

## LPIS QA and ETS v6.0



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## Outline

Observations on the 2014 exercise:

- automated screening

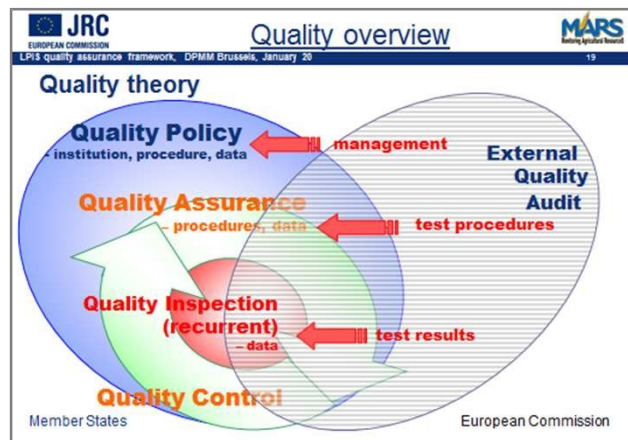
Changes to the 2015 LPIS QA

- Inspection protocol
- Data analysis

## Observations on the 2014 exercise



## Quality assurance and control QA&QC DPMM 20 January 2010

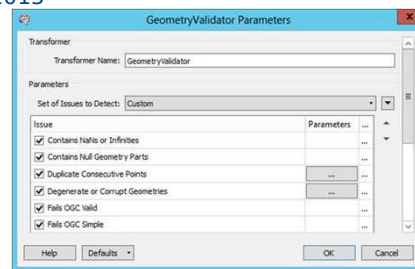


∴ JRC Quality control  
 ∴ error prevention  
 ≠ error correction

## Automatic screening

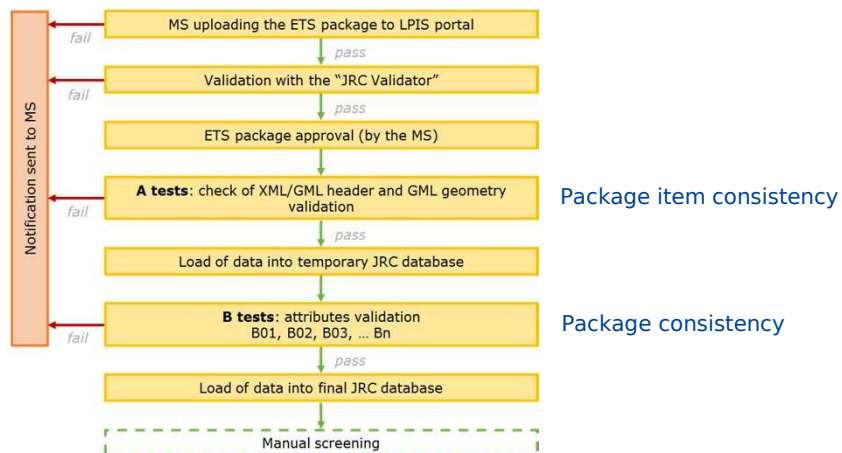
LPIS QA portal :

- Crontab operational after 31/12 deadline
  - no need for immediate re-upload, unless requested
  - BUT: failed items will block upload in 2015
  - hence, test facilities available
- Data content tests
  - complete inventory of package errors
  - 39 reports sent out 18/3/2013



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## Simplified automatic screening



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## Package item consistency test results





16/39(44) passed all PIC tests next slide

28/39 had with problems with a least one file:

- a07\_LpisPolygonZeroState: 16
- a06\_EtsInspectionMeasurements: 13
- a04\_OrthoimagerySet: 4
- a05\_OrthoimageryUrl: 4
- a03\_EtsObservations: 2
- a09\_FieldObservation: 2
- a01\_EtsScoreboard: 1
- a02\_LpisSamplePreselectionStatus: 1
- a10\_BoundaryInspection: 1
- a08\_GacMask: 0

