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Category: TG IXIT

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This is the *category*-article for the **Annex X - Technical guidance on Implementation eXtra Information for Testing (TG IXIT)** DS/CDP/2016/04-part B. An IXIT typically provides the details on the organization and storage of concepts in the SUT as well as on the means of access to and modification of the SUT.

- A draft guidance MSword document was distributed and presented on the DPMM on June 28th, 2016.
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Natasa (talk) 13:30, 11 July 2016 (CET)

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1 TG IXIT

This article is the starting page of **Annex X - Technical guidance on Implementation eXtra Information for Testing (TG IXIT). DS/CDP/2016/04-part B**. An IXIT typically provides the details on the organization and storage of concepts in the SUT as well as on the means of access to and modification of the SUT.

The IXIT is called for by ISO 19105(2000), however, this standard does not provide templates or structures.

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2 TG IXIT Introduction

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The Implementation eXtra Information for Testing is a statement containing all of the information related to the implementation under test (IUT) and its corresponding system under test (SUT) which will enable the testing laboratory to run an appropriate test suite against that IUT. An IXIT typically provides the details on the organization and storage of concepts in the SUT as well as on the means of access to and modification of the SUT.

- An implementation is defined as the realization of a specification, in the context of the ISO geographic information standards, and of LPIS QA in particular, this involves the specifications of the geographic dataset of reference parcels
- A system Under Test (SUT) relates the computer hardware, software and communication network required to support the implementation. This IXIT doesn't investigate the SUT.

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3 TG IXIT Data scope

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For the creation and upkeep of an LPIS, several important choices about data sources and stakeholder roles have been made. These choices have a profound impact on the priorities, the structure, the operational strengths and potential weaknesses of the operational system.

ISO standards on geographical information would usually attribute this type of information to the LINEAGE component of metadata, but since the LPIS QA requires a correct and complete understanding of these choices, a structured way for documentation is required. Furthermore the method for the conformance testing under LPIS QA is verification testing which implies rigorous proofs of correctness to demonstrate conclusively and exhaustively any stated conformance of an implementation.

This annex X or TG IXIT provides the structured way to find and report the required lineage metadata.

There are two other LPIS QA information components that describe choices and lineage regarding the IUT but that are not in scope of the TG IXIT.

- The eligibility profile which provides an LCML -compatible catalogue of the land cover classes deemed eligible by the LPIS custodian. The eligibility profile methodology and format are described in Annex III of the TG ETS.
- MTS 2.0 involves other implementation and source dataset metadata, which is sufficiently structured by the INSPIRE implementing rules on metadata and the relevant data specifications. This metadata is part of the core TG MTS, but outside the scope of the Implementation Conformance Statement (ICS).

The IXIT probes into eight implementation options that any LPIS custodian must have made at a certain point to address the choices or options offered by the Regulations. As a result, the outcome of IXIT is simply a set of 8 qualifiers (nouns or adjectives).

The eight choices relate to:

- A - The author/actor of the primary boundary of the reference parcel. The primary boundary or perimeter represents the spatial extent of land corresponding to the reference parcel identifier. The outcome defines the reference parcel type; note that a 'basic property unit' (BPU) has been introduced to be in line with the INSPIRE glossary.
- B - The process that leads to the delineation of the borders of the agricultural land to be used as maximum eligible area.
- C - The way the eligible landscape features, if applicable, have been adjudicated to the reference parcel.
- D - The processing of the spatial themes above to assemble a maximum eligible area for each individual reference parcel perimeter.
- E - The application of pro rata reduction of permanent grasslands (PG) with scattered ineligible features.
- F - The validation and documentation of the required positional accuracy requirements.
- G ? How does the SUT determine the amount of eligible hectares per RP that are actually available for direct area payment application.
- H ? The status of implementation of the geospatial aid application.

The method to find the correct choices made is by answering the polychotomy questionnaire in the next chapter; for each of the eight topics, one and only one answer should emerge.

Although we do not expect that not all combinations of answers can actually occur, e.g. a 'CP' type reference parcel perimeter is unlikely not to come with 'freehand' drawn borders, no business rules have yet been implemented. Each of the eight qualifiers operates in full independence.

