/7</cap:rpID>
<cap:referenceArea>54.231</cap:referenceArea>
</cap:ReferenceParcel>
</cap:FeatureCollection>
```

Where:

- **fid:** required by good GML practice. If it is provided, it must be a string that starts with either a letter or the underscore (_) character, followed by printable characters or numbers. fid attribute values must also be unique among all elements in the document.
- **geometryProperty:** a point representation of the reference parcel, giving X and Y coordinates (points shall be INSIDE reference parcels)
- **srsName:** information on the coordinate reference system, given such as an EPSG code, i.e. EPSG 4326
- **rpID:** the unique identification of the reference parcel
- **referenceArea:** the ?maximum eligible? area of the reference parcel, given in hectares.
Member States shall provide their reference parcels with the above information in the GML format, after they have performed a standard XML validation process (well-formedness and validity).

33.3 Tools for GML file generation

- Go to the Tools article to see the details.

Go forward to Example of the waiving of a potential critical defect.
Go backwards to Table of contents.

--Piotr 10:49, 23 July 2010 (UTC)
Example of the waivering of a potential critical defect
35 Case: agricultural parcel RP with unidentifiable boundary

35.1 Local context

The given example presents a reference parcel of the type AP for which, a section of the parcel boundary is not visible on the field, as the whole production block was cultivated at once with single crop. In the Figure below, Picture A shows extract of the orthoimagery (spatial resolution of 25 cm.) with the boundary of the reference parcel presented. Picture B shows the probable extend of the land under inspection (LUI) for that reference parcel. Picture C shows a close look to the section of the parcel boundary, which is not visible on the orthoimagery.

35.2 ETS observation steps:

The ETS operator:

1 - finds out that the LUI cannot be inspected, as the visual verification revealed that a certain part of the reference parcel boundaries do not match distinctive land features or follow well identifiable limits of land cover and/or land use.

2 - attests that there are non-agricultural (ineligible) feature present within a buffer of 5 meters each side of the displayed boundary of the Reference Parcel. As evidenced, a part of the artificial sealed surface, situated in the north-west part of the parcel is within that buffer.

3 - puts the observed eligible area, area declared and the reference area to value zero.
4 - skips the mapping of the land cover found on the LUI, as the uncertainty in respect to its location and extent, would cause ambiguity in the correct determination land cover and landscape features presented but marks the reference parcel as having a potential critical defect, related to ?inability to correctly quantify the land represented by the Reference Parcel?.

5 - checks for the availability of a waiver in Table A of Detailed Instruction 1 (Annex I), which can vindicate the presence of this particular potential critical defect, for the given type of reference parcel. See the ?How to?? Section below for details on identifying the reference parcel type. Based on the results from the previous point, he should select waiver 6 from Table A.

6 - verifies if the general conditions are respected in his particular LPIS implementation. See the ?How to?? Section below for details on verifying the general conditions.

7 - checks the minimum local conditions by confirming

   • there is only one single continuous land use crossing per unidentifiable LUI boundary, as evident from the reference orthoimage.

   • that none of the identifiable LUI boundaries crosses ineligible land.

8 - As the general and minimum local conditions are fulfilled, he uses waiver 6 and vindicates the presence of potential critical defect related to ?inability to correctly quantify the land represented by the Reference Parcel?.

<table>
<thead>
<tr>
<th>Unidentifiable boundary</th>
<th>AP, FB</th>
<th>Verify that APs are graphically declared and verify that no topological overlap between AP is allowed.</th>
<th>Check that there is only one single continuous land use crossing per unidentifiable LUI boundary and that none of the identifiable LUI boundaries crosses ineligible land.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unidentifiable boundary</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

35.2.1 Important implications

◊ The assignment of the observed eligible area, area declared and the reference area to value zero, ensures that the reference parcel is not counted for quality elements 1, 2 and 5.

◊ The waiving of the reference parcel regarding its potential critical defect, has as consequence that the reference parcel is not considered for quality elements 3 and 4.

35.3 How to?

These procedures should be followed only once for the inspection process as a whole. Results are reported in the ICS.

35.3.1 How to identify your reference parcel type?

Consult the ATS report to derive the reference parcel type:
1. Results from Module A1.1.1 confirm that it is a production block
2. Results from Module A1.1.2 confirm that it represents homogenous land cover under agricultural use
3. Results from Module A1.1.4 confirm that it includes adjacent fields of only one farmer
4. Results from Module A1.1.5 confirm that it contains only fields belonging to the same ‘crop group’
5. Results from Module A1.1 confirm that the reference parcel type is AP (agriculture parcel)

35.3.2 How to verify if the general conditions are met by the LPIS design?

1. Verify that APs are graphically declared. Module A1.3 confirm that there are attributes to store the digitized parcel area.
2. Verify that no topological overlap between AP is allowed. The description of the LPIS Feature Catalogue and the LPIS core Model reveal that no overlaps between agriculture parcels is allowed for the same period of use (StartDate-EndDate of the parcels are the same)

Go forward to Frequently Asked Questions.
Go backwards to Table of contents.
36 Frequently Asked Questions

36.1 How should we deal with confidentiality of the CwRS zones?

With the LPIS QAF now being included the Regulation 2009R1122, the MS should make the necessary arrangements to perform the inspection of the LPIS sample based on the CwRS imagery of the current year. As the CwRS sites are confidential until after the last day of the application campaign, this confidentiality should be respected. In the case OTSC and LPIS QA are performed by two or more different institutions, these institutions should make the necessary arrangements to ensure a timely LPIS quality inspection. This can be done through protocols that safeguard the confidentiality or by delaying the RP inspections until after the closing of the application, or by any other means the MS finds appropriate. Confidentiality itself should not be an argument for a delayed LPIS QA reporting.

36.2 How many images do we have to use?

Part of the objective of the LPIS QA framework is to provide a quantitative, unbiased and precise state of the LPIS. The objective of the ISO2859 standards is to provide the most cost-efficient sampling scheme for an ‘educated’ decision upon the results of the inspection. Both elements require strict random sampling.

Since the LPIS QA by default uses imagery, the sampling is in fact a "clustered design" where only the first inspected parcel of the site is strictly random and all subsequent parcels are geographically related (there is a maximum distance from the first parcel). We assume that this geographical relation can be neglected since in principle the same process and data sources apply allover the LPIS territory. However, one should minimise the potential exposure to cases where the assumption is false and MS should test the assumption ex post.

Therefore the conclusion must be:

1. USE ALL SUITABLE IMAGERY AVAILABLE, (suitable means: recent, VHR, JRC-specifications compliant, with no LPIS-related risk)
2. for 2010, for MS not applying the CwRS, three sites (on average) are applied

36.3 What is considered a homogeneous LPIS?

Assessing whether the RP population to be inspected is homogenous and thus constitute a single "sampling lot" relates only to the processes of RP creation and RP upkeep of the reference parcels. The physical nature of the reference parcels or the administrative subdivision on the Paying Agency/Regional centers who apply those processes can, but do not necessarily cause, heterogeneity.

As an ex ante rule, MS that have applied different methodologies for certain known subsets of parcels, should indeed define lots that contain all parcels created or managed with each methodology.

MS should perform ex post basic statistical analysis of the testing results to check that certain suspected sources of heterogeneity and impacts of identified RP categories (within IACS) are indeed insignificant.

Following ISO 2859/2-1985 (procedure A, LQ=2%), the sample size for any individual lot cannot exceed 1250 parcels. However not that for any given LPIS, inspecting two or more sub-lots will always require more resources than testing the whole.

36.4 How to deal with inspected parcels that are updated during the process?

This question addresses the difference between the eligible hectare value presented to the farmer on the pre-printed form (basis for aid application) and the area established nearly one year later (basis for payment).

It is safe to assume that for any parcel not inspected by OTSC or by the LPIS QA and not subject to a systematic update, eligible hectare value and established area are mechanically linked through the administrative crosscheck. This crosscheck applies to all parcels whereas the OTSC inspection covers only around 5-8 % of the agricultural parcels. For these reasons, the eligible hectare value is more representative for the LPIS as a whole.

This issue of reporting the effect of the operational update process is however extremely relevant

1. One would expect that all RP anomalies identified during OTSC and LPIS QA are processed by the start of the following aid application one full year later.
2. The difference in the rate of changed parcels identified and confirmed during the OTSC and LPIS QA and the total rate of transactions in the overall LPIS, provides an accurate indicator of how effective the LPIS is kept up to date and correct by the various processes. This difference is often referred to as the "NET" rate or the rate of "undetected" parcel change
3. Webservices could offer an automated instrument for follow-up of LPIS QA inspected parcels. Such follow-up would enable the MS to demonstrate that it addressed any found anomaly.

A note for the statistical experts: if the "NET" rate of undetected changes from point 2 approaches zero, i.e., the Member States claims it captures and implements all RP updates continuously, procedure B from ISO 2859-2 could be applied as the sampling plan in cases the MS already operates a formal quality reporting to other stakeholders than the Commission.

36.5 We have no CwRS experience, how should we proceed?

Since the direct aids are land area based and the LPIS is an explicit GIS requirement for IACS, GI knowledge should now be a core competence for any administration dealing with direct aids.

The LPIS QA provides a common testing methodology, described in a GI standard environment and taking on board the long experiences with CwRS. It should therefore not be too difficult to either:
36.6 Can the ETS inspection be performed by field inspection?

In principle yes, as for the area measurements of OTSC, we strive for an ideal where CAPI or field inspection should yield comparable results.

In practice this is not yet the case; The JRC is currently developing a testing methodology combining

1. a GNSS based survey specification for reference parcel boundaries
2. a field instruction for land cover mapping

This draft methodology will then have to be validated. Volunteers for this development and validation process are welcome.

Please note, that as with the OTSC area measurements, Field survey will be several times more costly than the CAPI inspection.

Also note that the adoption of a field inspection methodology by a MS will have an effect on the implementation of the sampling procedure. In particular, it would no longer make sense to "skip" a parcel on technical grounds (cloud cover, partially outside image zone...)

36.7 What calculations are underlying the prescribed ?sample size? for a given LPIS lot?

The ?sample size? is a direct result of applying ISO 2859/2-1985, procedure A, indexed on Limiting Quality at 2% for an LPIS lot of a given size. This ISO standard ensures a sufficient and the most cost-effective sample plan to make a statistically reasonable verdict on the total population. Some details are given in Figure 1.

![Figure 1. Single sampling plan indexed by Limiting Quality, Procedure A. Source: ISO 2859/2-1985, where (n) - sample size, (Ac) - acceptance number specified in the plan.](image)

36.8 What is meant by an ordered list of reference parcels to be ETS inspected, called ?sample pre-selection??

This list, called ?sample pre-selection?, is provided by the Commission (JRC). It contains an ordered and thus sequential list of reference parcel IDs which is approximately 3 times larger then the prescribed final ?sample size?. When performing the ETS inspection, the inspector starts with the reference parcel on top of the ordered list and inspects it according to the ETS procedure. When finished this parcel, he or she continues with the reference parcel on the 2nd place, and then the 3rd place, and so on. When the operator comes against any reference parcel that he or she cannot inspect due to e.g. cloud coverage, this reference parcel is skipped and the nature of its inspection problems has to be recorded. The inspection cycle continues until the prescribed number of reference parcels that has effectively been inspected (a required sample size) is reached.

The sample pre-selection list is ordered so that not only ?convenient? reference parcels are selected as ?inconvenient? parcels cannot be ignored.

**Example:** a paying agency operates one homogenous LPIS of 750,000 reference parcels. Sample size defined according to ISO 2859/2-1985, procedure A, indexed on LQ=2% is equal to 1250 reference parcels. A sample pre-selection, an ordered list of 3750 reference parcels is randomly generated and sent to the country. The ETS inspection starts. During the ETS inspection 300 parcels were skipped due to cloud cover or poor image quality. An operator should stop inspection after 1250+300=1550 parcels, having fully inspected 1250 parcels, labeled 300 parcels and recorded the outcome for all.

36.9 Can OTSC be used for LPIS inspection?

This question relates to the methodology of field survey/measurements with GNSS, applied by a field inspector. There can never be a direct applicability of the classical OTSC files of farmers’ applications to inspect the reference parcels. The sampling, subject and methodology are simply different:

- OTSC inspectors ‘determine’ areas of agricultural parcels claimed by farmers by an area measurement methodology
- LPIS QA inspectors verify LPIS reference parcel attribute values by large scale land cover mapping

36.10 When will the VHR satellite images be provided?

The procedure for LPIS QA image delivery is the same as that for the CwRS campaign. The raw image will be provided to a Member State within days, through an application called LIO.NET of the CID action. The Member State should then find a way to orthorectify that image.

Note that every Member State should select the zones (ensuring randomness) and then the European Commission will open the acquisition window with the image providers.
36.11 Why is the total eligible area calculated by summing up the recorded eligible areas of all reference parcels, both active and non-active rather than only active parcels?

In legal terms: Commission Regulations (EC) 2009R1122 and (EC) 2010R146 do not differentiate between "active" and "non-active" reference parcels. Article 28 doesn’t a priori exclude any type of declared parcel (reference or agricultural) and article 55 on “non-declaration of all areas” requires area values for all declared areas, including those “other uses” specified in article 13.8. "Activity" of reference parcels can thus not be assumed from article 34’s restriction “On-the-spot checks shall cover all the agricultural parcels for which aid is requested”.

In functional terms: The inspection process determines the area of agriculture land through the mapping of land cover. This is "potentially" eligible land (represents eligible ha) by applying an eligibility profile. The amount declared for aid per parcel is in fact one type of land use, it is not mapped (nor is there a need to do so) but recorded in IACS. Another relevant form of recorded land use is land declared for “other uses”, but not for aid. The two concepts land cover / land use are different and are assessed by two different measures. Both concepts should also be supported by different procedures in IACS:

- incorrect representation of agriculture land: --> LPIS update
- change in land use: --> verification procedure.

For more details on the LPIS population see question 16

36.12 What is the difference between categories 3. (incomplete processing) and 4. (erroneous processing) of the measure “categorization of the reference parcels allowing payment undue on ineligible land or excluding agricultural land”?

The difference lies (as between all categories) in cause of the problem: in category 3., the data were supposed/expected to be there, but they were not found; in cat. 4 some data were found, but these were not what was supposed to be there.

Examples:

3. e.g. permanent crop land from a scheme that wasn’t part of SPS/SAPS in 2003 olives, has not yet been entered in the LPIS, or simply, some parts of the territory were not mapped because nobody claimed there so far. In practice, the current inspection methodology will not detect many of such situations since it starts from parcels submitted for inspection.

4. The operator made a mistake e.g. he digitized a road centreline instead of a land cover boundary.

36.13 Is there a tolerance applied during the ETS inspection of the parcel?

There is NO technical tolerance applied during the ETS observations as there is no need to apply such technical tolerance, because:

1. the process is not establishing whether it is measuring the same land object or not. It IS SUPPOSED to measure the same land object, albeit with a different methodology.
2. the value for a major quantitative measure (?total eligible area?) is calculated from hundreds of parcels, any unbiased measurement is expected to balance out the small differences in measurement inherent to any measurement methodology
3. the other quantitative measure requiring accurate area measurement (?categorization of reference parcels allowing payment undue on ineligible land or excluding agricultural land?) has a conformance level (3%), well exceeding the CAPI measurement accuracies identified during the feasibility trial.
4. the acceptance numbers provided by ISO2859-2 imply some kind of practical tolerance, allowing many more individual parcels to fail the inspection than a simple proportion of the specified LQ would suggest.

36.14 The ETS inspection identified a non-conforming parcel, must I update this reference parcel and how?

The purpose of the ETS is to collect unbiased data on the LPIS as a whole, it is not intended as a main (and surely not an exclusive) information source for updating individual parcels. The ETS does however offer one possible trigger (?anomaly?) that drives the update process and an individual parcel?s ETS inspection result should thus be considered as a potential anomaly. So the Member State should:

1. consider updating all inspected parcels where an anomaly was identified
2. collect the required update information for these, in compliance with the existing procedures for that update process. The ETS inspection observations may not necessarily be fit for that purpose.

36.15 Who is ultimately responsible for the correct implementation of the ATS-ETS?

The Member State is the sole responsible for a correct and timely implementation of the tests. The JRC?s role in this process is

1. methodological: by providing the common technical documentation, guidance and templates.
2. logistical: by offering specific imagery to cover specific LPIS quality assessment needs. (linked to the CwRS acquisition program).
3. of a facilitator, by producing tools that enable the MS to demonstrate to the EC that their testing was performed correctly (e.g. sampling, automated screening of inspection records).

Especially regarding JRC’s logistical role, Member States should make provisions for contingency action in case no satellite imagery is captured under the CwRS program, i.e. procure alternative suitable images from the national mapping agency or separate contractors.
36.16 Do we need to inspect parcels that are declared only for "other uses" and have a zero value for maximum eligible hectare?

These declared parcels are an integral part of the LPIS, and they need to be identified to support unambiguous location of agriculture land. If their eligibility is set to zero, there should be a special procedure that validates their potential eligibility in the field before any payment can be made if such parcels would be declared for payment. This procedure has to be demonstrated by the MS.

As there have been no claims on these parcels and the eligibility value was set to zero, safeguarded by the verification procedure, some of these parcels have slipped "under the radar" of the regular upkeep processes. As result, they are now outdated and effectively represent a sub-population of LPIS reference parcels. A sub-population where we expect that the "maximum eligible hectares" value is outdated or missing.