## Package consistency test results

None of 16 passed all PC tests

- b04: 16      `areaLpisPointZeroState.gml` matches `areaLpisPolygonZeroState.gml`
- b13: 16      calculation `observedToRecordedAreaPercentage`
- b14: 16      calculation `observedRecordedAreaDifference`
- b11: 15      areas have 4 decimal precision [m<sup>2</sup>] 
- b12: 14      polygon entry `f(feasibility for measurement)` 
- b21: 14      conformant to 7% area purity test  
- b09: 13      feasible for inspection status><ETSobservation
- b23: 12      cause of non-conformities
- b10: 8      feasible for inspection status><polygonZeroState
- b24: 8      contamination and cause of non-conformities
- b22: 0      consistent contamination reporting

## 2015 Guidance



## Status 2014 ( slide LPIS WS 2014 Brussels)

- Crop measurement becomes default
  - Experience from Spain: cost benefit ???
- Sampling linkage
  - No change in 2014
  - QE7 obsolete from 2015
- Peer review
  - MS raise concerns about validity / disputes
- Dedicated LPIS QA zoning
  - Proposal repeated in following slides

?

DECLINED

DECLINED

ACCEPTED

## Dedicated LPIS QA zoning

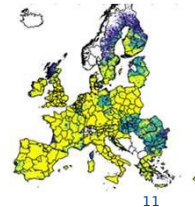
Ongoing while we meet: topic of dedicated presentation

Goal is to achieve

- equal probability of inspection for all reference parcels, no exclusion of zones.
- independence from CwRS zoning
- improved geometric and radiometric image quality
- concentration of field activities

Implemented through 4 level stratification based on

- reference parcel abundance
  - area representativeness
- reveals the impact of design choices



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## Documentation (topic of dedicated presentation)

- The numbering follows the sequence of the Regulation; i.e. QE3 (CD) and QE4 (causes) have been swapped.
- Activities are referenced to the LPIS quality model (interim data quality measures and final data quality elements).
- The guidance documentation has been derived from the UML model data  
 Standalone pdf-annexes are discarded: Annexes I, II and III  
 Direct model extracts are published as html-pages, ancillary description remain hosted by a Wikimedia environment.
- Continuity  
 Online pdf-generation of the complete documentation set will remain possible.  
 A correspondence table between the guidance versions is foreseen.

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## ETS v6.0 observation changes (=mapping)

### Simplification (-)

1. delineation variant 1 is universally applied
  - No more base or variant 2
  - Triggered by common image quality
2. the “5-m buffer” rule has been abolished
  - Copy/pasting (= qualitative assessment) is incompatible: feasibility for measurement must trigger measurement!
  - Situation appropriately handled by parcel aggregation.

### New(+)

1. Point location of contamination introduced
  - Document “abundance” to support screening
  - Enable conformance class 2 assessment

## Crop aggregation application

1. Principle: remains optional
2. But becomes mandatory where low “feasibility for measurement” denominators create a methodological or perceived problem:
  - methodological problem: less than 200 RP measured
  - perceived problem: >200 but less than half the RP measured

DECISION MADE A PRIORI FROM THE 2014 RESULTS:

$$\text{Est}(\% \text{RP}_{\text{measured}}^{2015}) = \%(n - \text{RP}_{\text{notFeasibleForMeasurement}} + \text{RP}_{5\text{mbuffer}})^{2014}$$

If <50% then crop aggregation!