In the questionnaire,

- extracts from the regulation are *quoted in italic?*
- answers for the topic are **quoted bold underline?**
- referrals to subsequent questions are indicated as -> qn

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4 TG IXIT Data structure

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4.1 A Authoring the reference parcel PERIMETER

- q1. The initial/primary graphical data (polygon boundaries) for the perimeter that identifies a *?unit of land representing agricultural area?* and allows *?unique and unambiguous localisation?* are delivered by:
 - ◆ a/ external registers or maps -> q2
 - ◆ b/ internal IACS procedures -> q3
- q2. The data supplier of the graphical and alphanumeric data for perimeter and RP ID is
 - ◆ a/ cadastral institution (or other entrusted body), land registry, land court, or any other property register -> q4
 - ◆ b/ mapping agency, cartographic institute or mapmaker **?TB?** - topographical block
- q3. The delineation of these units is made by
 - ◆ a/ the LPIS-custodian, the PA or their contractor **?PB?** - physical block
 - ◆ b/ the farmer or applicant: -> q5
- q4. What does the polygon, used as reference parcel, represent?
 - ◆ a/ the unit of land that was historically entered in the register: **?CP?** - cadastral parcel
 - ◆ b/ the current extend of land tenure, i.e. adjacent CPs merged by right holder: **?BPU?** - basic property unit
- q5. What the farmer or applicant delineates is:
 - ◆ a/ each individual crop group: **?AP?** ? agricultural parcel
 - ◆ b/ all clusters of adjacent agricultural parcels in his holding: **?FB?** ? farmer's block

Look at the scheme [A-qualifier](#)

4.1.1 B Mapping the BORDERS of agricultural land

- q6. The optional/secondary/implied graphical data (polygon boundaries) that represent the physical borders used to *?measure the agricultural land?* that *?as a principle, is stable in time?* are derived from.
 - ◆ a/ a systematic land cover mapping project, covering all the agricultural land of the territory -> q7
 - ◆ b/ a delineation process during IACS applications with or without preregistration -> q8
- q7. The land cover mapping project is set-up by
 - ◆ a/ the LPIS-custodian or the PA in isolation: **?dedicated?**
 - ◆ b/ in collaboration with a third party institution (e.g. mapping agency, environmental agency,...): **?shared?**
- q8. The delineation process by the applicant is
 - ◆ a/ based on delineation from standalone aerial/VHR imagery (even if overlaps with other applications are enforced): **?freehand?**
 - ◆ b/ based on aerial/VHR imagery in combination with and constrained by other GIS data: **?constrained?**

Look at the figure [B-qualifier](#)

4.1.2 C Integrating eligible area from GAEC LANDSCAPE FEATURES

- q9. If applicable, how was the eligible area from *?landscape features subject to the requirements and standards listed in Annex II to Regulation (EU) No 1306/2013 which form part of the total area?*, established?
 - ◆ a/ as a part of A. and B. above, i.e. embedded inside the perimeter of a reference parcel of agricultural land: **?inclusive?**
 - ◆ b/ as a separate spatial feature with individual identification and polygon, i.e. adjacent to the perimeter of a reference parcel of agricultural land: **?complementary?**

Look at the scheme [C-qualifier](#)

4.1.3 D ASSEMBLING the reference parcel for IACS crosschecks

- q10. To *?determine?* for each reference parcel? *?a maximum eligible area for the purpose of the support schemes listed in Annex I to Regulation?*, the following spatial operations were performed
 - ◆ a/ none (assumed possible only in production block systems): **?Raw?**
 - ◆ b/ a straightforward (unmodified, unfiltered) spatial intersection between only perimeter and border polygons: **?straightforward?**
 - ◆ c/ a sub selection only of perimeter data (merger of units) followed by a spatial intersection with border polygons -> q11
 - ◆ d/ manipulation (queries and or spatial operations) of perimeter data followed by a spatial intersection with border polygons: **?adjusted?**
 - ◆ e/ a more complex sequence of spatial operations, involving other spatial themes and combinations than a singular intersection of perimeter and border. -> q13
- q11. This sub-selection of perimeter data represents:
 - ◆ a/ ignoring only particular topographical elements or landscape feature types present in source but irrelevant for IACS: **?extracted?**
 - ◆ b/ ignoring only perimeter segments that have the same applicant on both sides -> q12
 - ◆ c/ made by any other condition: **?amalgamated?**
- q12. Retrieve your RP-type from A above and
 - ◆ a/ If **?BPU?**, **?default?**
 - ◆ b/ for all other RP-types: **?personalized?**
- q13. What is impact of the additional spatial themes used?
 - ◆ a/ it allows to combine another reference parcel authors than the one identified as primary, and allows to obtain operate with smaller units of land: **?hybrid?**
 - ◆ b/ It allows subdividing the initial reference parcel perimeter into smaller units based on physical subdivision: **?sub-parcelled?**
 - ◆ c/ Neither a/ or b/ (e.g. is achieves some particular properties, it accommodates a legacy situation): **?complicated?**