In the 2010 exercise, the presence of these declared, but zero-eligible reference parcels is acknowledged and consequently a partial inspection is sufficient, in particular relating to the elements of "critical defects" and "declared area inside the parcel". In practice, no separate sub-population will be identified, but the zero-eligible parcels are detected and separately reported during the inspection procedure. Because they are not fully inspected, they are not counted as items in the prescribed sample. As an illustration of this procedure, for a 1 million parcel LPIS requiring a prescribed 1250 parcel sample, the inspection procedure would involve:

- 1250 fully inspected parcels (all seven quality elements) for every non-zero-eligibility parcel
- e.g. 216 partially inspected parcels (only two quality elements) for declared but zero-eligibility parcels
- e.g. 113 skipped parcels due to technical limitations that obstruct inspection
- 2421 of the original 4000 parcels in the pre-selection list are discarded. Parcel with sequence number 1579 of pre-selection list would be the last parcel to be processed (and by default fully inspected).

Please have a look at the difference between total population and sub-population.

36.17 For eight SAPS member states, the GAC criterion further restricts the MEA to agricultural land on a reference date (30 June 2003). How is this dealt with?

The GAC mask is considered a further restriction on eligibility linked to the land, comparable to the SPS entitlements which can further restrict eligibility of a given application. For the LPIS QA, the GAC issue is addressed by performing some extra data processing and by complementary reporting to the common ETS inspection.

The extra processing consists of:

1. clip the available ETS observations done on the land under inspection (LUI), with the historical GAC mask. This results in a "land under historical GAC" or LUHG.
2. reperform the relevant data processing measures already done on the LUI for the (clipped) observations of the LUHG.
3. report on two scoreboards: one for the LUI and one for the LUHG.

These extra steps for SAPS member states with a historical GAC restriction are described in a separate Annex V.

36.18 We are already performing an LPIS refresh, do we still need to perform the LPIS quality assessment?

YES, but please note:

1. If the refresh is part of an continuous cyclical update process, no special provisions are needed.
2. If the refresh activity involves improved data specifications ("upgrade") or represents an isolated update project, the mix of "old" and "new" reference parcels cannot be considered a homogeneous population. As a result, two separate lots should be inspected:
   ◊ this assessment of the two halves, inevitably involves a bit more inspection than assessing the whole;
   ◊ it offers immediate confirmation of the effectiveness of the ongoing upgrade/update project or it will identify which issues remain to be addressed well before the refresh project terminates.

36.19 Should we alter the CwRS programming parameters to comply with the LPIS QA imagery recommendations?

In general: NO

- The sample pre-selection generates a list of parcels that numbers more than three times the prescribed sample size. If the recommendations, e.g. capture angle are not respected for a particular acquisition, you can choose "ex post" to skip the inspection of any parcel under that zone and simply continue with the next parcel in the pre-selection list which lays in a zone that does meet de recommendations. This is similar as if no image was captured on the zone.

   ◊ note that the historical success rate for CwRS image capture is more than 90%, so ignoring some zones is not expected to jeopardize the availability of imagery for inspection
   ◊ note that these LPIS recommendations do not impact on the CwRS activities of farmers' applications. Zones "skipped" for LPIS QA are still valid for CwRS.

- Contact JRC only if you fear your current CwRS image programming will provide you less than three images that meet the recommendations.
- If you decide to skip a zone with an image acquired, please motivate this decision only on a failure to meet the recommendations.
36.20 Do we need to identify and include all possible LCCS land cover classes for the eligibility profile?

NO, unless you have been using a too general approach towards eligible land, there should be no need to define or add new land cover classes:

- The landcover classes involved are strictly those which have already been identified in your IACS procedures to determine eligibility.
- Where do you find these land cover classes? These should be listed in
  1. the legend/mapping key used to delineate eligible land during your LPIS creation
  2. the field instructions used by the OTSC inspector for determining the agricultural parcel
  3. the instructions used by the CwRS operator (CTS and national top-up)
- The FAO LCCS is simply a structured way to name (and describe) the land types you have already identified inside your system

Please note:

- Generally, one national class corresponds to a single LCCS class
- It is possible that one national land class turns out to consist of two or more LCCS classes e.g. ?grassland? can refer to agricultural land (sown) or (semi-)natural vegetation.

IF THIS IS THE CASE, PLEASE DIFFERENTIATE THE NATIONAL PARENT CLASS. i.e. define national subclasses for each LCCS component for the purpose of the ETS inspection

- It is unlikely that two different national land classes would relate to a single LCCS class

For your mapping convenience, there is an explicit 'simplified' legend included in ETS version 4.3.

36.21 Do we need to delineate non-agriculture land cover during ETS inspection? Do these non-agriculture land cover types have to be coded within LCCS?

NO, non-agriculture land cover is delineated only when it needs to be excluded from the inner area of the agriculture land cover, notably if the patch of combined non-agriculture areas exceeds 0.1 ha. This delineation represents the "hole" of the doughnut. Smaller "holes" are allowed, but not compulsory.

- The list and description of non-agriculture land cover classes of relevance to the ETS, are given in table 6 (measure 10105) of Annex I ) and no LCCS codes are designated for these classes.
- Please note that you should report the abundance of all non-agriculture land cover features (even those not delineated) by land cover type of this list.

36.22 How do the measures relate to the quality element indicators? (aka: Which non-conforming parcels are counted where?)

The arrows in the figure below provide the links between the RP quality measures with conformity levels and the LPIS quality measures. The latter directly relate to specific LPIS quality elements.

- RP with un-waivered critical defects (10106_2), are considered non-conformant. They are reported in measure 10205_2 (Table 14.2 of Annex I).
- RPs with ?area-based? non-conformity - quality measures 10102_2 and 10102_3 - are reported in Measure 10202 (Table 11 of Annex I).
- The DQ_Scope of Table 9 (10107) comprises all reference parcels, which are considered non-conformant and for which the cause of the presence of the given non-conformity should be investigated and reported. This includes the ?area-based? and ?unwaivered critical defect? types of non-conformity.
- The number of causes for non-conformity is reported in measure 10204 (Table 13 of Annex I).

Correspondence between the quality measures at Reference Parcel and LPIS sample levels

For QES, reference parcels having more than 10% difference between the observed eligible area (rounded to 0.01 ha) and the area declared, are considered non-conformant as well. However, if they are conformant in respect to the other quality expectations at parcel level, they are not subject to quality measure 10107, as the cause for the difference is obvious and out of direct control of the administration (farmer behaviour).
36.23 How to implement measure 10208 on QE7?

Please apply the following clarifications:

- **area not found**: the difference between area declared and area determined regarding only eligibility conditions on the land. This means that for SPS the availability of entitlements is not considered. i.e. the second clause of 2009R1122 art 2(23) and art. 57(2) are not applicable.
- **use 2010 data**: although 2009R1122 art 84 (1)(d) calls for a bulk reporting on July 15th, the area not found? for this measure should have been determined before late autumn. See 2.4 of the art 34 guidelines
- **add up the values of the positive differences** on an application by application basis. This way, only over-declaration in relation to eligibility criteria (2009R1122 art 58) is considered.

36.24 Can you explain the difference between the "total population" and the "sub-population"?

Please look at the diagram below:

![Diagram showing total population and sub-population](https://example.com/diagram.png)

36.25 How to implement measure 10207 on QE6; esp. what 'collection of parcels' has to be used as denominator for the two rates of change?

Although the scope of the measure relates to all parcels declared over the previous years, to calculate the rate of change for the year under assessment, only the information relating to that particular year shall be used for the annual change rate calculations. This means that:

1. 2010 rate of change declared by farmer = number of parcels with change notification by farmer in 2010 divided by the total number of parcels declared in 2010
2. 2010 rate of change identified by inspectors = number of parcels with change discovered by inspectors in 2010 (classical OTSC + CwRS) divided by the total number of parcels inspected in 2010 (classical OTSC + CwRS)

Go forward to Discussion pages (shared experiences) to see the details.

Go backwards to Table of contents.

--Wim 12:53, 5 February 2010 (UTC)
Discussion pages (shared experiences)

This space is for You. We have not set up a formal forum, with moderator and specific software but trust that this Mediawiki environment allows you to place your comments on these pages.

Go forward to  Member State question

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38 Member States’ Questions

38.1 Q&A

If you have a WikiCAP account, please feel free to add questions or complement or enhance the existing entries.

The current notation convention = MS: question? > Answer [link]

38.2 ATS

- PT: How much time is needed? > See the ATS presentation
- PT: How to prepare (e.g. using a consultant)? > See the ATS preparation and this ATS presentation
- PT: How does ATS relate to ETS? > See Initial ATS conformance testing and ATS presentation
- PT: Does the ATS scoreboard need to be communicated to JRC? > See Reporting on ATS conformance. The scoreboard should be included in the Initial Reporting on ATS conformance.
- ES: What is the type of RP? (parcela or recinho)? > Consult your results in the ATS scoreboard template. It needs to be established according to the available definitions.
- DE: Must the ATS be performed? > See the Inspection method. Although the ATS is not required by the the Art 6. of Regulation (EC) No 1122/2009, it is an integral part of the LPIS QA methodology. Without performing an ATS, there is a considerable change that inappropriate LPIS attribute values are entering the ETS.
- IT, DE: A_1315 how do we have to consider "farmedArea"? > consider it as total area declared (i.e. recorded in the system, summed over all farmers declaring on that parcel).
- UK: What (FAO LCCS) land cover classes should be included in the eligibility profile? > See our FAQ

38.3 ETS quality elements

38.3.1 The positional accuracy measure

now fully obsolete

38.3.2 Maximum eligible area E1

- PT, SI: Is the 2% tolerance not biased on parcel size? > It is not "biased" as such, but individual small parcels may be subject to smaller precision (see this presentation).
- PT: How to delineate? > see important considerations
- PT: Can a confirmation of area recorded suffice? > No, the inspection method must be strictly followed. Important consideration
- PT, MT: Is there a minimum size for parcels? > Not directly, the art 13(9) of Regulation No 1122/09 mentions an optional minimum size for agricultural parcels.
- PT: What about differences observed between various orthophotos? > The inspection is performed on a dedicated reference image, additional images can provide additional information for the CAPI. See our guidelines
- NL: Can negative and positive results compensate each other?  
- NL: How to handle parcels with a clear difference between the delineation according to the inspection and the deleniation in LPIS that results in a neutral effect on the total area? This can be the case when for the inspected parcel there is area found on one side of the parcel that is not eligible (but is part of the LPIS parcel) and on the other side of the parcel there is area found that is eligible but is outside the LPIS parcel. Both areas are more or less of the same size. > If the LPIS delineation does not match the LUI, there is a potential critical defect and nonconformity. In one specific case the area can be taken into account.

38.3.3 Distribution of problematic parcels E2

- EE: In SAPS, RP can record less agricultural land than is physically available as the border of 30 June 2003 must be followed. Please clarify. > See the methodology and our FAQ

38.3.4 Categorisation of parcels E3

- DE: Do all parcels have to be assigned to a category? > NO, only non-conforming parcels; see table 9 / Measure 10107 of ANNEX I
- EE: What are the differences between 3. and 4.? Please give us some examples. > See our FAQ

Does ?contaminated? reference parcel (10102_3) have a minimum limit, like the 0,1 ha?

38.3.5 Critical defects E4

- PT: Does a parcel under change (e.g. road being constructed cutting it up) to be considered defectues? > See the The "Critical Defects" issue
- DE: What is a parcel with a critical defect. > "Critical Defects" issue
- EE: What is difference between ?discontinuity? and ?multi-parcel? ? In some cases in examples they look the same. > The difference is subtle, A discontinuity relates to the possible failure to follow up a feature that should have split up the block. A multparcel relates to a clear failure of the resulting reference parcel (block or other) to be considered a single unit of land use.
- DE: A physical block has clearly identifiable outer boundaries. But within the reference parcel the boundaries between land cover features are unclear. Is it a critical defect? > No, it is not. Also note that v4.3 of the ETS highlights that, unless coupled payments are involved, an aggregated LC inspection legend may be used (see Annex III). The mapping of the land cover using solely the classes from this legend, might resolve the issue since probably some of the internal boundaries never needed to be mapped.

38.3.6 Area declared inside the RP E5

- PT: What is the population (claimed parcels/ declared parcels)? > See our FAQ. The LPIS population is defined in the discussion document.
- PT: Polygon area or eligible area? > See Table 15 of Annex I
38.3.7 Effectiveness of update processes E6

- PT: How to count the 25%? > See Annex IV
- EE: The cumulated rate is calculated only by using maximum (bigger?) of two rates? (indicated by the farmers and change identified by the inspectors) > The working rate is defined as the maximum rate of the two. See our guidance
- PT, EE: What is the base to start counting? > From 2010 or the year of the oldest parcel; whichever is latest. (See Annex IV) and our guidance
- PT: What types of LPIS update are to be considered? > Land (cover) changes reported by farmers and identified by OTSC inspectors
- PT: Is this indicator reset after a systematic update? > YES (See Analysis of IACS data).
- DE, DK: What is understood under "systematic refresh" > A verification of the state of all reference parcels followed by an update or correction where necessary (see Glossary).
- DK: Is this accumulation made on the "gross changes" including changes that already have been updated or on the "net changes" only including changes which are not updated? > Only changes which escaped the administration's attention are considered. See Analysis of IACS data
- DK: Is a modification of the attribute of the reference parcel (not the shape and area), considered as change? > Only permanent physical changes of the land that impact on the IACS in general and eligibility of the land in particular are considered. See for more details Annex I and Annex II
- DK: Should all changes in the geometry be counted or do we exclude all changes not caused by changes in the land? > Only consider permanent physical changes of the land that impact on the IACS in general and eligibility of the land in particular. Use the data flow schema to identify which geometry changes to discard.
- EE: Will 25% be calculated by the changes in whole LPIS or by the changes of reference parcels within the sample? > The whole LPIS (See Annex IV).
- EE: Will % be calculated on annual basis or cumulated over the years? > See Annex IV.
- EE: After systematic refresh will % be calculated from zero? > YES

38.3.8 Relation with the irregular claims E7

- PT: What irregularities to consider, all or those linked to the sample? > Consider all applications
- BE-FL: Must those 2% must be calculated: on "claim" level, or on "parcel" level? > On application level, there is no direct link to the LPIS reference parcel sample
- PT: Irregularities of previous or current year? > Current year
- EE: Calculating "amount not paid". Is it associated only with the area problems which are directly caused by LPIS? > The "amount not paid" is a -at least in part- caused by a failure of the LPIS to inform the farmer and do an effective crosscheck.

38.4 Secondary elements

- DK: Should these elements be taken into account on a voluntary basis or are they mandatory elements in the framework? > They are not mandatory and no formal measures are published.

38.5 Quality measures of Annex I

38.5.1 Quality measure 10102 (RP_MEA)

- BE-FL: How do we cope with cases where parcel borders do not correspond exactly with land cover feature borders or this border can?t be delineated correctly without the information given by the farmer? > The ETS flow-diagram version 4.2 accommodates for this.

38.5.2 Quality measure 10103 (RP_ELC)

- BE-FL: It is quite common that there is a strip of grassland next to a arable parcel (headland?) Are headlands regarded as a different land cover class? If so, how to cope with this in a practical way? > In principle, they are different land cover classes (grassland/arable) but if the width of a strip prevents separate mapping considering the ETS technical environment used, merge the smaller into the main polygon without individual identification.

38.5.3 Quality measure 10104 (RP_ALF)

- BE-FL: How to count hedges/trees/ditches that form the border between 2 reference parcels. Is it OK to count them twice, and if not, how to choose? the parcel the landscape feature is attributed to? > Elements and the area they represent can NEVER be counted twice, you should choose as your national procedures prescribe.
- BE-FL: When does a hedge stop and a new one begin? If there is a gap of 10 meter in between or?? > Use the national procedures and mapping rules.

38.5.4 Quality measure 10104_2 (RP_ELF)

- BE-FL: The occurrence of eligible landscape features outside agriculture areas, but inside the Reference Parcel is impossible since our Reference Parcel = agriculture area. Is it OK for us to skip this quality measure? > No, you cannot ?skip? a quality measure. If your assumption is correct, zero occurrences should result from the test.

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38.5.5 Quality measure 10105 (RP_ANF)

- BE-FL: Do we only need to count the permanent, non-eligible features? > YES, this is a difference between the LPIS QA inspection and the CwRS AP determination.

38.5.6 Quality measure 10106 (RP_CRA)

- BE-FL: Even with the examples provided the definition of the various potential critical defects is not always clear. Can JRC give more examples on critical defects? > Yes, but only when the preliminary results from ETS inspections become available.

38.5.7 Quality measure 10102_2 (RP_CNF)

- BE-FL: Why are parcels with an area larger than 103% of that of the reference parcel regarded as non conforming? > This 3 % threshold was derived from art 55 and 58 from Regulation 2009R1122. Correctness itself is defined as a two-way deviation from the true value.

38.5.8 Quality measure 10102_3 (RP_CNT)

- CZ: Are there any rules defined for cases when small pieces of non-agriculture land cover areas along the parcel boundary are included inside the reference parcel? Can they be considered just as LPIS boundary adjustment problem, rather than as presence individual ineligible areas inside the LPIS block? > If the "small pieces....boundary" are caused by technical reasons (mapping mismatch, shift of orthoimagery) they should not be reported. They should be, when they represent a feature that is individually distinguishable inside the LUI, regardless the observation method.

38.5.9 Quality measure 10107 (RP_CEA)

- BE-FL: Is it possible to have an even more detailed instruction/definition/examples for each cause of anomaly? > Yes, when the preliminary results from ETS inspections become available.