### Notes :

- by definition ☆ for cadastral parcel and agricultural parcel designs
- crop aggregation is analogous to OTSC AP measurement

## Data Analysis and reporting (=processing)

### Simplification (-)

1. The correlation test with the rate of OTSC irregularities (former QE7) has been removed.

### New(+)

1. "classification correctness test" verifies a reference parcel's correct delineation of arable land, PG and permanent crop.
2. QE4 (causes) expectation will be expressed in "non-conformities per 100 items"
  - appropriate for second conformance class, where "item" means reference parcel but non-conformities require the analysis
  - expectation value unmodified <5%/cause @LQ12.5

## Classification correctness test

Compares the observed land cover with the recorded agricultural land types (if CAPI in doubt -> field observations)

≡ existing area test performed on sub-parcels

i.e. 3%,5%,7% threshold applied on individual EP-class sub-parcels

Example: RP registered as 2ha PG

ETS observes 2ha arable, no contamination, no critical defect

For QE2:

- |                   |  |                |
|-------------------|--|----------------|
| • RP area:        | 2ha <sub>ref</sub> vs 2ha <sub>obs</sub>       | conforming     |
| • contamination:  | NONE <sub>obs</sub>                            | conforming     |
| • classification: | 2ha <sub>ref</sub> PG vs 0ha <sub>obs</sub> PG | non-conforming |
- Non-conforming RP for QE2



## Non-conformities (cf. EU 640/2014 art 6.2)

Conformance class 1 “assess the quality of LPIS”, counts non-conforming items (RP or crop aggregate)

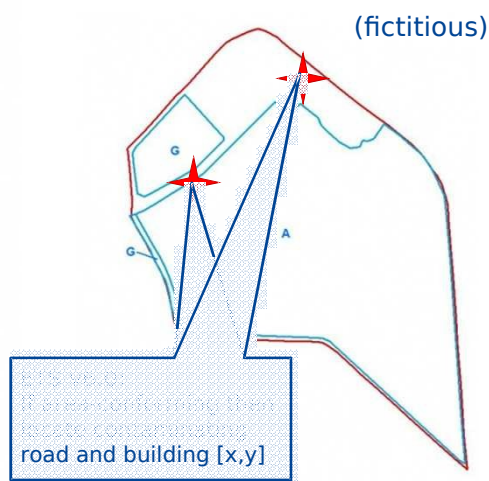
- QE1, QE2, QE3 ≈ factual assessment
- Straightforward link with RP upkeep processes
- expectation = 5% (QE2) or 1% (QE3) non-conforming items  
NO CHANGE FROM ETSv5.3

Conformance class 2 “identify possible weaknesses”, requires a broader system wide analysis,

- QE4 ≈ analysis on the LPIS processes and design
- Example: a single, large parcel is contaminated, includes ineligible land and its land is wrongly classified  
this represents 1 NC RP but 3 different weaknesses!

QE4: expectation = <5% non-conformities per 100 items  
where item ≡ RP/aggregate

## Illustration of observation change



## Illustration of processing change

test	observation	ETS v5.3	ETS v6.0
Area conformance	120198 m <sup>2</sup> >< 94513 m <sup>2</sup>	Fail	Fail
Contamination	1 road, 1 shed	n/a	n/a*
Area correctness	PG: 120198 m <sup>2</sup> >< 8925 m <sup>2</sup>	n/a	Fail
QE2	Any fail above	Fail	Fail
QE4	Count QE2/QE3 fails	1 non conforming item	2* non conformities

\*: any unrelated road and shed would be individually counted i.e. 2 counts

## Summary of methodological changes

	ETS v5.3	ETS v6.0
QE1	Measured + 5m buffer	No more 5m buffer, crop aggregation
QE2	Area conformity	No change
	Contamination	No change
	-	Classification correctness
QE3	Presence of defects	No change
QE4	Counts nc items	Counts non-conformities (QE2/3)
QE5	Ratio measured/declared	No change (see QE1)
QE6	Incremental change rate	No change
QE7	OTSC link	-

## Conclusion

### Changes

some already announced, some triggered by the legislative context (Greening/conformance classes)

### Impact

- ETS Inspection workload should not significantly increase from adding the location of contamination
- Field observation might become more important in certain conditions.
- software adaptation needed to accommodate processing

These changes intend to increase effectiveness and relevance of the LPIS QA. Results for LPISs already approaching the “ideal” RP should not be affected by these changes



**Thank you!**