

LPIS Quality Assurance Framework

Based on JRC IES/H04/P/PMI/pmi D(2011)(13519)

ANNEX IV

Executable Test Suite (ETS)

Four-eye control, version 6.4

July 2019

Release notes (changes/updates from version [6.3 2018](#)):

- [No changes from version 6.3](#)

1.1 Description of the activities and measures

An independent operator (different from the person involved in the original ETS) should perform a verification of and confirm certain ETS observations for all Reference Parcels belonging to the QC sample. That verification should be made in the same inspection environment used for the ETS and with the same independent standard dataset (reference orthoimagery). The LPIS custodian shall ensure a transparent segregation of duties and responsibilities for staff involved with both the update processes and the annual quality assessment.

This verification is not considered part of the ETS quality measures and ETS inspection procedure, as it is executed after the ETS. It does not report on certain quality aspect of the dataset under inspection, but provides a feedback to the ETS operator whether the inspection he conducted was performed correctly for a given RP and can trigger re-inspection of certain quality measures. Some of the components of this verification (given in the template bellow) are derived from the Observation Schema laid down in ISO 19156 "Geographic Information – Observations and Measurements".

Observation components	Value/Example/Description
phenomenonTime	Date and time of the moment when the verification is performed. The format should be in compliance with the parameter DateTime described in ISO 19103 (for example 1998-09-18T18:30:01).
Result Time	Date and time of the moment when the results of the checks become available (in the majority of cases, it should be the same as the phenomenonTime)
Operator	Person who has performed the checks (Domain code 008 - B5.5 of ISO 19115:2003)

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FeatureOfInterest	Reference Parcel ID
Data quality measure	
Measure identifier (measureIdentifier)	20000
Name (Name)	Quality of the ETS inspection
Alias (alias)	ETS_QA
Metaquality (elementName)	Confidence
Basic Measure (basicMeasure)	Correctness indicator
Definition (definition)	Trustworthiness of a data quality result
Description (description)	Synthetic description of the results of the data quality evaluation.
Value Type (valueType)	String
Source Reference (sourceReference)	Technical specifications of the LPIS QA 2016
Example (example)	
Data quality evaluation	
Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
Evaluation method type code (DQ_EvalMethodTypeCode)	001
Evaluation method description (evaluationMethodDescription)	See Flow of events
Evaluation procedure	-
Conformance level (DQ_ConformanceLevel)	All requirements stated in the evaluation procedure have to be fulfilled.
Data quality result (DQ_ConformanceResult)	
Specification	Technical specifications of the LPIS QA 2015
Explanation	The land cover mapping of the Reference parcel was not performed with sufficient quality. The land cover inventory on the LUI for that reference parcels should be repeated. The results from all derived quality measures should be updated accordingly.
Pass	Boolean (1=yes, 0=no)

1.2 Flow of events

1. Retrieve the ETS inspection report and the necessary data, including the ETS observations, ETS measurements, sample pre-selection status, LPIS polygon zero state, field observations and field inspections and reference orthoimagery
2. Sort the reference parcels from the QC sample by ordinal number
3. For each reference parcel from the ordered list and based on the information from the independent standard dataset, check whether:
 - a. DQ_Value of "RP feasibility for inspection" is assigned correctly
 - b. DQ_Value of "RP feasibility for measurement" is assigned correctly
 - c. land cover features for the calculation of RP_MEA and for checking the contamination conformance are interpreted and mapped correctly
 - d. the parcel has been correctly classified as to the presence of critical defects
4. If the verification reveals that the ETS observations are not correct in at least one of the above-mentioned cases, flag the reference parcel for re-inspection. Else, confirm the observations for the given reference parcel.
5. Check whether you have reached the end of the ordered list. If not, go to the next reference parcel
6. Else, finalize the verification.

NOTE: If the verification reveals that, due to erroneous assignment of certain reference parcels as feasible for inspection, the minimum sample size is not reached, additional reference parcels from the sample pre-selection should be inspected to complement until the required sample size. These will, in turn, be subject to a subsequent the four-eye control.