38.5.10 Quality measure 10206 (LPIS_RP_DCA)

EE: As the we cannot measure correctly the observed eligible area for those reference parcels that have potential critical defect ?Unability to indetify RP boundaries?, they are not used in the calculation of Quality element 1. Should these reference parcels be excluded for the calculation of Quality element 5, as well? > Yes. The set of parcels used for QE5 is the same as those for QE1.

EE: Would the reference parcels with Area declared = 0 be considered as ?incorrectly declared?? Should we exclude them from the calculation of Quality element 5? > No. The reason for their inclusion is that a farmer should declare all his land (whether for aid or other uses) and that a MS should monitor the land use for a/ check this obligation and b/ prevent undue application on abandoned land. If there is a system in place to prevent these non-declared lands from reentering IACS unchecked, we consider it NOT to be a problem.

38.5.11 Quality measure 10208

- BE-FL: We propose: ?The OTSC rate of irregularities shall not exceed 2%. If not, the rate shall not be higher than the rate observed in the preceding application year. Can the definition be amended in the way proposed? > To be discussed in the DPMM.

38.6 ETS Implementation

38.6.1 Sampling

- PT, DE: How to select a representative parcel sample? > Reference Parcel Sampling
- ES: How does the pre-selection work? > Reference Parcel Sampling: Sample pre-selection procedure
- DK: How should a homogeneous set of reference parcels be understood, what are the criteria for a homogeneous sub-population? > See our FAQ
- PT: Should the information of the previous year be used for the sample creation? > Yes, but only to identify reference parcels that were declared during the previous application year. See ETS Methodological background
- ES, DE, PT, EE: How are "active" parcels defined? (claim / non-claimed declared) > See our FAQ
- EE: Is the "sample size" the number of parcels that must be inspected by the member state or is it the size of sample (pre-selection) made by JRC? > The former. See ETS Methodological background.
- DE: must all RPs of all RS zones completely be delivered to the JRC? > NO, only ID,X,Y and RefArea
- DE: Which deadline concerning that RPs should be forwarded ? > See the 2010 instructions
- PT: Should a partial or complete LPIS be provided to JRC? > A complete set of POINTS representing Reference Parcels should be provided. See also Sampling procedure.
- BE-FL: Should we skip parcels if parcel borders are unclear e.g. when borders are lined with trees with large canopies. If so, should we use the code ??C4?? > No, skipping can only be done for technical reasons (cloud cover, outside active image, radiometric artefacts).
- BE-FL: Do we check the preprinted parcels which were sent to the farmer for his single application or do we take the newest version of the reference parcel (including e.g. changes made by the farmer) for the 2010 campaign? > The reference date is that of sending to the farmer
- BE-FL: Do we skip reference parcels that don?t exist anymore? > No, skipping can only be done for technical reasons.
- BE-FL: Can we skip these parcels which were already changed between sending the population for sampling and the execution of the ETS?> No, skipping can only be done for technical reasons, See also our FAQ
- DE: Is it expected that from 2011 onwards non-clipped lots only will be accepted and all reference parcels of a CwRS Zone have to be sent? > See question 3 from the Q&A from the LPIS workshop in 2010. You could consult also the scope of the LPIS QA
- DE: The ETS reporting package should include the LPIS polygon zero state, described as an extract from the LPIS data under inspection, i.e. reflecting the state at the first step of the ETS. Is it the LPIS sate at the date of pre-printed form? > Yes.

38.6.2 Orthoimagery and LPIS QA zones

- ES: How to select the max 3 areas for LPIS QA > There is no maximum of three, see LPIS control zone selection
- PT: Can aerial images (50cm) be used next to CwRS? > YES, See Orthoimagery use. Please provide the shapes of these aerial zones during
the sample pre-selection.

- UK-NI: Can we move inspection zones during the campaign? > Only if 1/ JRC has used your full LPIS to produce the sample pre-selection and 2/ timely availability of the imagery for the alternative zones can be guaranteed. See LPIS control zone selection.
- EL: Do we use the CwRS zones of the previous or of current application year? > Only the current application year.
- DE, IT: Please change the sensor assignment and restrict the angle of view for our CwRS imagery. > See our FAQ.
- BE-FL: Should we check the reference parcels preprinted in campaign 2010 on 2009 (VHR) orthophotos. For future years the deadline of returning the results could then be advanced to July, so member states have time from +- January (preprint-moment) to July to perform the test. > NO, the 2009 CwRS zones are not representative for the full 2010 state of the LPIS as any anomalies on these parcels should have been updated in the system.

### 38.6.3 Methodology

- ES: What with modifications of the parcel? > See our FAQ
- DE: What is the fundamental basis for the ETS? > ETS Methodological background
- DE: Can the ETS be performed with field observations rather than RS? > See our FAQ
- DK: Can classical on-the-spot checks be used for the assessment? > See our FAQ
- DE: What is the difference between eligibility and land cover/land use. > Eligibility relates to the validity of all elements of an aid application for a given scheme; land cover relates to the physical nature of the land; land use relates to a person's right or activity to generate money on that land. See Land Cover Classification System and Land Cover and Eligibility
- DE, ES, DK: Can tolerances (like in art 34 OTSC) or triviality limits be used? > See our FAQ
- DE, ES: Is visual inspection and recovery of the parcel boundaries allowed? > No, the inspection methodology has to be fully applied
- DK: How does the lacking of clear definitions for eligibility affect the described procedures? > The ETS observes land cover types which are linked to eligibility by the eligibility profile. (See Land Cover and Eligibility and Land Cover Classification System). Consult also the following presentation
- BE-FL: Should linear elements, found on the LUI, be digitized during ETS?: See ANNEX III
- UK: how to code temporal ineligible features in the ETS, are there ?decision path? for classification?: The ETS inspection represents a snapshot of the situation in the current application year with an estimate of eligibility as it will be used for aid application.
- EE: In case of ?farmer?s block? (of physical block subdivided for farmers) there is sometimes no visible barrier between reference parcels, because parcels were digitized by using borders of cadastral units. What is LUI in this case? > The LUI is, as always, the land represented by the reference parcel. However, in the described situation, the LPIS inspector is unable to delineate the agriculture land cover as required, i.e. the parcel counts as defective parcel, and should be flagged as ?non-conformant? AND as ?having potential critical defect?. In respect to the eligible area observed, there are two options, depending on the situation:
  - If no ineligible land cover is present in and around the LUI, the recorded reference area is filled in for the observed area.
  - If any ineligible land cover is present in or around, then both the Area Observed and the Area Recorded in the LPIS are both set to zero. This dual change prevents the parcel to bias the the ?total eligible area? of the sample.
- EE: Should all the non-agricultural land cover features also be digitized as separate geometric objects (areas, lines, points)? Is it necessary to give them LCCS code? > NO,
  - all types of non-agricultural land cover features must be detected *
  - only those located inside the initially mapped agriculture land cover features ? exclusions? - must be accounted and quantified
    - if bigger than 0.1 ha, mapped as polygons.
    - smaller non-agricultural features, could be graphically represented as points or lines.,
  - There is no need to codify such land cover classes in LCCS.
- EE: Can we also exclude non-agricultural objects smaller than 0,1 ha from the area of the eligible land cover? If we have to estimate their area, we must map them anyway. > The area of the non-agricultural objects smaller than 0,1 ha should always be deducted. Mapping is one way, but there are others to estimate the area value e.g. scorecards
- EE: How to digitize eligible landscape features. Are they part eligible land cover? For example, there is a group of trees and we map it as polygon and there is grassland around it, which is also digitized as polygon. Can these polygons overlap or should there be ?hole? in polygon, which represents grassland? > Landscape features specified by GAEC (defined by the MS) are part of the eligible land cover. However, land cover must mapped unambiguously so areas can?t be counted twice. Topological rules apply and a ?hole? in the ?doughnut? is required.
- EE: There are many different eligible land cover types described in example of eligibility profile (Annex III). Some of them can not be clearly distinguished in VHR image. We can get only one image for CwRS in 2010, so multi-temporal analysis cannot be performed. For example: different types of grassland (seed-selfed or sowed) can not be distinguished, because they look the same in VHR image. One possibility is to use the data provided by farmers in 2010 to determine land cover types. Another possibility is to classify land cover more generally: arable land, grassland, permanent crops. > The Eligibility profile acts as a mapping key. If the types of grassland cannot be distinguished, ignore that classifier and merge the land cover types concerned into a joint class.
- EE: About acceptance decisions. Our sample size is 800 reference parcels. How exactly should we calculate acceptance numbers for quality elements and how to use them to make decisions about conformance? > See our guidance
- BE-FL: What is the advantage of redigitizing from scratch? The purpose of this exercise (the ETS) is to check if there are ineligible elements in the reference parcels (that isn?t accounted for in the net reference area)? and to have an indication of the risk to the fund this could impose. > In fact, purpose of the ETS is to verify if the LIPS is fit for CAP purposes via a series of observations. Fit for purpose is not the same as meeting the national LPIS specification. The Mapping from scratch is a full part of this independent external inspection and allows to collect more factual data is probably stored in the LPIS.
  - This latter ?over-collection? allows for analyzing of any identified issue and for modeling of the changes in the rules.
  - Copy/Pasting of the RP boundaries is a different data collection procedure with different risks and probabilities. It would require a change of the statistical decision rules.
- BE-FL: If the original reference parcels have to be shown anyway, what is the use of not starting from a copy? > The original parcels are required to a/ determine the LUI and 2/ enable a completeness test of the LPIS (i.e. verify that all agricultural land was equally subject to inspection on the ETS)
- BE-FL: Can the procedure be changed so the operator can choose to start from a copy of the parcel or start from scratch, depending on the quality of the original parcel? > Version 4.2 of the inspection annexes allows for such ?copy/paste? equivalent under very strict conditions.
- BE-FL: Point 8.1.3. of the annex III mentions that ?the calculation principle should be agreed in advance with the Commission?. To who and before which date do we have send this? What?s the term we can expect an (dis)agreement? This is a general remark, not specifically linked to ETS. If you consider other land cover types than arable, permanent grassland, permanent corps (and for SAPS: household garden) as eligible, please make sure you have a derogation from the European Commission to support that position.
38.7 Organisational issues

- **DE**: Can the test be done by the LPIS-personnel of the paying agencies or must this personnel be independent from the paying agencies? > Both options are valid, as long as the test methodology is fully respected. The end responsibility always remains with the member state (see our FAQ).

- **PT**: Will the JRC provide feedback? > Not systematically.

- **PT**: Will the outcome of all indicators be weighted into a ?grand total?! > No, each quality element has a specific indicator that is considered independently.

- **PT**: Will corrective measure be needed to be done in one or two years? > It depends: probably one year for individual non-conforming parcels and possibly several years can be proposed for LPIS wide corrections.

- **ES**: What is the status of the ETS and ATS specifications at WikiCap? > See our FAQ; it must be performed per homogeneous LPIS.

- **DE**: Is only the first pillar relevant? > In the current ETS setup: YES. See ETS Methodological background.

- **DE**: How often must ETS be performed? > Annually: see Analysis of observed data.

- **DK**: Will the Commission develop or make tools available to meet the objective of standardised analysis and reporting formats? > There is an on-going research project on Geoportal and WebServices. Please monitor our portal developments.

- **DK**: What is to be done by the Member States and what will be done by JRC? > See Inspection method and our FAQ.

- **EE**: Does the performance of the ETS require a specific software development? > NO. ETS can be performed with any standard (off-the-shelf) GIS/Image processing software. Some adjustments of the environment might be necessary, using the standard functions available.

- **EE**: In Estonia we have eligible land cover type which is natural grassland covered with trees and/or bushes no more than 50%. This kind of land cover is eligible only in 4 West-Estonian counties due to local farming traditions. Eligible hectare factor is 100% (we do not use pro rata system yet). Representation of eligible land? would be ?Conditional? (depends on the county where reference parcel is situated). What is the procedure of getting LCCCode to this land cover type, should we send definition to JRC and JRC provides LCCCode? > For the LCCD, Either contact JRC or feed the relevant classifies into the downloaded LCCS software. Note that "conditional" may in cases require more evidence than administrative location only to demonstrate that there is indeed grass under the observed tree canopy; not all forests in the 4 counties are subject to the derogation.

- **EE**: Reporting. How to collect raw observations during LPIS QA, is it possible at first to put them in MS Excel table and then to convert MS Excel table to xml file (which must be the final result)? > Yes, as long as the resulting XML schema is respected.

- **EE**: Explanation needed about ETS observations schema ftp://mars.jrc.ec.europa.eu/LPIS/Schemas/LPIS_Observations_v4.xsd What are the meanings of data fields? > the fields relate to the predefined tables of DQ_VALUES of the various quality measures.

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39 Findings, Q&A of the 2010 LPIS workshop

version 4.3

This document contains the positions of the Commission services on the issues identified by the working groups during the 2010 LPIS conference, held at Copenhagen, September 20th-22nd. It holds 2 parts

1. the individual Q&A, in sequence of the quality element concerned.
2. an inventory of issues and suggestions identified by the working groups with an index to the relevant Q&A topic.

These positions apply for the 2010 LPIS QA implementations and are, where appropriate, integrated in the version 4.3 of the annexes and corresponding guidelines.

The Commission services may revise their positions upon the findings, experiences and results of the 2010 LPIS QA implementation.

Ispra, Brussels, 15/10/2010

39.1 Q&A

39.1.1 1. The ATS is complicated and some concepts are unclear

On the complication side, there is not much that can be done:

◊ the ATS is no more than questionnaire that relates to the various elements of a model and the model itself represents requirements from the Regulation and best practices. In respect to the LPIS QA, which is focused on pillar 1 aids, one could consider module A_132 (cross-compliance attributes) accessory.

◊ The eligibility profile (part of the implementation conformance statement) is no more than an enumeration of elements identified module A_12

Regarding the lack of clarity of some aspects, the JRC takes note of these comments. However, please observe that

◊ the current version of the ATS, its concepts and relations, still relates to the LPIS core model representing pre-health check specifications.

◊ For several reasons, JRC chose to freeze the model and thus the ATS until the results of the first application become available. Preliminary results indicate that this 2010 exercise has uncovered a number of practices that should be addressed in the model (e.g. sub-parcel/super-parcel, the equivalence of all declared land,...).

An upgraded model of the LCM is needed before a new version ATS can be published. This new version will address the issues raised.

39.1.2 2. What should be the reference date for the input LPIS data, used in the ETS inspection? the date of the generation of the pre-printed forms for application or the date for the cross-check?

The Commission services acknowledges that for AP and FB RP-types, a lot of changes of the reference parcel are expected and processed in the period between the pre-printed form and the time of declaration by the farmer.

For 2010, the Commission services consider that the date on which the pre-printed form was produced represents the common reference data for the assessment of reference parcel information. This date ensures the availability of a documented status of information and of a uniform methodology covering all designs and member states. A number of the issues expected to occur with AP and FB RP-types are specifically addressed in the inspection guidelines.

39.1.3 3. Why submit the total RP population for sample-preselection?

This full population delivery is needed to verify the completeness of the LPIS population and representativeness of the sample. Both elements shall be verified at the screening stage. Because a very small sample is inspected, LPIS QA results would be biased if some categories of reference parcels were excluded from the sampling process; a yearly extract of the full population allows automatic detection of such exclusions.

As the full population involves a large and cumbersome dataset, the Commission services are open for alternative methods that allow verification of completeness and randomness.

39.1.4 4. Why map the land cover and not simply map eligibility?

The scope of the LPIS QA is to provide MS with knowledge over their full system. The Commission services request the collection of this detailed information during the inspection, in order to enable analysis of the nature, source and reasons for the problems (anomalies) found. The inspection of the reference parcel at appropriate land cover level can provide more evidences in support of certain findings, during the screening. Also, as land cover is independent from aid scheme, this information will become of primary importance for any activities in near-future, related to cross-compliance and second pillar of CAP.

Furthermore:

◊ The appropriate land cover classes are explicitly defined in 2009R1120 art 2 or by the Member State by way of its GAEC legislation.

◊ Unlike eligibility, land cover is stable over time and independent from member state. This allows a robust and uniform inspection method common to all member states.

To cope with an alleged extra cost of delineating land cover classes, rather than producing a single eligibility mask during inspection, the Commission services:

1. encourage using automated detection and delineation methods that give the necessary guarantees to correct interpretation
2. clarify that, unless coupled payments or pro-rata classes are applicable, the delineation key should NOT address the agricultural parcel level details, but SOLELY reflect "aggregated" land cover classes defined in R 1120/2009 art 2 and R 73/2009 art 124. These are ?arable?, ?grass?, ?natural grass?, ?permanent tree crop?, ?permanent scrub crop?, ?greenhouse?, ?irrigated rice?, ?short coppice plantation? and ?kitchen garden?.

The Commission services stress that the delineation of appropriate land cover classes is required only for the LPIS QA inspection. It does not require the LPIS reference parcels to differentiate this way neither graphically nor alphanumerically.

39.1.5 5. How to deal with temporary (ineligible) land cover features?

The classifiers used for the land cover types relevant in this domain are not affected by temporary phenomena. So, if the inspector can determine a feature temporary, considering the local context, he should ignore that feature and simply apply the ?underlying? land cover class.

It is a judgement call where the interpreter should apply his knowledge of the local practices: Some examples: ? The covering of grassland or arable land with a thin layer of sludge from the neighbouring canal will not change the long term nature of the land cover. ? A visible spray track on arable land will most likely be ploughed under by the next year. However a path between to gates in fence is likely to persist. Although such temporal variations influence the land cover appearance, they do not influence its nature or description, and so the classification works independently of the date of observation.

39.1.6 6. Different datasets (ortho-images) are used for the LPIS update and the ETS, Are the mapping results comparable?