Look at the scheme [D-qualifier](#)

4.1.4 E Establishing the PRO RATA reference area values for permanent grassland

- q14. Regarding *?permanent grassland with scattered ineligible features?*, and their *?pro-rata system to determine the eligible area within the reference parcel?*:
 - ◆ a/ pro rata is not implemented and so not a single case occurs; for all PG the area is directly derived from a polygon geometry of the delineated grassland: **?geometric?**
 - ◆ b/ pro rata is implemented and at least one reference parcel with PG was subject to area reduction -> q15

- q15. The pro-rata reduction of eligible area of reference is calculated
 - ◆ a/ based on the delineation of a specific PG land cover class: for all applicable PG occurrences, the delineated polygon area is reduced by a pre-assessed pro-rata reduction factor: **?systematic?**
 - ◆ b/ in at least one case that area reduction is based on a reference parcel specific assessment of the area of the ineligible features to be deduced: **?sporadic?**

Look at the scheme [E-qualifier](#)

4.1.5 F VALIDATING the source data

- q16. All spatial data identified above (source imagery, perimeter polygons, border polygons and possibly third themes) are demonstrated, by a documented report of external tests, to *?operate on the basis of a national coordinate reference system?* on a level that is *?at least equivalent to that of cartography at a scale of 1:5 000?*.
 - ◆ a/ If there are testing reports: **?validated?**
 - ◆ b/ If there are no testing reports: **?non-validated?**

Look at the scheme [F-qualifier](#)

4.1.6 G Immediate AVAILABILITY for payment

- q17. With the agricultural area and eligible hectares inside the reference parcel perimeter measured, how does the SUT *?specify the maximum eligible area per reference parcel?* of the current year in the *?pre-established forms based on the areas determined in the previous year??*
 - ◆ a/ That area value is identical to the value determined by the inventory or the physical observations of the agriculture land: **?landCover?**
 - ◆ b/ The area value determined by the physical inventory has been further modified on the basis of internal or external restrictions: **?landUse?**

Look at the scheme [G-qualifier](#)

4.1.7 H GSAA uptake

- q18. To what extent are farmers known to *?submit the aid application and/or payment claim using the geo-spatial aid application form?* i.e. *?through a GIS-based interface??*
 - ◆ a/ less than 25%: **?< 25%?**
 - ◆ b/ at least 25%: **?>= 25%?**
 - ◆ c/ at least 75%: **?>= 75%?**
 - ◆ d/ (as good as) all applications: **?= 100%?**

Look at the scheme [H-qualifier](#)

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5 TG IXIT Data delivery

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The eight qualifiers (nouns or adjectives) should be recorded in the appropriate element of the Ixit.xsd.

Qualifier	Topic	Ixit.xsd - entry
A	Author / RP-type	perimeterAuthorRPType
B	Land cover borders	landCoverBorders
C	Landscape features	landscapeFeatures
D	RP assembly	rPAssembly
E	Pro-rata PG	prorataPG
F	Validation	validation
G	Availability	availability
H	Geospatial aid application	gSAA

The schema descriptor can be downloaded from the LPIS schema registry: <http://lpis.jrc.ec.europa.eu/GTCAP/registry/6.1.0/> . The compiled xml files will have to be uploaded as the MTS package on the LPIS QA portal

A filled in example is available at <http://lpis.jrc.ec.europa.eu/GTCAP/registry/6.1.0/examples/>

Alternatively, for 2016, the outcome can be documented in the MTS log file (Annex XI), where a separate IXIT tab has been included to accommodate the IUT values for each qualifier. The resulting values in the worksheet tab will have to be manually copied into the MTS database via an editing application provided by the LPIS QA portal.

The TG IXIT delivery is linked to the MTS reporting package.

After the initial complete MTS upload for 2016, new complete MTS packages shall only be uploaded if and when the SUT was subject to a system redesign or to a substantial system upgrade. Any substantial redesign or upgrade will inevitably impact on the TG IXIT data results.

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6 TG IXIT examples

- A-qualifier
 - B-qualifier
 - C-qualifier
 - D-qualifier
 - ◆ Raw
 - ◆ straightforward
 - ◆ adjusted
 - ◆ extracted
 - ◆ default
 - ◆ personalized
 - ◆ hybrid
 - ◆ sub-parcelled
 - F-qualifier
 - E-qualifier
 - G-qualifier
 - H-qualifier
-

7 TG IXIT IXIT2ETS

7.1 Mapping the IXIT choice to ETS package files

ETS package v.6.4 consists of 12 mandatory and 11 optional files, depending of the individual applications in the Member State.