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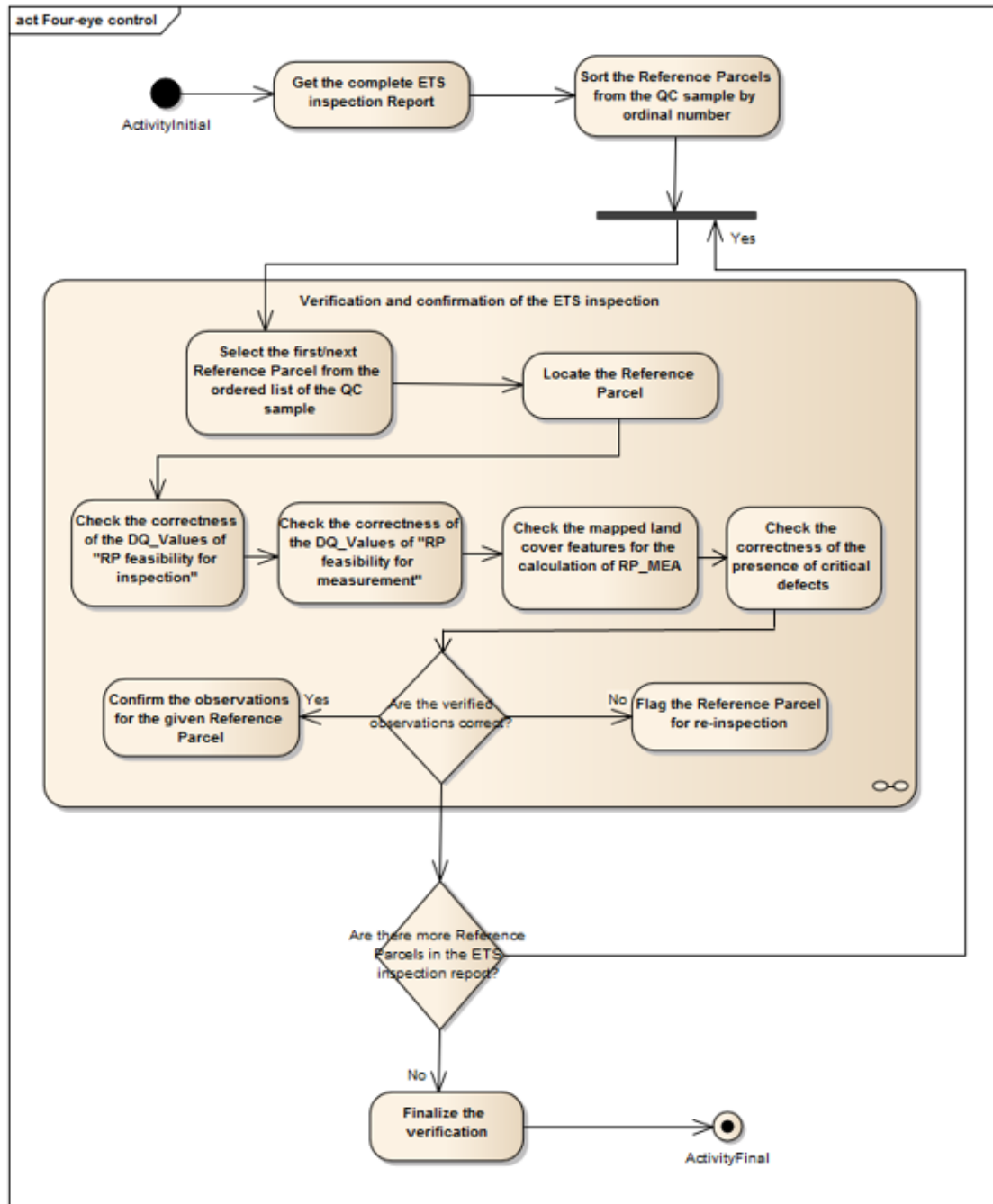


FIGURE 1: Ex-post verification of the ETS inspection (four-eye control)