The WikiCAP guidelines indicate a series of practical guidelines to consider regarding the use of CwRS imagery in the context of the LPIS implementation and of the landscape concerned. If in doubt, the MS can consider to acquire dedicated imagery with the same specifications as its LPIS ortho-imagery for a selection of the LPIS QA zones, while ensuring randomness and currency.

For 2010, Commission services will evaluate the MS's explanations that non-conforming results are caused by the sub-optimal nature of the dataset used.

39.1.7 7. Why re-digitize a parcel that appears unchanged on the imagery?

Formally, re-digitizing of the reference parcel boundaries is not requested, what is required is the delineation -via the various land cover features present on site-, of the agriculture land, which can be eligible inside the LUI. This mapping procedure provides not only a total area measurement value but also more detailed information on the nature and abundance of the eligible land contained within the reference parcel.

Fundamentally, the digitizing process is the default procedure to collect an independent observation and measurement on a parcel. Random variations of the observed values are an element for the probability statistics that are the basis for the acceptance decisions. Mixing ?copy/pasted? and observed data in the sample can create a heterogeneous sample that does not allow a robust conclusion of the results as long as there is no rule to ensure that ?copy/pasted? area/boundary is really ?true?. As a result, the current method does allow visual inspection, but only in cases where no challenge to the recorded maximum eligible area or correctness of the boundary can be made.?

39.1.8 8. Can additional information from rapid field visits (RFV) be used in support to the visual interpretation?

RFV can support visual interpretation. But please note that the main purpose of a RFV is not to provide supplementary information in respect to a proper delineation of an unclear LUI boundary. RFVs are primarily intended to clarify unclear cases of land cover/land use interpretation.

For boundary delineation with field instruments (GPS etc), there is not yet a validated survey procedure available, but even if there were, this would not be considered a RFV but rather a ?terrain inspection?.

39.1.9 9. Why distinguish between over- and underestimation of the maximum eligible hectare? Only he first one implies a financial risk to the fund.

The Commission services are not only interested in the financial risks to the fund, but also in the ability of the system to give the proper farmer support for the declaration process and to give an indication of the potential risk. As the differences are reported in gross terms appropriate conclusions can be drawn.

39.1.10 10. Tolerances need to be introduced (especially for area based non-conformance)

The Commission services has a clear interest in the reporting of the original ?raw? observations but the Commission services also acknowledges that non-conformances based on exceeding an area difference threshold, can be influenced by parcel size, source image characteristics and landscape as well as interactions between them.

Considering that the Commission services desires a simple and uniform inspection method and that Member states have some control over their source imagery, a dependency of the conformity level threshold on parcel size has been introduced. The resulting variable threshold is based on the 3% accuracy expectation and the theoretical mean polygon measurement uncertainties (?tolerances?) with 50cm GSD imagery and becomes (further reading):

<table>
<thead>
<tr>
<th>Reference area</th>
<th>Conformity threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 5000 m²</td>
<td>3 %</td>
</tr>
<tr>
<td>2000 &lt; 5000 m²</td>
<td>5 %</td>
</tr>
<tr>
<td>&lt; 2000 m²</td>
<td>7 %</td>
</tr>
</tbody>
</table>

In the LPIS QA methodologically, Member States shall report the %distribution of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account? with the raw observed data, but assess the proportion of non-conforming parcels using the above variable threshold.

The introduction of these size dependent thresholds creates "safety margins" of up to 140m² or 250m² for the smaller parcel categories. As a result, e.g. parcels with a newly constructed building inside the LUI could easily escape detection as non-conforming if only this area-based conformance test
were applied. To prevent this escape, the guidance introduces a separate conformance test on the already observed occurrence of particular ineligible features inside the LUI.

39.1.11 11. Why not to report only the true defects and skip reporting ?potential? cases?

To remove ?potential? defects directly out of the equation is not a good practice, as this would ignore a ?real? issue that was actually picked up during the common inspection process. The Commission services however acknowledge that a potential defect can be excused from being considered a true defect, in case all of the following conditions are met:

1. the type of potential defects can be described through well specified criteria
2. its existence is inherent to the particular reference parcel type
3. the defect doesn't jeopardize the farmer declaration and administrative crosscheck procedures.

The possibility to apply one ?waiver? does not entitle the MS to automatically ?whitewash? such parcels or to ignore to report on a parcel that carries other defects or indications of non-conformance.

Methodologically, the original number of potential critical defects will be reported at one ?intermediate- stage, whereas only the number of remaining true defects -where no pre-defined ?waiver? is applicable- will be used for the acceptance decision. Or, if no other potential defect is present on the inspected parcel, the applicable waiver(s) shall be reported but the parcel remains "conforming".

The Commission services proposes a variety of "waivers" and their conditions; the Member State shall indicate within their ATS-ICS which of these ?waivers? are applicable.

Guidelines will be adapted accordingly.

39.1.12 12. Why is a parcel non-conforming if (a part of) its boundary is not visible, even if the area encloses eligible land?

This is a particular type of ?potential critical defect?.

In general, the ?non-conforming? status is attributed to an inspected parcel if either it has a critical defect or if the eligible area found exceeds the conformity level. These conditions act independently.

Parcels with unclear boundaries do have a serious defect: the boundary of the LUI cannot be identified and hence the area cannot be measured via the common inspection method. For this reason they are non-conforming.

On the other hand,

1. visual inspection to excuse this ?potential defect? is currently allowed if the local field conditions cannot challenge the statement that the LUI encloses eligible land?. Practically, in absence of any measure of absolute positional accuracy in the ETS, the presence of any ineligible feature within 5 meter of the perimeter of the LUI constitutes a challenge to that statement.
2. for AP, FB and CP RP-types, specific waivers are introduced, specifying the external and local conditions to be verified for a vindication of this potential critical defect.

Parcels with a potential critical defect "inability to identify LUI boundary" that are excused by either of the two mechanisms above (unchallenged visual inspection or application of an appropriate waver) are still considered conforming.

39.1.13 13. When is there a need to do a LPIS ?refresh??

In the discussion document it is also written ?systematic refresh using appropriately recent data source (in preference ortho-imagery) should be investigated?.

The Commission services will prepare some documents on the refresh issue in the course of the next year. The findings of the 2010 LPIS quality assessment can be considered in the guidance to be delivered.

39.1.14 14. What is the meaning of and reason for this rate of irregularities from OTSC? If it is a pure IACS query over the whole population, it is already reported to the Commission services

The rate of irregularities from OTSC can be the result of a poorly functioning LPIS. As the LPIS should reflect agricultural reality with regard to the eligibility of the land, ideally, the OTSC should not detect a substantial amount of ?additional errors". If OTSC does detect significantly higher error rates from year to year, it can indicate the failure of the member state to address LPIS issues. This causal relation is not present in the existing reporting.

39.1.15 15. There is no added value for AP and FB to perform the ETS

Experience shows that reference parcels, based on AP and FB are not always as ?pure? as the member state assumes. The ETS, when correctly performed, will allow the identification of issues by systematically comparing the real world with information recorded in the LPIS.

It is agreed that with regard to the interpretation of the results on certain ratios a distinction between the different systems could be needed. This will be evaluated at the end of the first year’s exercise.

39.1.16 16. What will the Commission services do with the LPIS QA results?

It is important to point out that the exercise is above all a self-assessment exercise. It is a tool for the Member States to evaluate the situation of its LPIS and to determine the actions to be taken to remedy any problematic situation.

This is why the report, apart from the ratios as such, should focus on an analysis of the ratios and on an action plan indicating what measures will be taken to remedy the deficiency established as well as the time line by which this will be done.
As with any quality assurance approach, it allows the member states to be proactive.

The scoreboard results as such will not trigger the application of financial corrections. Although the scoreboard results are important, the Commission services are more interested in the actions that will be proposed to remedy the problems found.

### 39.2 Working group findings: experiences and suggestions

#### ATS and LPIS model elements experiences

- **Farmer area? not clear: Does it imply the declared, claimed area?** [TOPIC 1 + WikiCAP FAQ]
- **Subdivision of reference parcels (i.e. parcels and farmers blocks): Do legal boundaries indentify sufficiently the subdivision of reference parcels?** [TOPIC 11]
- **Rationale: ATS and ETS should be regarded as depending instruments?** [TOPIC 1]
- **Eligibility profile**
  - Can we create new (MS related) LCC codes? [WikiCAP FAQ + Annex III]
  - Can the same temporary features be mapped to different LCC? [TOPIC 5]
- **ATS reporting**
  - What should the ATS include (feature catalogue schema) [WikiCAP guidelines]
  - Is there any deadline to send it to EC? [EC] 2009R1122: 28/2/2011

#### ATS and LPIS model elements suggestions

- **ATS to the EC before starting the ETS?** In order to validate the MS ATS performed it might be of advantage to send preliminary ATS-reports to the Commission services. Does the JRC agree to give feedback? In case No 2= ?yes? what is the deadline for sending the ATS to EC? [to be discussed on bilateral basis]
  - **FC/AS issues**
    1. Make the application schema more understandable by adding practical examples. MS need an instruction. [TOPIC 1]
    2. More examples on feature catalogue
    3. More details on the LPIS core model [TOPIC 1]
    4. The term ?validity status? is not clear: that needs clarification [TOPIC 1]
    5. What is the expected format to send the UML schema? INSPIRE/JRC uses EAP
- **ATS: We need one or more clear use cases**

#### GML and data exchange experiences

- **GML is suitable format for exchanging spatial data**
  - **BUT**
    - requires knowledge,
    - big files with not much information in it [TOPIC 3]

#### GML and data exchange suggestions

- **Schemas as simply as possible, [TOPIC 1]**
- **MS still waiting for rest of XML/GML schemas?** In progress, introducing some innovations from the [TOPIC s above]
- **consider the possibility to receive/publish the orthoimagery via WMS**
- **consider the possibility to receive/publish the ETS results via web services**

#### CAPI Inspection experiences

- **PLUS:**
  - More efficient and less expensive than OTSC
  - Quality control more easy
  - **BUT**
    - Repeatability
    - Interpreting is agent dependent [TOPIC 7]
      1. Requires different competences than OTSC
      2. Large experience with CAPI operator: More representative sample
    - Interpretation is image dependent. [TOPIC 6]
      1. Lack of quality reference
      2. Positional accuracy of the images
    - Labour intensive. As all parcels have to be re-digitized. [TOPIC 7]
    - Not taking into account the changes from the farmers in the LPIS [TOPIC 2]

#### CAPI Inspection suggestions

If there are no clear deviations from the RP registered in LPIS it is not necessary to re-digitize the whole RP again. This will always lead to some deviation of the RP registered in LPIS, but is only due to slightly different operator actions. What is the reason of the systematic redraw? [TOPIC 7]
Population and sampling experiences

• Definition of total population? is not clear:
  Why to send total population to JRC for pre-sampling? > TOPIC 3
  What about RP that hold only LF? If these can under no circumstances be attributed to a single traditional reference parcel, they should be inspected separately. Note that such LF-only RP must therefore immediately border two distinct traditional reference parcels???

Population and sampling suggestions

• Change definition of total population: All reference parcels declared by farmers (if followed up in IACS-processes) or with non-zero eligible area
  Problem: Time gap between relevant date for the sample (equal to date of pre-printed forms) and the date for taking of the photo
    ◊ Solution 1 (preferred): if focus is placed on eligibility of parcels, the changes to reference parcels would not affect the test (or only very little)
    ◊ Solution 2: Instead of doing the ETS on the version of the reference parcels as pre-printed on the forms take the version as declared by the farmer. Problem: this way it becomes possible to cleanup the parcels before sending the sample to JRC
    Then in GML-file date of last update should be recorded
  > TOPIC 2

CwRS imagery use and alternatives experiences

• Elevation Angle problem (IKONOS) > TOPIC 6
  ◊ Shadows are a problem, time of acquisition in Southern Europe
  ◊ Hilly Terrain - Southern Europe
  ◊ Small parcels (easily goes over threshold - areal uncertainty)
• Problem to determine temporarily non-agricultural activities on 1 image set > TOPIC 5

CwRS imagery use and alternatives suggestions

• ETS test on imagery of same quality as the LPIS at least similar was also suggested
  • Input data the same for all MS? > TOPIC 6
  • Threshold 97 -103 % too strict > TOPIC 10
  • CwRS flexible season > TOPIC 6
  • Option for orthophotos paid by JRC budget? No, this is legally not possible. The VHR image acquisition uses a DGagri budget sub-delegated to JRC and is governed by Council Regulation 165/1994
  • New data or zones for ETS test? > TOPIC 6

Eligibility profile and Land cover experiences

• unclear what ancillary data can be used: application data, cadastre data, OTSC (rapid field visits), other (ortho)images
• define
  ◊ temporarily not used areas, example: wasteland close to canal > TOPIC 5
  ◊ when images tilt over different inspectors will come to different polygons > TOPIC 6
• cases with long boundaries of phys. block where 23 cm on 50 cm images decide between conformance > TOPIC 6

Eligibility profile and Land cover suggestions

• ETS is/should be an eligibility matter and not a LCC list; why digitalize up to 10 different elements in 1 physical block? > TOPIC 4
  • If MS must not split into non-eligible vs. eligible, JRC should explicitly allow creation of MS-specific LCC e.g. put arable land together with grassland plus MS-specific critical defects > TOPIC 4

QE1 experiences

• Temporary features: Are they possible (eligible)? Can they be mapped by MS own decisions? In Case temporary features have to be mapped and sent: Can MS create an own LCC for it? > TOPIC 5
• What has to be reported to the Commission services? Everything or just results? > WikiCAP guidance
• Can we define property boundaries or other ?hints? to determine boundaries between parcels? > TOPIC 8 + > TOPIC 1.12

QE2 experiences

• good indicator for LPIS technical quality
  • BUT
    ◊ strong dependency on imagery quality and experience of operator, > TOPIC 6
    ◊ very critical on small parcels, > TOPIC 10
• not considering temporary ineligible features (!)> TOPIC 5
QE2 suggestions
- consider treating temporary ineligible features as eligible features according to historical imagery > TOPIC 5

QE3 experiences
- Conformance level between 97 % and 103 % (quality aspect 2) is inappropriate for very small RPs and for long narrow RPs. Differences between resolutions of VHR > TOPIC 10
- Slow process > TOPIC 4

QE3 suggestions
- If those generic processes are to be exhaustive, they must refer to realistic and concrete situations > TOPIC 11
- More flexibility with adaptation to different cases > TOPIC 11
- Ineligible features with area > 0.3 ha is considered as an major error. > TOPIC 9
- Threshold could function of the size and of the shape. Use buffer tolerance ? > TOPIC 10
- Other categorisation used if the area is overestimated or less estimated > TOPIC 9
- The 3% conformance level should be replaced by a ?tolerance? based on the perimeter (as used in the on the spot controls). > TOPIC 10
- To delineate only the eligible features and not to draw the LCCS. > TOPIC 4

QE4 experiences
- potential critical defects: all the potential critical defects need to be investigated if they are really critical defect, but the quality element is still based on potential critical defects instead of real ones??? > TOPIC 11
- Definition of the potential critical defects isn?t always clear. E.g. Potential discontinuity -> example page 56 in guidelines
- The critical defect about ?unclear boundaries between eligible agricultural land? is considered not relevant; overlaps with adjoining parcels would reveal it > TOPIC 12

QE4 suggestions
- Drop ?unclear boundaries? > TOPIC 12
- General remark: the entire ATS and ETS should be simplified a lot > TOPIC 1

QE5 experiences
- Careful farmer declares less than maximum eligible
- Does not give information on quality of LPIS (Agri Parcel/Farmer Block) > TOPIC 15
- Declared area independent from LPIS > TOPIC 9
- Clarification of declared area vs determined (observed) area / *SPS ? entitlements /
- SAPS ? number of hectares > TOPIC 1

QE5 suggestions The ratio of declared area to the maximum eligible area should take into account the type of RP used by the Member state. RP : Physical blocks - large problem

QE6 experiences
- normal changes in parcels summed up to non-conformance (applications ?); plus: different reference systems have different reasons for changing polygons i.e. why has the parcel changed? what is a ?land change?? > permanent physical changes of the land that impact on the IACS in general and eligibility of the land in particular
- what does ?refresh? mean/implies? plus: if the changes in parcel is part of update process (administrative process) is this to be counted as land change? how to deal with reaching the 25 % i.e. when do refresh? > TOPIC 13
- If all QEs reach thresholds but QE 6 does not, why do a total refresh? > TOPIC 13

QE7 experiences
- conformance level: ?the OTSC rate of irregularities shall not exceed 2 % AND shall not be higher than the rate observed in the preceding application year? Problem: what does it mean? always not higher than preceding year, even when already below 2 %? fluctuations are normal > TOPIC 14
- what does OTSC mean? which OTSC? [take entitlements into account] question of calculating this? > those who involve AREA NOT FOUND

QE7 suggestions
- Somebody explicitly explain guideline for QE 7

--Wim 16:30, 14 October 2010 (UTC)
This document contains the positions of the Commission services on the issues identified by the working groups during the 2011 LPIS workshop, held at Amsterdam, April 6th-8th. It holds 2 parts:

1. the individual Q&A, in sequence of the presentation by the Commission services staff during the workshop closing session.
2. an inventory of issues and suggestions identified by the working groups with an index to the relevant Q&A topic.

These positions apply for the 2010 LPIS QA implementations and serve the discussion on the review of the 2011 LPIS QA exercise.

No substantial changes to version 4.3 annexes or corresponding guidelines have been implemented.

The Commission services may revise their positions upon further findings, experiences, results and screening of the 2010 LPIS QA implementation.

Ispra, Brussels, 15/5/2011
41 Q&A

41.1 PRACTICAL PROBLEMS

41.1.1 Topic 1.1 Imagery

Delegations commented on the difference in quality used for LPIS creation and LPIS QAF. These "quality" issues included: the "scale" of the imagery; the resolution, and the timing.