Depending of the IXIT choice for each qualifier, following content of the ETS package files is expected:

IXIT qualifier	ETS file	Explanation
A - TB	LpisPolygonZeroState.gml	occurrence of non-agricultural (ineligible area) layer within the file is expected
A - PB	LpisPolygonZeroState.gml	occurrence of non-agricultural (ineligible area) layer within the file is expected
A - CP	LpisPolygonZeroState.gml	occurrence of non-agricultural (ineligible area) layer within an additional file is expected
A - BPU	LpisPolygonZeroState.gml	occurrence of non-agricultural (ineligible area) layer within an additional file is expected
A - AP	LpisPolygonZeroState.gml	occurrence of non-agricultural (ineligible area) layer within the file is not expected
A - FB	LpisPolygonZeroState.gml	occurrence of non-agricultural (ineligible area) layer within the file is not expected
C - inclusive	LpisPointZeroState.gml	landscape features is not expected to be present in the file as a separate spatial feature
C - inclusive	Eligibility Profile	landscape feature(s) listed in the file
C - inclusive	EtsInspectionMeasurement.gml	landscape features present in the file in form of a spatial feature
C - inclusive	EtsObservations.xml	occurrence of the landscape features could be present in the file as the attribute RP_ALF
C - inclusive	LpisPolygonZeroState.gml	landscape features could not be present in the file (in form of an attribute or a spatial feature)
C - complementary	LpisPointZeroState.gml	landscape features present in the file adjudicated to the RP spatial feature
C - complementary	Eligibility Profile	landscape feature(s) listed in the file
C - complementary	EtsInspectionMeasurement.gml	occurrence of the landscape features present in the file in form of a spatial feature
C - complementary	EtsObservations.xml	occurrence of the landscape features present in the file as the attribute RP_ALF
C - complementary	LpisPolygonZeroState.gml	landscape features could be present in the file (in form of an attribute or a spatial feature)
D - raw	LpisPointZeroState.gml	etsReferenceArea is equal to the sum of individual agricultural area values
D - raw	Waiver.xml	Waiver C is not applicable
D - straightforward	Waiver.xml	Waiver C could be listed and applied
D - hybrid	Waiver.xml	Waiver C could be listed and applied
D - sub-parcelled	Waiver.xml	Waiver C could be listed and applied
D - complicated	Waiver.xml	Waiver C could be listed and applied
E - geometric	Eligibility Profile	pro-rata eligibility and reduction coefficient is not expected
E - geometric	EtsInspectionMeasurement.gml	pro-rata eligibility and reduction coefficient should not be applied
E - geometric	EtsObservations.xml	pro-rata eligibility and reduction coefficient should not be applied for calculating the RP_MEA
E - systematic	Eligibility Profile	pro-rata eligibility and reduction coefficient is expected
E - systematic	EtsInspectionMeasurement.gml	pro-rata eligibility and reduction coefficient could be applied for the area measurement
E - systematic	EtsObservations.xml	pro-rata eligibility and reduction coefficient could be applied for calculating the RP_MEA
E - sporadic	Eligibility Profile	pro-rata eligibility and reduction coefficient could be listed
E - sporadic	EtsInspectionMeasurement.gml	pro-rata eligibility and reduction coefficient could be applied for the area measurement
E - sporadic	EtsObservations.xml	pro-rata eligibility and reduction coefficient could be applied for calculating the RP_MEA
G - landcover	LpisPointZeroState.gml	For all reference parcels the attribute "etsreferenceAreaAvailability = true"
G - landuse	LpisPointZeroState.gml	The file can hold both "etsreferenceAreaAvailability = false" and "etsreferenceAreaAvailability = true" for an RP depending on the internal national administrative rules

8 TG MTS Downloads

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8.1 Schemas and examples for the MTS reporting package v.6.4 - **NEW**

Name	Reporting package	Description	Schemas/Templates for v.6.4	Example	Date*
Ixit	MTS reporting package	Application schema describing IXIT	Ixit.xsd	Ixit.xml	2019-06-17
Model test suite	MTS reporting package	Application schema describing LPIS QA MTS conformance testing log report	ModelTestSuite.xsd	ModelTestSuite.xml	2019-06-17
System metadata	MTS reporting package	Application schema describing vector and ortho metadata	SystemMetadata.xsd	SystemMetadata.xml	2019-06-17

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