The Commission services are looking into the following options:

- Purchasing imagery only of a very high quality
- MS could buy better imagery if they see fit

In the above it is paramount that no deterioration of the LPIS quality is allowed.

Furthermore, in contrast to aerial orthoimagery, JRC found that the quality of the CwRS VHR orthoimagery is very much dependent on the ortho-production process and its use of ancillary data (GCPs, DEM) over which the producer has often not direct control. The image content can be seriously downgraded, if an inappropriate ortho-production process or irrelevant ancillary data are used. Often too little attention is given to radiometric quality, colour balance and the preservation of the image detail, as the focus lays only on geometric quality.

Unfortunately, there are to date no clear and standardized metrics in respect to the quality check of the radiometry, but to fill this void, JRC already revised its Guidelines for Best Practice and Quality Checking of Ortho Imagery and the Orthoimage technical specifications for the purpose of LPIS. In addition, some possible metrics to assess the relative geometric accuracy, as residual plots and visual inspection of the spatial fit between the vector and raster data, were introduced in the same documentation. These guidelines and specifications will be further revised in the light of the findings from the screening of the 2010 ETS results, so that specific, more stringent, requirements can be proposed for the orthoimagery used in the LPIS QA.

Some recommendations in that respect were already given on the Wiki article Use of Orthoimagery. Additional article will be created in the "Support" section of the LPIS QA Documentation regarding the quality of orthoimagery, where some clarifications will be given on the following issues:

- Influence of the input image parameters on the CAPI for ETS
  - viewing angle
  - time of acquisition
  - type of image product
  - radiometry (bit depth)
  - ground sampling distance

- Manual photointerpretation of land cover
  - Operator subjectivity
  - Impact of phenological development on interpretation
  - Use of ancillary data (multi-temporal data)
  - Visual scale for digitalization
  - Others

For 2010, and of course for 2011, we strongly advise the Member State to evaluate whether its orthoimagery meets the above orthoimagery specification. Sub-optimal image processing by the contractor should be addressed immediately.

41.1.2 Topic 1.2 Tolerance (on small parcels)

Delegations expressed the need for tolerances for small parcel, large parcels, long parcels etc.

A technical tolerance is an expression of measurement variability. This variability has been taken into account in the tiered threshold (3% - 5% - 7%) and -to some extend- in the probability that underlies the LQ statistics.

The Commission services do not consider introduction of new / other tolerance being good practice.

Indeed, the tolerance prevents analysis of the field situation by vindicating (?)hiding?) parcels whose shape and size prevent accurate and precise measurement. Although a given LPIS might well be the most appropriate design for the prevailing conditions, it is nevertheless essential to become aware of these conditions and the implications of the choices made in the LPIS. The Commission Service is looking into the following options and awaits supporting evidence of screening of the ETS packages.

For QE2 this means introducing an additional scoreboard entry that doesn't take into account parcels smaller than a threshold size to be determined.

41.1.3 Topic 1.3 Timeframe for reporting

Delegations expressed the view that by the time the report for year N is finished the evaluation for year N+1 started and not all actions taken after year N give positive results for year N+1.

The Commission services understand the situation. However analyses showed that changing the timing of the work as such is not very easy given the deadlines to start and do the work. There are no real alternatives.

As regards the fact that efforts have not passed, this issue is inherent to the yearly exercise. In the evaluation of the LPIS QAF the longer time aspect of remedial action is "accounted for" by the Commission services.
41.1.4 Topic 1.4 ETS documentation received mixed feedback as regards its "quality"

Some delegations say the ETS documentation is too detailed; others that it is incomplete or needs to be clarified.

The Commission services will consider the issues that need "deletion". Therefore the delegations help could be welcome, i.e. they indicate what can go out and what should come in.

◊ A tutorial to the setup and structure of the documentation can be found here.
◊ JRC will revise and prepare a plan for a new version v5.0 of the ETS documentation. The revision will focus on the leads indicated in this article.

41.1.5 Topic 1.5 Requests for a change to waivers or issue new waivers

Waivers can be introduced but only if good justification is provided by the MS. It should be guarded that by creating waivers the evaluation becomes pointless, as any waivered issue is no longer subject to further analysis.

Therefore each waiver introduction must include specific general and local conditions for its application.

If a member state wishes to propose new waivers to be considered for the 2011 campaign, please fill in the template and mail it. Before submitting a waiver, please ensure

1. The proposed waiver involves either contamination or potential critical defects.
2. That the particular issue is not yet addressed by modification to the measures involved.
3. That is is duly motivated and illustrated.

Submitting a proposal doesn't automatically involve acceptance. Only waivers listed in the Annex 1 are valid.

To ensure a better service for the delegations, i.e. to keep a balance in the guidelines provided (> topic 1.4) a forum whereby (a number of) delegations could pre-evaluate the need for a waiver can be considered.

41.1.6 Topic 1.6 Why is it required to redigitise? Can we not copy/paste?

See the Copenhagen workshop Q&A.

41.1.7 Topic 1.7 Why consider parcels that are not-declared for aid?

It is a legal requirement that all agricultural area on the holding shall be declared and hence, also the parcels not claimed for aid must be in the LPIS. More precisely Article 19(1) of Regulation (EC) No 73/2009 establishes that farmers shall declare all the agricultural parcels of the holding. This implies that farmers must declare not only the parcels in respect of which they claim aid but also any other unclaimed parcels of the holding. The main purposes of this obligation to declare all parcels are to enable effective cross checks as well as the control of the cross compliance requirements.

In accordance with Article 55 of Regulation (EC) No 1122/2009, farmers might be subject to reductions in the case where they have omitted to declare one or more parcels. However, this Article does not provide a legal basis for imposing sanctions in the case where the farmer has declared all his parcels but with an underestimated area, i.e. a number of hectares which is below the size determined by the authorities.

41.2 CONCEPTUAL ISSUES

41.2.1 Topic 2.1 Quality Element 5 is relevant, but needs revision

As described in the rationale, one purpose of the LPIS is to support the farmer declaration process. In an ideal world, the farmer declaration should be no more than a confirmation of the reference area available, but the 2010 experience has shown that reality is not always ideal: In many cases the area declared doesn't equal the reference area available, e.g. because not all farmers on a reference parcel apply for aid.

The impact/support of the LPIS on the farmer declaration can be critical for two functional issues:

- If the reference area is too small, the farmer cannot apply for aid on all available land.
- If the total declared area on a parcel is unrelated to the reference area, it provides opportunities for improper declaration of land.

The first issue can be expected to solve itself as parcels with an underestimated reference area should trigger the farmer to request a reference area update. By contrast, an explicit indicator could be considered to verify whether incompletely declared parcels of year N, suspiciously become more declared on year N+1.

41.2.2 Topic 2.2 Quality Element 6 is relevant, but needs revision esp. regarding the link to update needs

Update is the most important challenge for any GIS, including the LPIS. Several different processes all contribute to keeping the information up to date (see LPIS update and a forced "acute refresh" (throwing away a database to replace it by a newly produced) is by far the worst option.

The purpose of QE6 is to monitor the update processes so that an acute refresh can be avoided.

The categorization of non-conforming and defective parcels a failed update cause in QE3 provides an indication of the overall failure of update processes, but gives no information on the actual update performance of any individual process. The relative abundance of transactions triggered by each of the actors (farmer/inspector/LPIS custodian/national mapping agency) does and if these transactions are managed effectively, they should be completely processed prior to the next claim period.

These considerations can be formulated into 3 leads for the updating process.

1. The rate of reference parcels that farmers indicated subject to change should not be different more that 25 % from real annual change rate observed during the OTSC (previous or current year).
2. The rate of missed updates observed by the OTSC inspectors should not deviate more than 10% from the change rate observed by reference parcel sample inspection under QE3.

3. 98% of the reference parcels changed detected since the start of the previous claim period should be fully processed at the start of the claim period. This rate is derived from IACS register query of the previous year. This could maybe be explained a bit tomorrow?

The first two leads imply that OTSC inspectors are able to determine the "annual change rate" and "rate of missed updates" as part of their LPIS update role.

As with the other measures, QE6 should not deterministically trigger a reaction but lead to analysis and a sound remediating plan. > topic 3.1

41.2.3 Topic 2.3 Quality Element 7 is relevant, but needs revision esp. regarding the link with OTSC

Member states have indicated that LPIS is only one of the many possible cause that lead to irregular applications and that is difficult to extract the correct irregularities from the IACS query. Finally some member states indicated that the LPIS QA sampling should be respected in this measure.

Both LPIS QA and OTSC inspections resort to sampling procedures and a key challenge is to achieve a representative sample of reference parcels common to both inspection procedures. Obtaining sufficient common reference parcels mainly depends on the OTSC strategy:

1. Member States applying the CwRS program probably need no action as, on European average, about one third of the agricultural area of the CwRS-site is subject to CwRS inspection. So the random OTSC zones should provide a sufficiently large common CwRS-LPIS QA sample.

2. Member States relying on Field Inspections only shall need to specifically select a number of claims of their OTSC as to cover a sufficiently large common sample. As the LPIS QA sample is by definition random, the OTSC checks on this would also be part the random OTSC sample.

As QE7 aims to demonstrate that LPIS is NOT a key contributor to irregular claims, two leads can be proposed and applied on the common sample:

1. Not more that 2% of the common reference parcels are claimed for an agricultural parcel which belongs to a crop group that was determined to be over declared.

2. The rate of irregular claims on farmers declaring on non-conforming or defective reference parcels, should not be significantly different from the overall OTSC rate of claims with irregularities (of the common sample)

41.2.4 Topic 2.4 The 5-meter buffer needs more clarification

The 5 meter concept was introduced to compensate the removal (from trial ETS v1.0) of measure 10101 for absolute positional accuracy after the feasibility trial. See feasibility report ? 18.2.5. The check for positional accuracy (quality measure 10101 ?not required for 2010R146-) of the border has been found to be complex and time consuming, without a very clear purpose and use...?.

The 5 meter buffer around the RP boundary accommodates for a coordinate shift in any direction (i.e. deviation in absolute coordinates) for identifying the LUI. Areas measured by the CAPI delineation are not affected by such shift, they are however very effected by the relative coordinate accuracy of the imagery used for inspection (i.e. consistence of scale throughout the image). ETS contains no measure to quantify the relative coordinate accuracy.

> topic 1.1

41.2.5 Topic 2.6 The need to got back to last year ? create a waiver (QE2)

There must be a starting point ?the reference data- and at the beginning of the declaration, the situation indeed refers to the previous year and the RP data may well be corrected (art 12.4) by the farmer during the process. The Commission services acknowledges this situation and its adverse effects on the scores:

- A waiver is however not the appropriate instrument to deal with this farmer?s update as a waiver relates to a particular measure. The update is effecting most, if not all measures and should therefore be accounted for in the methodology.

- The Commission services therefore proposes an additional step in the methodology, in particular in the data preparation, to update the reference area from the pre-printed form with a new area provided by the farmer before he made his application (not the result of OTSC inspections), provided the Member State demonstrates that the rate of farmer updates in the LPIS QA zones is comparable with the national average.

41.3 COMMUNICATION ISSUES

41.3.1 Topic 3.1 LPIS QA BASIS

To help the rationale on the Commission services position, it is important to understand the following rationale:

1. The ETS is developed as common inspection procedure that outputs comparable raw observations from all MS

2. These raw observations , compiled in the ETS scoreboard. are a common basis for analysis by the MS

3. The thresholds applied on this ETS scoreboard act only as a trigger for further analysis. (below the threshold no explanation is required)

4. This further analysis could and should isolate and clarify ?raw issues? that are not a problem for the conditions in the Member State. This can possibly lead to the compilation of an alternative ETS scoreboard.

5. A remedial action plan should be based on the results after analysis, not of the raw ETS-scoreboard.

The objective of the EC is enabling the MS to produce a good assessment report and remedial plan. For this it is essential that the guidelines are followed, in particular as regards the interpretation of the objects and the application of waivers.

The Commission services considers thresholds, waivers and tolerances as methodological instruments that vindicate issues well before they enter the raw ETS-scoreboard. As these instruments prevent ?reporting noise? they are very useful, but too much ?filtering? will prevent the analysis of any true signal that lays hidden in the raw observations.
41.3.2 Topic 3.2 ?If thresholds are not met this is not necessarily a problem, but (through the scoreboard) externally communicated as one?

Delegations expressed the view that it would be better to do away with all thresholds as they create problems of "non-compliance". Thresholds are important and should be kept, as they give the opportunity to the EU MS Administrations to decide whether an action needs to be taken. To evaluate a system and to see if actions are required benchmarks are needed. > topic 3.1

41.3.3 Topic 3.3 ?It is not because thresholds are not met that there is a risk for the Fund?

The purpose of the LPIS QAF is not immediately to determine risk for the Fund. The purpose of the LPIS is firstly to provide correct information to the farmers as regards what can be claimed i.e. the enable Administration of the claim (iAcS). In this way it is a system designed firstly to avoid problems. Only afterwards is the control (iAcS) The LPIS QAF is to see if measures are required to ensure that the LPIS fulfils this role.

41.4 ELIGIBILITY ISSUES

41.4.1 Topic 4.1 Landscape Features

To be eligible, a landscape feature should always be inside or directly bordering some "traditional" agricultural land:

- those that are traditionally part of good practice (Article 34(2)) have a maximum width and can be, at the discretion of the member state, considered eligible
- those that are protected by a national GAEC for retention (Article 34(3)) are defined by the member state, are not subject to size restriction and are by default eligible

Therefore the latter features have to be taken into account in the reference area of all LPIS reference parcels and their retention must be monitored.

It is not feasible to define generally applicable technical guidelines on how to account for these landscape features in the LPIS, as both approaches on landscape features depend on respectively the regional traditions or on the national GAEC measures rather than on pan-European concepts. Each MS will have to develop a solution where it can demonstrate that the farmer is informed of the presence and eligible area of a landscape feature and, when appropriate, the inspector is able to control its retention.

The existing technical guidance on landscape features relates to the work of the inspector, and how his findings (position and area) are brought into the LPIS for the inspected reference parcels.

OVERVIEW ON THE RELEVANT RULES

When measuring the areas eligible for payment, ineligible parts of the area concerned shall be deducted. However, Member States may consider certain landscape features (for example hedges, ditches, walls) where those are traditionally part of good agricultural cropping or utilisation practices, as part of the eligible area, i.e. they do not have to be deducted. This is under the condition that they do not exceed a total width to be determined by the Member State (Regulation (EC) No 1122/2009, Article 34(2)). That width must correspond to a traditional width in the region in question and shall not exceed 2 metres.

Furthermore, Member States may recognise landscape features as being part of the GAEC obligations under cross compliance. In such a case the features in question do not have to be deducted from the eligible area in a parcel, i.e. the feature becomes eligible for payment (Regulation (EC) No 1122/2009, Article 34(3)).

Besides, the current EU rules foresee certain flexibility. An agricultural parcel that contains trees shall be considered as eligible area provided that it does not hinder the carrying out of agricultural activities (Regulation (EC) No 1122/2009, Article 34(4)). The "Guidelines for area measurement" (European Commission, Joint Research Centre, Guidelines on Article 34 of Regulation 1122/2009, Point 1.2 - http://mars.jrc.it/mars/Bulletins-Publications) point out that an agricultural parcel containing trees with a density of more than 50 trees per hectare should, as a general rule, be considered as ineligible. The Guidelines also foresee that in order to assess the eligible area within an agricultural parcel of (permanent) pasture, Member States can use a reduction coefficient in the form of a pro rata system or a percentage reduction.

Moreover, according to the Guidelines (European Commission, Joint Research Centre, Guidelines on Article 34 of Regulation 1122/2009, Point 2.6.2 - http://mars.jrc.it/mars/Bulletins-Publications) ineligible landscape features smaller than 100 m2 have to be deducted from the eligible area only if the total of these landscape features present a significant area of the parcel in question (that is, when the total of all these small ineligible landscape features within the parcel exceeds the tolerance of the parcel calculated as the buffer width of the measurement tool - maximum 1.5 metres - multiplied by the external perimeter of the agricultural parcel (Regulation (EC) No 1122/2009, Article 34(1))). Above the technical tolerance all ineligible landscape features in the parcel have to be deducted from the eligible area.

In addition, EU legislation contains certain provisions which ease the treatment of minor over-declarations discovered during the checks. In case the difference of the area declared by the farmer and the area determined by the controls is maximum 0.1 hectare per application the aid to be paid to the farmer is not reduced, but the farmer is paid for the area declared for the payment (Regulation (EC) No 1122/2009, Article 57(3) 2 indent).

41.4.2 Topic 4.2 Eligibility on marginal areas

In the exercise of assessing the quality of the LPIS, it is appropriate to use the approach towards eligibility of marginal areas which is used by the authorities when establishing and updating the LPIS. The approach should be set within the legal framework for eligibility of areas which is given in Reg. 73/2009, Reg. 1120/2009 and Reg. 1122/2009.

The subject of eligibility was exhaustively discussed in the Management Committee for Direct payments in 2009/2010. In that context document DS/2009/29 was presented in the meeting of the Management committee for Direct Payments on 26 November 2009. Annex II of this document lists the legal provisions relating to eligibility. Furthermore, some clarifications relating to the issue of eligibility, and in particular marginal areas, can be found in DS/2010/04 rev 1 which was discussed in the meeting of the Management committee for Direct Payment on 31 March 2010. Any changes of the legislation is not foreseen for now.
41.4.3 Topic 4.3 GAEC eligibility is SPS related

GAEC becomes an eligibility condition for areas under SPS in the case where no other agriculture activity besides the GAEC maintenance is taking place on the parcel. Forests is not eligible for payments under the first pillar except in case where it is covered by Article 34(2) of Regulation (EC) No 73/2009(afforestation). See previous point for further reference to the eligibility rules for the SPS and the SAPS.

41.5 ADDITIONAL REACTIONS

The following topics were not mentioned during the first reaction at the closing session, but offer a response to additional issues identified during the presentations and working group findings

41.5.1 Topic 5.1 reduction coefficient for the pro rata land cover classes

Several member states have indicated that, for marginal lands a reduction coefficient is used that was determined on a parcel by parcel basis. They experienced difficulty recording the results as LPIS QA eligibility profile imposes one coefficient or fixed rate for each type of land.

The reasoning for this pro-rata approach with a fixed coefficient is documented in a Bergamo presentation.

If the resulting area differences observed during the LPIS QA for the individual pro-rata parcels cause non-conformities that, in the view of the member state, not necessarily indicate a true problem for the LPIS as a whole, a separate analysis of this set of pro-rata parcels land is in order to demonstrate that no bias is present for the total area of agricultural land stored in the system.

41.5.2 Topic 5.2 Rationale behind the thresholds (or better the quality expectations)

EXPECTATIONS

• QE1 (total area):
  2%: threshold for serious error in the Court of Auditors DAS methodology - update: the document has been updated and defines this as "materiality threshold"

• QE2 (rate of area based non conforming parcels):
  3%: this threshold difference is twice specified in the Comm Reg 2009R1122: Both cases relate to a comparison between an area observed and an area declared.

  ◊ in Article 58: Reductions and exclusions in cases of over-declaration: the area declared for the purposes of any area-related aid schemes, ..., exceeds the area determined...if that difference is more than either3 %:...

  ◊ in Article 55: Non-declaration of all areas: the difference between the overall area declared in the single application ... and the area declared plus the overall area of the parcels not declared, ..., is more than 3 % of the area declared.

In a good LPIS Area declared should be derived from the LPIS reference area.

5 % and 7% thresholds include a degree of technical tolerance for smaller parcels as add on to 3%.

1ha: maximum tolerance of OTSC methodology.

• QE3 (causes of non-conformities and defects) and QE5 (area declaration rate):
  5%: Arbitrary: serves an indicator/alert function.

• QE4 (rate of defects)

LQ2: a LPIS should have no true critical defects at all. The limiting quality (in percent nonconforming parcels) is set to 2 as in the threshold for serious error in the Court of Auditors DAS methodology - update: the document has been updated and defines this as "materiality threshold"

• QE6 (accumulated change rate):
  25%: Arbitrary: serves an indicator function.

• QE7 (rate of irregular applications):

  ◊ 2%: threshold for serious error in the Court of Auditors DAS methodology - update: the document has been updated and defines this as "materiality threshold"

  ◊ not significantly higher then previous year: based on good quality management principles.

LQ INDEXES

• Regarding the verbal expression of the expectation* into Limiting Quality indices (used to determine the acceptance number for attribute sampling):

<table>
<thead>
<tr>
<th>Lot size</th>
<th>Limiting quality in percent (LQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5000</td>
<td>600  5</td>
</tr>
<tr>
<td>5001 to 150 000</td>
<td>800  10</td>
</tr>
<tr>
<td>150 001 to 500 000</td>
<td>1 250 15</td>
</tr>
<tr>
<td>&gt; 500 000</td>
<td></td>
</tr>
</tbody>
</table>

◊ QE4 - for 1% / LQ2 : please look at slides 13-14 of this presentation.
The provisional changes depend on insights gained during screening the 2010 observations and the actual implementation of the measures.

From the above discussions, the Commission is considering the following changes to be implemented in ETS v5.0. Please note this summary is provisional, and the final changes depend on insights gained during screening the 2010 observations.

41.5.3 Topic 5.3 Subparcels / Superparcels / Hybrids

Several member states have indicated it is not easy to assign a single reference parcel prototype to their implementation. It can be demonstrated (see slide 24+ of this presentation) that subparcels and superparcels (= aggregated parcels) can easily deviate from the optimal representation of the land for the purpose of the CAP processes. This optimal situation is not always achievable for all processes, but it is worth checking if the particular design doesn't affect the LPIS QA results:

- Subparcels and superparcels affecting results can be demonstrated.
- Superparcels make declarations more difficult, affecting QE5 results.
- Superparcels and mismatching boundaries cause potential critical defects affecting QE4 results.

On a more general note, these object referencing cardinality (multiplicity) considerations are also relevant on how to implement landscape features in the reference parcels if the area is located on the immediate border of the agricultural parcel, in particular for landscape features common to two neighbouring agricultural parcels:

- A separate identification of feature as a reference parcel will lead to declaration by the same land two farmers, inducing a risk of a double declaration of that area.
- Inclusion of half the feature to each of the bordering parcels will lead to invisible and thus arbitrary adjudication of the land.

41.5.4 Topic 5.4 Validation of the Methodology

Prof. Arnold Bregt called for:

1. A third party/peer evaluation of the evaluation procedures
2. A systematic meta-evaluation of the assessment approach

The Commission services propose to do this evaluation first inside the LPIS community as it is there where the true validators can be found. Independent experts who are not familiar with the CAP domain will face difficulty to assess the LPIS QA without prior knowledge on CAPI implementation. The JRC is obviously not independent on these matters but is willing to facilitate and support these evaluation activities.

41.5.5 Topic 5.5 ATS Developments

The LPIS Core Model (LCM) is a logical model translating the CAP legislation into the geoscientific terms. On the contrary, all MS LPIS databases are physical implementations of the CAP legislation. The ATS focus is on testing if a physical implementation is conforming to the LCM logical model, so that the ETS can be correctly performed (correct scope, correct values).

Ongoing modifications for the 2011 LPIS QA will focus on the interaction between ATS and ETS:

- Revision of the ATS modules and provision of a new template to accommodate that some of the original ATS modules were transferred to separate specialized documents (A_12 > Eligibility Profile) whereas others were inactivated as they do not address issues within the 1st pillar scope (A_12 = cross-compliance).
  - A_11 reference parcel definition: clarification of procedure and requirements.
  - A_12 eligible land cover types and landscape features: better fit eligibility profile.
  - A_13 reference parcel attributes: accommodate ETS concepts
    - A_131 mandatory attributes: clarified and tuned definitions.
    - A_132 cross-compliance attributes: temporarily suspended.
    - A_133 other attributes: clarification.
- Introduction of features to address:
  - Sub-parcel/super-parcel.
  - Attributes specific to all declared land.
  - Reference parcel polygons resulting from (on-the-fly) geospatial operations.
- Revision of the ATS terminology to better align it with the ETS inspection methodology.
- Restructuring of the ATS reporting package items to better separate the ATS-conformance testing (> ATS-Log) and the ETS-support documents that are produced during the testing but with annual relevance (> waivers, eligibility profile, ICS).
- No major changes are foreseen to the LCM in short term.

41.5.6 Topic 5.6 ETS Developments

From the above discussions, the Commission is considering the following changes to be implemented in ETS v5.0. Please note this summary is provisional, the final changes depend on insights gained during from screening the 2010 observations and the actual implementation of the measures:

- General methodology changes:
  - Enabling the update of the reference area by farmer (only) during the application period.
  - As member states should by now have implemented measures to deal with the issues of subpopulation, the distinction total population versus subpopulation is removed (> topic 5.7).
- Revise documentation.
- More clarifications on orthoimage specifications and quality expectations.
- XML/GML schema set needs harmonisation due to ETS developments, enabling interoperable and smooth data exchange.
- QE1: no changes to the measure
- QE2
  - separate reporting of parcels larger than a threshold size
  - LQ8 set to LQ12.5
- QE3: LQ8 set to LQ12.5
- QE4
  - remove "discontinuity"
  - revise set of waivers based on experience
- QE5: new indicator / measure focused on monitoring declaration changes.
- QE6: new indicator / measure focused on monitoring real world change rate / remove "plan refresh" action
- QE7: new indicator / measure focused on effect of LPIS on irregular applications

41.5.7 Topic 5.7 Scope versus denominator

Many member states are confused with the difference between the parcel numbers entering the inspection or scope on one hand, and the resulting number of successfully inspected parcels for that measure, on the other hand.

Please note that:

- the ETS 2010 considers only two collections of parcels (scopes) at the start of the activities: total population and sub population (see our FAQ). The particular scope is separately indicated for each measure of Annex I
- during the inspection procedure, it can happen that not all parcels in the particular scope can be successfully inspected, e.g. because of a critical defect, or because of the absence of information in IACS for the inspection year. Therefore it is absolutely normal that the resulting denominator under point 3 of the acceptance decisions ends up smaller than the original scope.

In the 2010 ETS:

- The scope drives the inspection, depending on lot size, 500/800/1250 parcels of the sub-population scope need to be inspected (this number excludes the skipped parcels, but includes the critical defects), see also our FAQ
- The resulting denominators depend on what parcels can
  - QE1: subpopulation minus RP parcels that can not be measured (note: not all CD are unmeasurable !!!)
  - QE2: idem
  - QE3: total population
  - QE4: total population
  - QE5: sub-population minus RP that are not declared during year N minus RP that can not be measured
  - QE6: (2010) all applications
  - QE7: (2010) all applications

For example: the case of our FAQ could result in the following final numbers (denominators are underlined):

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subpopulation</td>
<td>1250</td>
</tr>
<tr>
<td>Measured (QE1 and QE2)</td>
<td>1197</td>
</tr>
<tr>
<td>Declaration</td>
<td></td>
</tr>
<tr>
<td>Declared</td>
<td>1226</td>
</tr>
<tr>
<td>Declared AND Measured (QE5)</td>
<td>1183</td>
</tr>
<tr>
<td>Total Population (QE3 and QE4)</td>
<td>1466</td>
</tr>
<tr>
<td>All Applications (QE6 and QE7)</td>
<td>68781</td>
</tr>
<tr>
<td>Skipped</td>
<td>113</td>
</tr>
<tr>
<td>Ignored</td>
<td>2421</td>
</tr>
</tbody>
</table>

i.e. 1115 by digitising, 82 by area recovery
42 Working group findings: key issues and suggestions

The plenary presentations made by the working group chairs can be found on the website.

42.1 QE1 (total eligible area): comments

- Marginal areas (how to map?) > topic 4.2
- Delineation issues > topic 4.2
- GAEC effect on eligibility > topic 4.3
- Prioritization of ETS: Delineation of non-eligible areas: > See the Copenhagen Q&A

42.1.1 QE1 (total eligible area): proposed solutions:

- 1st: Marginal land: wetland, boundary between pastures with or without trees, natural grassland/grassland > topic 4.2
  - ◊ to be pro-rata until 2013,>2014 eligible if farmer is carrying out agriculture activity; > Under the current Regulations that land in
    not fully eligible
  - ◊ Flexible thresholds in future "> topics 3.2 3.3"
  - ◊ waivers > topic 1.5
- 2nd: Delineation: small parcels, cadastral parcels as RP, image quality
  - ◊ Copy/paste should be OK > topic 1.6
  - ◊ Waiver for cadastre parcel > there are several waivers for the cadastral parcel
- 3rd: GAEC: when do commitments become eligibility conditions > topic 4.3

42.1.2 Eligibility profile: comments

- Is forest eligibility profile necessary (II pillar)? > it is not required unless for eligible reforestation
- Determination/codification of land cover ? use of the JRC system or the MS classification system? Use of the common minimum mappable
  legend is confusing.
  >
  - ◊ The LCCS is a classification system to describe the land cover classes defined by the member states,
    ◊ the JRC Minimum mapping legend is a legend; a combination of classes for the inspection mapping at approx.
    scale 1/5000)
- LFps: why needed in the eligibility profile if not mapped in the given LPIS?
  > because the Eligibility profile inventories all eligible land covers, the mapping legend only these which are mapped.

What is the difference between the natural grassland and grassland?

- natural grassland is self-seeded and not a result of cultivation (i.e. not sown)
- XML cannot cope with more than one pro-rata value (ranges or variable values) > topic 5.1

42.1.3 QE2 (rate of area non-conformities): issues

- 1st: Differences from digitizing reference parcels
  - ◊ Image quality > topic 1.1
    ◊ Radiometric
    ◊ Resolution
    ◊ positional accuracy
    ◊ acquisition moment)
  - ◊ Operator subjectivity
    ◊ Especially marginal areas > topic 4.2
    ◊ Not all boundaries are visible
    ◊ Standard error is not included in the inspection > topic 1.2
- 2nd: Thresholds
  - ◊ arbitrary chosen > topic 5.2
  - ◊ Conformance level is not OK for small RPs > topic 1.2
  - ◊ Shape of RPs should play role as well > topic 1.2
  - ◊ 1ha too tight for very large parcels > topic 1.2
- 3rd: #Timing > topic 1.3
  - ◊ Updates not taken into account (beginning of year vs payments)
  - ◊ No time for action plan

- Satellite image quality is not always sufficient (bracken >< rush) > topic 1.1
- The procedure to apply buffer of 5 meters for RP with an unclear boundary is completely unclear. > topic 2.4
- Complexity

92
Why map separate Land cover features? > See Copenhagen Q&A
Why map small LF? > small LF are only to be mapped if your national specification do so too

42.1.4 QE2 (rate of area non-conformities): proposed solutions:

- 1st: Differences
  - Copy/paste the RP and then verify > topic 1.6
  - Image resolution should be same as the ortho resolution (used for the creation of the RP) > topic 1.1

- 2nd: Thresholds > topic 1.2
  - Tolerance should be the same as for the OTSC ? perimeter based (max 2 ha) based on objective laboratory study > on tolerance: topic 1.2; on study, topic 5.4

- 3rd: Timing:
  - Waivers for QE 2, if RP changed by the farmer or OTSC > topic 1.3
  - Change/ apply flexibility for the date when the sample is taken. (MS chooses date) > topic 2.5
  - earlier reporting to enable action plan? > topic 1.3

- Quality
  - Increase the image resolution to 50 cm > topic 1.1

- 5m
  *Do not put immediately ?0? for unclear LUIs. > topic 2.4

- Complexity:
  - Map eligibility rather than land cover > See Copenhagen Q&A
  - Complex: Reduce the features that needed to be mapped > See FAQ

42.1.5 inspection methods: comments

- Why not to do GPS-based ETS together with the OTSC
  > there is no fundamental objection if the random sampling can be guaranteed. See also FAQ

  - ETS documentation is not clear ? the concept of sub-population is not clear. > topic 1.4
  - Underdeclared parcels often digitised too small -> affect QE2 and QE5 > WD: this makes little sense, did you mean too large ?
  - Difficult to inspect the TB > topic 5.3

42.1.6 QE3 (causes): comments

- Part of the non-conformities are caused by the time difference between data exchange and QA ETS > topic 12
- Limited reporting on type of causes. (too few causes? More need to be added ?)

  > JRC: the 6 (incl. historic GAC) generic causes can surely be detailed or subcategorised to support the analysis, but we haven?t identified another generic cause yet. We welcome proposals based on the 2010 experiences

- What ?incomplete processing? incompatible LPIS-design is?
  >
  - incomplete processing: occurs when someone has not done all what needed to be done
  - incompatible LPIS-design: indicates the system (LPIS and its operating procedures) is unable to identify any other generic cause for that observation

- QE3 doesn?t take into account the national legislation
  > please explain: the CAP is a common policy, ensuring equal treatment for all EU farmers

- Use of older imagery should be allowed
  > it is allowed in ETS v4.3, be it in an ancillary capacity

42.1.7 QE3 (causes): proposed solutions

- 1st: latest imagery is not always the best Imagery sometimes is not clear on latest imagery (which is on older). Solutions:
  - Skip the RP
  - Add new non-conformity code, related to the limitation of the VHR
  - Add Waiver
  > topic 1.1

- 2nd: Part of the non-conformities are caused by the time difference between exchange of data and QA-inspections (either raster of vector)
  - Add a new non conformity code, imagery contains changes not yet reported on the imagery used for refresh
  > topic 1.3
• 3rd: QE3 does not consider national legislative requirements (splitting due to administrative boundaries)
  ◊ Add a new non-conformity code, LUI contains administrative national boundaries > topic 5.3
  ◊ Create a new waiver. > such waivers already exist

42.1.8 ATS: comments

• ATS-log inconsistent, some errors found in the XSD
• Are the cross-compliance elements part of the ETS?
• What about if a MS has different types of RPs? How to apply then the ATS?
• LCM model implies that LPIS data is ?physically? stored in attribute tables. It doesn?t take into account that some of the values can be generated on-the-fly.
• LCM should be logical e.g. no ?attribute stored? (RPs can be also a result of separate spatial layers)

42.1.9 ATS: proposed solutions

• 1st: Terminology: ATS mentions several elements `attribute stored? , while it is possible to get it through a spatial function.
  Keep ATS model `logical?, implementation can be database field or function, maybe leave space for comments > Agreed: topic 5.5
• 2nd: How do we identify the rp in presence of separate spatial layers with different attributes? How do we fill the ATS-log since a simple yes/no might not be enough?
  ◊ Leave space for comments and definitions
  > not really needed in the ATS templates, the Feature Catalogue or Application Schema hold such information
• 3rd: ATS-log scheme seems to contain inconsistencies
  Fix XSD. > corrections were made in the aftermath of the Amsterdam workshop

42.1.10 QE4 (critical defects): comments

• 1st: More and Better examples needed > topic 1.4
• 2nd: Unclear LUI ??(boundary)? should be better clarified as concept > topic 1.4
• 3rd: More waivers for PhB and CP > topic 1.5
• Multi-parcels are not necessarily a CD
• Explain difference multi-parcel vs multipolygon

> two different cases of multiple cardinality, (see topic 5.3)
  ◊ multi-parcel: a situation where the reference parcel aggregates/joines what should be separate RP parcels according to the intrinsic definition/specification used in the LPIS. It could result from any cause besides upgrade
  ◊ multi-polygon: a situation where a single identified "unit" of land (i.e. one parcel-ID) relates to two or more distinct/disjunct plots in the field. It could result from erroneous processing or incompatible LPIS design

• Local conditions should be taken into account when evaluating a RP > conditions are already a structural element of the waivers

42.1.11 QE4 (critical defects): proposed solutions

• More examples and definitions through WikiCAP > topic 1.4
• Use of SDIC forum > would be much appreciated, topic 5.4
• More examples needed > topic 1.4
• Virtual/physical workshops for each type of RPs > topic 5.4
• Peer-group to evaluate the LPIS QA results > topic 5.4
• Drop all CDs except ?no eligible area found? topic 1.5, but revision of the CD selection will be made during the screening

42.1.12 Reporting: comments

JRC note: there has been some confusion on the scope of the topic reporting , It was intended to process the experiences of the assessment report and remedial plans, but seems to have focused on the data exchange of the inspection results. As a result, there is considerable overlap with the findings of the next working group. > topic 3.1

• Not clear for some elements ? explanation needed for every point
• If there will be a technical issue with the XML, is there any backup??
• Why was XML chosen? JRC should make tools available to check if files are ok.

> 
• because of INSPIRE compatibility. Note that also GML is an XML grammar written in XML schema. Relevant GI standards are ISO 19118 (Encoding) and ISO19139 (GML)
• for validation tools see our tools article

> Live demo on reporting needed
> XML generates extra work for the MS and extra cost

> The effort is acknowledged, but it is an essential investment for an application which relies on GIS technology

42.1.13 Reporting: proposed solutions

• 1st: clear information on what is exactly needed > topic 1.4
• 2nd: We need a backup alternative > full web based access to the data (WFS) offered by the LPIS custodian would remove the need for the data exchange
• 3rd: More support in general (presentations/wikiCAP)
• Alternatives for XML and GML should be available (xls, dbf, shp)

> each of the three proposed alternatives has distinct disadvantages that substantially reduce their potential for international data exchange

• Provide tooling / demonstrations > new tools have been places on our tools article
• Clear examples needed > topic 1.4
• Sharing information between EU Member States is good thing > agreed
• Option should be available in the Portal to view the XML after updating > JRC will consider this option

42.1.14 QE5 (declaration rate): comments

• 1st: Monitoring ?area declared?

◊ implies land use concept, which is not relevant to LPIS > topic 3.3
◊ It checks something that cannot be controlled, as there is no way to check farmers declarations
◊ Under/over declaration ? negative impact through false non-conformities > topic 3.3

• 2nd: Uncertainty on the geometries digitized from scratch

◊ allow partly corrected RP > what is meant by partly corrected RP?
◊ Correct quantification of RP areas already measured by other QE > topic 3.3

• 3rd: Need of further clarifications on the terms: > topic 1.4

◊ Declared area
◊ Claimed area
◊ Farmer area
◊ Paid area

42.1.15 QE5 (declaration rate): proposed solutions

• 1st: skip 0% declared RPs from the sample (interpretation of table 15)

> 
◊ see topic 2.1
◊ please note this is opposing the Dutch proposal to focus on the 0% declared

• 2nd: remove the threshold and make the QE5 indicative value only > topic 3.2
• 3rd: introduce waiver for under-declared RPs > topic 2.1

42.1.16 Data exchange: issues

• 1st: Big waste of time to acquire the know-how on XML/GML

> The effort is acknowledged, but it is an essential investment for an application which relies on GIS technology

• 2nd: No easy solution in sight : invest in that know-how
• 3rd: Unstable XSD structures (many update from JRC) > changes are kept to an absolute minimum

42.1.17 Data exchange: proposed solutions

• 1st: Please provide tools for GML and XML generation and handling!: 

> new tools have been placed on our tools article

• 2nd: Please warn for any changes in the schema versions (through watch page?)
3rd: Freeze the documentation and regulation:

- methodological changes are made upon request of the member states or to address urgent technical issues identified by the member states > topic 1.4

42.1.18 QE6 (land changes): comments

- Does the 25% fit to the real world change rate or is it arbitrary? > topic 5.2
- Is the imagery used for change detection, or for verification of detected changes?

- neither, the LPIS QA should detect unprocessed changes

- Regional difference (e.g. ENG => SCO)
- obviously "stable" landscapes require less update effort than those where competition for land occurs (often from urbanisation pressure)
- Difference between real world change and image model change
  - changes reflecting the data in the model
  - What about other channels than farmer/inspector? Systematic changes of Mapping Agency included? > topic 5.2
  - Can one common approach be applied for all different LPIS models?

- Yes, all models should be equally capable of dealing with the change occurring
- What attribute changes are relevant
- those attributes that have a significant effect on the eligibility represented by the reference parcels

- What type of changes, ineligible features boundaries > both, see above
- Background 25 not understood > topic 5.2
- How does it relate to good update procedures/performance? > topic 2.2
- Use ETS for producing change signals rather than measuring change > topic 2.2

- for more information on the LPIS update cycle, please look at the LPIS dataflow article

42.1.19 QE6 (land changes): proposed solutions

1st: Why the 25% threshold

- Keeping track on the change rate is good and useful, but it should be a criteria. Alternatively, we could think to apply different thresholds > topic 3.2
- Why not to use the inspection results to establish the change rate threshold? > topic 2.2

2nd: What are the relevant types and source of change

- Look at rwc and determine baseline per MS > topic 2.2
- Use inspection results to assess the change detection level > topic 2.2

3rd: Fixed change rate threshold does not reflect different regions and different type of RPs suggested

- Introduce different threshold based on rwc rates > topic 2.2

42.1.20 Orthoimagery: comments

- Use NIR > topic 1.1
- poor imagery affects LPIS QA (bad GCP, poor orthorectification) > topic 1.1
- uncertainty due to subjectivity > topic 1.1
- Inappropriate elevation angle cause poor orthorectification > topic 1.1
- Occlusion of tree and buildings; shadows cause CAPI ambiguity > topic 1.1
- Time of the acquisition (snapshot of winter/spring) > topic 1.1
- Phenological development is sometimes an important factor > topic 1.1
- At scale 1:10 000 ? image of 1 meter resolution is good, but not for 1: 5000! > topic 1.1
- Can we downgrade LPIS data to match 50 cm. ortho quality? > No, deterioration of LPIS quality is not allowed.
- Test conditions should be equal the LPIS maintenance conditions > topic 1.1

42.1.21 Orthoimagery: proposed solutions

1st: Pixel size and visual scale for CAPI impact the LPIS QA outcomes

- To apply greater tolerance? > topic 1.2
- Or even generalize to 1:10000 > No, this would decrease the sensitivity of the assessment
- standardize the scale to 1: 10 000 > No, this would decrease the sensitivity of the assessment
- Acquire and produce own imagery with the desired resolution and parameters > Already allowed

2nd: The ?base? image quality should be always met
Increase image budget or decrease the thresholds
◊ Source own imagery > Already allowed

◊ 3rd: Bad timing of image influence the results as well
◊ Multiple acquisitions in order to create multi-temporal data? > topic 1.1
◊ Lower angle images might be less affected by the tree overhang > topic 1.1
◊ Source own imagery > Already allowed

> for all the unaddressed points above, please look at the extensive topic 1.1

42.1.22 QE7 (rate of irregularities): comments

◊ 1st: What is area not found?
◊ area not found or area not paid because of an error?
◊ causes for area not found OTSC
  ◊ Non-agriculture land found in declaration
  ◊ Parcel Over declaration
  ◊ under minimum size
  ◊ parcel not found at all
  ◊ eligible land but not used for farming

◊ 2nd: separation of eligibility conditions on the land
◊ Area not found: where land cover conflict or ineligible because of administrative rules?
◊ Positive difference on application by application basis

◊ 3rd: over declaration and compensation
◊ Random sample is taken at farmer level so different approach
◊ Area non found at dossier (business level by PA)
◊ Area not found assed at parcel level in ETS

◊ Justification of QE7
◊ What is the correlation between the area not found during the OTSC and the LPIS quality?
◊ Over declaration should be picked up at the time of the application process.
◊ Difference from MS declaration management and 100% over declaration test will introduce difference irrelevant for LPIS QA

42.1.23 QE7 (rate of irregularities): proposed solutions

◊ 1st: What is area not found?
◊ decision needed on the exact meeting (same as reported by the PA or not?!) > topic 1.4
◊ clear definition

◊ 2nd: separation of eligibility conditions on the land
◊ Count only land connected ?area not found?
  ◊ Non-agri land in declared area
  ◊ Found less than declared (over declaratoin)
  ◊ Parcel not found (withdrawn at the end)
◊ Recalculation of value, this is not the value reported by the PA

◊ 3rd: over declaration and compensation
◊ consider the compensation occurred not at crop group level but at parcel level
◊ Count only those parcels in the Total population, parcels outside the LPIS QA zone should not be counted

◊ Justification of QE7
◊ Different relevance for different RP type
  ◊ AP most relevant
  ◊ If area admin control is done during declaration, higher relevance
  ◊ PB so relevant

◊ Analyse declaration procedure and result
◊ 2% is too strict. And define on dossier level linked to a penalty philosophy > topic 5.2
◊ Inconsistent sample issues
  ◊ selection of RPs is based on previous year (2009) so parcels newly declared in 2010 are not in the sample BUT these parcels are used for QE 6 and QE 7

> for all the unaddressed points above, please look at the extensive topic 2.3
42.1.24 Population and scope: comments

- 1st: Problems with small parcels
  - Measurements below the tolerance limit for specified image quality > topic 1.1
  - Often issue for AP > topic 5.3

- 2nd: Undefined RP in QE5
  - RP with critical defect or inability to determine LUI are considered in QE5, although the area is undefined

- 3rd: Parcels with no SAPS/SPS payment
  - Should declared parcels? include RPs with no SPS/SPS payment but subject to GAEC or other payments? > topic 1.7 and LPIS QA scope.

- Independent selections
  - how to select the sub population?
    - Sampling sites must be representative for the ETS
    - Risk factor used for OTSC must be independent of LPIS
    - Must also be independent of IACS elements

  > See LPIS zone selection

42.1.25 Population and scope: proposed solutions

- 1st: Problems with small parcels
  - Exclude RP below a certain size from ETS > topic 1.2
  - This exclusion size can be based on image quality criteria > topic 1.1

- 2nd: Undefined RP in QE5
  - Exclude RP with unclear boundaries from QE5
    > by setting Aobs and Arec to zero, these parcels are already effectively removed from the QE5 results

- 3rd: Parcels with no SAPS/SPS payment
  - Exclude parcels with are part of the declaration but no SAPS/SPS payment on
    > topic 1.7 and LPIS QA scope

- Inconsistent sample issues
  - Use the same set of RPs for ETS-CAPI and for IACS value QE > topic 2.6
  - We need to include the PBs newly declared in 2010.
    > these ?new parcels? are ?in process? and therefore represent a heterogeneous subpopulation and separate lot; see our FAQ. Testing this "new" lot probably requires a dedicated executive test suite (and more work for the member state)
  - Both years could be used: previous and the actual year. > see reply above

- Independent selections
  - Further study on the risk factors used to select the sites, how they can be
    connected to the LPIS RPs.
  - Use only those risk analysis sites can be in the sample, when no supervised selection (risk
    or manual shifting to a problematic area)
  - Please do this analysis and indicate potential problems, JRC will investigate during the screening whether a simple ANOVA might indicated dependencies on risk factors known prior to zone selection
43 MS questions on ATS and ETS reporting packages upload

43.1 ATS Reporting Package

43.2 ETS Reporting Package

- **DK:** In the 2 requested GML files (LPIS point zero state, LPIS polygon zero state), what does "...zero state" stand for? > an extract from the LPIS data under inspection, i.e. reflecting the state at the first step of the ETS . For more details, please refer to The_ETS_reporting_package and to Data exchange presentation

- **NL:** What do rpID and ordinal number stand for? > rpID stands for a unique identifier of a reference parcel (it is checked under ATS Module A_1311). The ordinal number is used to indicate an order of parcels to be ETS inspected.

- **SE:** Can I omit/delete Module A_133 and its parts in the ATS log XML? > Yes, but only the parts that are not applicable AND for which the corresponding xsd schema shows: <xs:element name="moduleA133" minOccurs="0"/>

- **DE, ES:** Some of the modules in AtsLog.xsd have been removed. What should we do? > AtsLog.xsd and AtsScoreboard.xsd schemas were established after first preliminary results of ATS and after the Copenhagen workshop. We had to accommodate some required changes, as well as to introduce waivers on the MS demand. These changes and adaptations are reflected in the above-mentioned schemas. For instance, we decided to reduce the burden for the MS in compiling some elements twice, since A_121 can be directly reflected (and in more accurate way) in a separate EligibilityProfile.xsd. Moreover some elements have been completely removed since they were less relevant. We decided to keep only the crucial ones. Please, see also: Copenhagen workshop 2010

- **NL:** JRC XML Validator indicates a problem with the internet connection/proxy server or similar. What to do to validate our XML/GML files? > Your proxy configuration does not allow our validator to connect to internet to access all the necessary schemas. You can validate your files locally, by putting every concerned schema (xsd), connected LpisCommonTypes (xsd) and your file (xml/gml) in the same location of the JrcXmlValidator.exe. Follow the steps:

  1. download the required schema connected to your xml/gml file to a local folder, where the JrcXmlValidator.exe is located,
  2. download the required LpisCommonTypes.xsd to the same location, it is mentioned INSIDE the main schema, check it,
  3. copy your xml/gml file to the same location,
  4. edit your xml/gml file to replace schemaLocation path to indicate the new one (i.e.: xs:/schemaLocation="http://ec.europa.eu/dgagri/cap 4_3_AtsScoreboard_20110120.xsd" instead of previously: xs:/schemaLocation="http://ec.europa.eu/dgagri/cap ftp://mars.jrc.ec.europa.eu/LPIS/Schemas/4_3_AtsScoreboard_20110120.xsd"),
  5. save the file,
  6. validate your file and analyse the results,
  7. if valid, edit your xml/gml to put back the schemaLocation pointing to our ftp (xs:/schemaLocation="http://ec.europa.eu/dgagri/cap ftp://mars.jrc.ec.europa.eu/LPIS/Schemas/4_3_AtsScoreboard_20110120.xsd"),
  8. save the file,
  9. if not valid, check and correct the errors and validate again.

- **SK:** What is the required format of the codeSpace for the eligibility profile? > urn:ec:lpisqa:REPORTING_YEAR:YOUR_LPIS_CODE:LOT_NUMBER:EligibilityProfile where you need to replace the bold elements with your actual data, i.e. urn:ec:lpisqa:2010:TEST-LPIS:1:EligibilityProfile

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<td>Agro-Environmental Measures</td>
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<td>ATS</td>
<td>Abstract Tests Suite</td>
</tr>
<tr>
<td>AQL</td>
<td>Acceptance Quality Limit</td>
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<td>CAP</td>
<td>Common Agricultural Policy</td>
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<tr>
<td>CAPI</td>
<td>Computer Assisted Photo Interpretation</td>
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<td>CwRS</td>
<td>Control with Remote Sensing</td>
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<td>EC</td>
<td>European Commission</td>
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<td>EPSG</td>
<td>European Petroleum Survey Group</td>
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<td>ETS</td>
<td>Executable Tests Suite</td>
</tr>
<tr>
<td>EU</td>
<td>European Union</td>
</tr>
<tr>
<td>GAC</td>
<td>Good Agricultural Condition</td>
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<td>GAEC</td>
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<tr>
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<td>Integrated Administration and Control System</td>
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<tr>
<td>INSPIRE</td>
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<td>ISO</td>
<td>International Organisation for Standardisation</td>
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<td>JRC</td>
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<td>LADM</td>
<td>Land Administration Domain Model</td>
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<tr>
<td>LCM</td>
<td>LPIS Core Model</td>
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<td>LCML</td>
<td>Land Cover Meta Language</td>
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<td>LQ</td>
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<td>LUI</td>
<td>Land Under Inspection</td>
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<td>MS</td>
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<td>OTSC</td>
<td>On-the-Spot Check</td>
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<td>RP</td>
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<td>QC</td>
<td>Quality Control</td>
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<td>QA</td>
<td>Quality Assurance</td>
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<td>QAF</td>
<td>Quality Assurance Framework</td>
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<tr>
<td>QEx</td>
<td>quality element x (x = rank in the discussion document)</td>
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<tr>
<td>SDI</td>
<td>Spatial Data Infrastructure</td>
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<td>UML</td>
<td>Unified Modelling Language</td>
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<tr>
<td>VHR</td>
<td>Very High Resolution</td>
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<td>XML</td>
<td>eXtensible Markup Language</td>
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</tbody>
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Abstract Test Suite (ATS) - set of abstract tests specifying all the requirements to be satisfied for conformance abstract test.

NOTE: An abstract test case is a formal basis for deriving executable test cases. One or more test purposes are encapsulated in the abstract test case. An abstract test case is independent of both the implementation and the values. It should be complete in the sense that it is sufficient to enable a test verdict to be assigned unambiguously to each potentially observable test outcome (i.e. sequence of test events).

anomaly - observed non-conformance

application schema - conceptual schema for data required for one or more applications [ISO19101]

acceptance quality limit (AQL) - quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance sampling

basic test - initial capability test intended to identify clear cases of non-conformance

capability test - test designed to determine whether an Implementation Under Test (IUT) conforms to a particular characteristic of an International Standard as described in the test purpose

conceptual schema language - formal language based on a conceptual formalism for the purpose of representing conceptual schema [ISO19101]. Examples: UML, EXPRESS

conformance - fulfilment of specified requirements

conformance testing - testing of a product to determine the extent to which the product is a conforming implementation

conformance test report - summary of the conformance to core elements as well as all the details of the testing that supports the given overall summary

conforming implementation - implementation which satisfies the requirements

defect - non-fulfilment of an intended usage requirement

executable test - specific test of an implementation to meet particular requirements NOTE: Instantiation of an abstract test case with values.

Executable Tests Suite (ETS) - set of executable tests

generalization - feature association - describing inheritance relationship between feature types, where more general feature type (supertype) is result of generalization and one specialized feature type (subtype) is result of specification

feature - abstraction of real world phenomena [ISO 19101] EXAMPLE: The phenomenon named ?Eiffel Tower? may be classified with other similar phenomena into a feature type ?tower?. NOTE: A feature may occur as a type or an instance. Feature type or feature instance should be used when only one is meant.

feature association - relationship that links instances of one feature type with instances of the same or a different feature type

feature attribute - characteristic/properties of a feature

Feature Catalogue (FC) - catalogue containing definitions and descriptions of the feature types, feature attributes, and feature associations occurring in one or more sets of geographic data, together with any feature operations that may be applied

GAC - Good Agricultural Condition. A component of eligibility under SAPS

land cover - physical and biological cover of the earth?s surface including artificial surfaces, agriculture areas, forests, (semi-) natural areas, wetlands, water bodies

land use - territory characterised according to its current and future planned functional or socio-economic purpose (e.g. residential, industrial, commercial, agricultural, forestry, recreational)

LCCS - Land Cover Classification System, developed by FAO/UN

limiting quality (LQ) - when a lot is considered in isolation, a quality level which for the purposes of sampling inspection is limited to a low probability of acceptance

lineage - data quality overview element, which describes the history of a feature from collection and acquisition through compilation and derivation to its current form

lot of reference parcels - homogeneous population of reference parcels defined for each country/region (or LPIS),

LPIS control zone - randomly chosen control zone used for the ETS inspection, where up-to-date national orthophoto or VHR data, acquired in the frame of the CwRS, is available.

LUI - Land Under Inspection. The land represented by the Reference Parcel, according to its definition
LUHG - Land Under Historical GAC. The land which corresponds to the area under GAC at the time of the reference data, irrespective of its production status at that reference date

non-conformance - failure to fulfill one or more specified requirements

nonconformity - non-fulfilment of a specified requirement

sample pre-selection - ordered list of reference parcels to be sequentially inspected

sample size - prescribed number of reference parcels to be tested based on ISO 2859/2-1985 (Procedure A, Limiting Quality = 2%),

spatial object - feature

specialization - association describing inheritance relationship between feature types, where a more general feature type (supertype) is result of generalization and a specialized feature type (subtype) is result of specification.

"systematic refresh" of the LPIS - verification of the state of all reference parcels followed by an update or correction where necessary.

Unified Modelling Language (UML) - open modelling standard for conceptual schema language defined and maintained by the Object Management Group.

universe of discourse - view of the real or hypothetical world that includes everything of interest [ISO19101]
47 LPIS QA Contacts

For technical issues regarding the LIPS quality assessment:

- Wim Devos [wim.devos@jrc.ec.europa.eu] - overall coordination
- Piotr Wojda [piotr.wojda@jrc.ec.europa.eu] - data exchange
- Pavel Milenov [pavel.milenov@jrc.ec.europa.eu] - ETS inspection procedure
- Romuald Franielczyk [romuald.franielczyk@jrc.ec.europa.eu] - Mediawiki.

--Wim 16:28, 22 March 2010 (UTC)
This article offers a rough overview of the changes applied to the LPIS QA technical documentation as presented on the LPIS-day (April 15th) and the final technical guidance presented to the DPMM (Management Committee for Direct Payments).

For detailed information on these changes either

1. Look at the ?history? tab of the WikiCAP article
2. Look at the release notes indicated in the beginning of the 5 annexes.

48.1 Additional documentation by November 20th, 2010 (still ETS version 4.3)

1. Errata page lists implemented modifications
2. Frequently Asked Questions updated
3. Support article on application of waiver
4. Raw data examples published on Downloads

48.2 Changes implemented by October 2010 (ETS version 4.3)

Guidance 4.3 reflects a series of modifications resulting from the experiences and suggestions presented at the 2010 LPIS Workshop at Copenhagen. Version 4.3 tried to reconcile the contradictory requirement of a call for simpler guidance, a need to differentiate according to LIPS implementation type and the key objective to obtain only relevant information from this inspection. The result of this balancing exercise is that changes are very minor for the inspection procedure (process of observation) but some additional processing of the observed data through the concept of waivers had to be introduced. Waivers offer the formal and conditional dispensation for not considering a particular issue as non-conforming.

48.2.1 ATS

The implementation Conformity Statement (ICS) is extended with two optional statements:

1. optional statement on applicability of waivers regarding potential critical defects and contamination.
2. optional statement on selection criteria for reference parcels subject to permanent physical changes of the land that impact on the IACS in general and eligibility of the land in particular?

Due to constraining resources, the LCM and derived ATS modules have not yet been upgraded.

48.2.2 Annex I Inspection method

1. population and sub-population are clarified and their application slightly revised
2. the use of the inspection mapping legend with aggregated land cover? classes is better explained
3. application of visual inspection is widened, by applying it to only the parcel boundary area (rather than on the whole parcel)
4. introduction of a size dependent conformance threshold for the area-based non-conformities
5. introduction of the waiver concept for vindicating a number of particular potential critical defects and contamination by ineligible features.

48.2.3 Annex II Inspection workflow

• Adaptation for the changes of annex I
• Vindication of critical defects and contamination is handled,

 instruction to identify critical defect-based non-conformance revised
 instruction to identify contamination-based non-conformance added

48.2.4 Annex III Eligibility and land cover

2. added condition for eligibility of landscape feature subject to retention: ?on the immediate border of the agricultural parcel?

48.2.5 Annex IV IACS data

1. application of a minimum 100m2 threshold for significant land change
2. explicit handling of land changes relating to permanent land cover changes that affect eligibility
3. ?significant? added regarding the proceeding year (measure 10208)

48.2.6 WikiCAP [art 6.2] technical documentation articles

• Chapter 2: inspection method

1. general version 4.3 indicated on all pages of this chapter
2. ATS testing: ICS extended to accommodate waivers and change detection procedures
3. Inspection: reflects Annexes version 4.3
4. Analysis of observed data: reflects Annexes version 4.3
5. Analysis of IACS data: reflects Annexes version 4.3
6. Annual ETS reporting: the scoreboard template has an added row, to hold the observed potential defects, this parameters has no expectation attached. the acceptance decision (LQ=2) applies on the remaining unwaivered defects.
7. Annual ETS reporting package: clarified ETS-reporting package and removed some obsolete or redundant items.
8. Reference Parcel Sampling: has been adapted to accommodate new naming convention of the exchange schemas.

• Support
  
1. Downloads: updated templates and missing schemas added as well as a date stamp for their validity

• Discussion pages
  
1. Existing Member States’ questions moved to separate article
2. findings and Q&A of the LPIS workshop Copenhagen workshop added as new article

• Front and back matter
  
1. Release notes: updated to V4.3
2. Errata: addressed and emptied

--Wim 16:38, 14 October 2010 (UTC)

48.3 Changes implemented by July 2010 (ETS version 4.2)

version 4.2

• ATS

◊ farmedArea attribute of ReferenceParcel class replaces farmerArea
◊ conformity column added to the ATS-log template

• sampling:

◊ GML tools for creation, scripts and examples were published
◊ restructured guidelines, separating instructions (chapter 2) and support (chapter 3)

• portal: login and upload facilities on the portal were activated

• orthoimagery use: the use of CwRS imagery from “secondary sensors” is clarified

• inspection procedure:

◊ better differentiation between parcels that can not be inspected for technical reasons (= skipped parcels) and parcels that cannot be delineated because of the condition of the parcel boundaries (= non-conforming parcels)
◊ in a situation where no delineation of the land cover can be made AND no ineligible elements are visible inside or around the LUI (e.g. corn fields in “sea of corn fields”), then a copy/paste of the MEA is performed. (Note that the parcel is still recorded as non-compliant and potentially defective) In case ineligible features are in or around, the parcels area is not considered for quality element 1 (total eligible area). An example is added to the examples article
◊ the restriction to take into account ineligible features estimated to be > 0.1ha is removed
◊ these changes are reflected in annexes version 4.2

• parcels with a potential critical defect should be flagged as non-conforming and require an investigation into the cause of their non-conformance

• the eligibility profile:

◊ its standardized eligible land cover class definitions is explicitly addressed as the (national) mapping legend for the ETS delineation procedure
◊ a disclaimer is added to indicate that a receipt confirmation of a formally correct eligibility profile does not indicate an approval from the European Commission regarding the interpretation of eligibility of land made by the Member State within that particular profile

• pro-rata land cover types are no longer subject to prior DGAgri approval, provided they are dealt with in accordance with the definitions in R.1122/2009 and R.73/2009.

• cumulative change: an article is added on how to implement the measure?the measure for “the percentage of reference parcels which have been subject to change, accumulated over the years” is added

• detailed methodological Q&A are added to the discussion article

• the FAQ article was appended

• reporting:

◊ for both ATS and ETS, a differentiation is made between the reporting package (to be delivered to the European Commission) and archive documentation (to be stored by the MS)
◊ exchange formats for both reporting packages specified

48.4 Changes implemented by June 2010

• the revised discussion document made available for download

◊ minor adaptations on quality elements 5, 6 and 7
◊ the scope of reference parcels subject to inspection is clarified

• a list of individual questions and answers (Q&A) is provided on the discussion pages

• IACS queries: an annex was added for dealing with these quality elements

• historical GAC restrictions: an annex was added for dealing with historical GAC restrictions under SAPS

• pdfbook functionality allows you to dynamically download all documentation in a single pdf-document for easier printing and distribution
--Wim 15:46, 22 July 2010 (UTC)
49 Errata

version 4.3
50 Errata

The release of version 4.3 on 2010-10-15, cleared the errata of version 4.2.

No errata will be entered until this version is officially frozen.
51 Revised LPIS portal application reopened

A message was sent to all LPIS QA contacts on 22 February, indicating the portal would henceforth steer the upload process and that improvements would be implemented. This online development may have lead to minor inconsistencies between the application and the written down wikiCAP guidance.

It is obvious that when a minor conflict arises, the application supercedes the WikiCAP guidance. We apologize for any inconvenience and will harmonise documentation.
52 Recent modifications on ETS v4.3

The following corrections are, technically speaking, not errata. The entries are just a log of small changes and corrections that have been implemented in the online documentation since October 15th.

This means, that if you upload or view the documentation, the listed modifications are already there. A conflict could only become apparent if you compare the new download with an earlier download.

52.1 Discussion Document 11164 (FMP 11691)

52.1.1 Paragraph 3.5.4

• Written: ?An appropriate indicator on the LPIS as a whole would be the rate of parcels with more than 10 percent difference between declared area and recorded area.? 
• Should be read as: ?An appropriate indicator on the LPIS as a whole would be the rate of parcels with more than 10 percent difference between declared area and observed eligible area.?

52.1.2 Paragraph 3.6.5

• Written: "As soon as the cumulative change rate exceeds 25 percent, a systematic refresh should be launched."
• Should be read as: "As soon as the cumulative change rate exceeds 25 percent, the need to launch a systematic refresh should be investigated."

52.2 Wiki articles

52.2.1 Tools

• completely revised to include custom built and third party tools.

52.2.2 ATS Reporting

• ATS reporting package clarified: redundant lines for ICS are removed.
• ICS is composed of 3 sub-elements: eligibility profile, waivers, "change procedure"

52.2.3 ATS Preparation

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/Preparation#Implementation_Conformance_Statement)
• The content of the ICS is updated with the List of applicable waivers for potential critical defects and reference parcel "contamination?, as well as with the implemented procedure for selecting parcels subject to "permanent physical change?.

52.2.4 Acceptance Decisions


LPIS QA Instructions: for 2010, no acceptance decision will be applied on quality elements 2, 3, 4 and 6. The corresponding entries are striken from table 2.

52.2.5 Annual Reporting

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/GAMMA_2.c)

23 February 2011
• The ATS scoreboard (DOC/PDF) is explicitly mentioned in the mail delivery package due by 28 February.

POST DPMM of 16 December 2010
• The "Textual part" has been revised:
  1. a 3 page assessment report is mandatory.
  2. Some guidance is added on editing the assessment report and plan for remediating actions.
• Delivery instructions were added. Note that MS-Word DOC-versions of assessment report and plan are now required.
• ETS reporting package item 5 has been updated: there is no image transfer through the LPIS QA application. Instead: an INSPIRE compliant WMS is required or orthorectified imagery shall be delivered in a standard way to the JRC CID portal.

PRE DPMM of 16 December 2010
• ETS reporting package is revised with the following major changes:
  ◊ ETS scoreboard reported in XML format
  ◊ Orthoimagery can be provided as image subset or as ?imagettes?.

111
Flexibility in reporting the List of SQL statements - no specific format required

XML and GML schemas are updated

XML with the GAC-related raw observations is added

10 meters -> 100 meters distance: 9. LPIS polygon zero state should contain: boundaries, identifier and reference area of any parcel within a distance of 100 meters from the boundary of the inspected parcel.

The list of required elements has been updated. Two items added: Sample pre-selection status (XML) and if a field visit has been performed: Rapid Field Visit documentation (GML)

ATS: For the first LPIS QA year the ATS should be performed. For further years: if changes in the LPIS conceptual model, the ATS should be re-performed. If no changes: only a statement on the ATS conformity shall be sent.

52.2.6 Downloads

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/GAMMA_3.a#Downloadable_examples)

- a draft overview table of templates, schemas and examples has been added


- a link to an external schema set change log has been added


- Examples for ETS annual reporting have been added.


- Schema for reporting the rapid Field visit (RFV) is added.

52.3 Annexes

52.3.1 PDF versions of the ETS Annexes

- Blank pages at the end are removed.

52.3.2 Annex I, Table 5: RP landscape elements area (10104_2)

- Typing mistake corrected in the ?Example quality result meaning?: ?non-agriculture areas? changed to ?agriculture areas?

52.3.3 Annex I, Table 6: RP Non-agriculture land cover features (10105)

- Additional class for non-agriculture land cover is introduced ? ?Natural Vegetation?. Class ?Woodland? is changed to ?Forest and woodland?. Table 8.2 changed accordingly.

52.3.4 Annex I, Table 15: LPIS declared area (10206)

- Typing mistake corrected in DQ_EvalMethodDesc. Text changed to ?differs more than 10% from the area declared?.
- Typing mistake corrected in DQ_ConformanceLevel. Text changed to ?Area declared-Area Observed) <=110%?.
- Formula in DQ_ConformanceLevel is corrected to ?100*|Area Declared-Area Observed)/Area Observed| <=10%?.

52.3.5 Annex I, Table A of Detailed Description 1

- New waiver “10’ is introduced for LPIS systems using an AP design, to vindicate reference parcels having a potential critical defect “multi-parcel” (based on the observed occurrence of more than one agriculture parcel (“crops”) within the LUI).

52.3.6 Annex I, Table B of Detailed Description 2

- Typing mistake corrected for Waiver A. Text changed to ?Check that (Arec ? Aoibs) <= 100m2?.

52.3.7 Annex II, Activity Diagram

- A note mentioning the version (4.3.) is included.

52.3.8 Annex II, Point VI.2

- The instruction is updated: RPs with unclear LUI boundaries, having ineligible features present within a buffer of 5 meters each side of the parcel boundary, should not be taken into account for the statistics for both LPIS maximum eligible area (QE1) and LPIS declared area (QE5).

52.3.9 Annex II, Table 1

- A new code F1 is added, related to "Failure to inspect the reference parcel due to force majeure circumstances, observed on the LUI". Its use, requires provision of additional information (or proof) to confirm the occurrence of the force majeure situation.

52.3.10 Annex III, point 8.1.7 of Chapter 8

- It is clarified that the user-defined legend entries in the eligibility profile of the EU MS, should be expressed with maximum 2 capital letter abbreviation.
52.3.11 Annex III, Table 2: Semantic description of land cover classes and landscape elements

- Hops are included Permanent Herbaceous Crop
- Terraces are included in LF Section
- The classes representing Non-Agriculture land cover are removed
- Disclaimer added at the end of Table 2, that the given list of landscape feature is for illustration purpose only.

52.3.12 Annex IV, Table 17: OTSC rate of irregularities (10208)

- ?Amount not paid? is changed everywhere in the text to ?area not found?

52.3.13 Annex V, Table 1: RP GAC area (10301)

- DQ_Alies is changed to ?RP_MEA_GAC?

52.3.14 Annex V, Table 13: LPIS number of historical GAC anomaly causes (10403)

- ?Others? is removed from the list of causes for occurrence of GAC non-conformity.

52.3.15 Template of the ETS scoreboard

- The naming of the quality elements updated according to the changes in Annex I