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## GeoCAP Technical specification

### Conformance test for LPIS Core Model

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## 1. **Introduction**

### 1.1. **Objectives**

- 1.1.1. The main aim of this document is to provide a comprehensive test suite that enables conformity testing of the various LPIS systems that have been developed to address the common requirements laid down in the CAP regulations EC 73R2009 and EC 146R2010 and their supporting work documents. The LPIS Core Conceptual Model (LCM) has been designed to accommodate the regulatory requirements on the LPIS. The modelling technique enables the definition of standardized Abstract Tests Suit (ATS) for testing LPIS data structure conformance against the concepts of the regulations. Such conformance can be claimed for any LPIS implementation and data set
- 1.1.2. Needs of commonly agreed elements of good practices are also regarded.
- 1.1.3. The second objective of this document is to give guidelines for the Executable Tests Suit (ETS), which tests the very data and concentrates on such data quality elements as completeness, thematic and temporal accuracy.

### 1.2. **Scope**

- 1.2.1. The scope of this document is to define:
- an Abstract Test Suite (ATS) for MS LPIS implementation to the LCM, based on methodology of ISO19105 and ISO19106 standards;
  - test methods for conformance;
  - guidelines for Executable Tests Suit, (ETS)
  - content of a conformance test report.

### 1.3. **Terms and definitions**

#### **abstract test suite (ATS)**

set of abstract tests specifying all the requirements to be satisfied for conformance

#### **abstract test**

generalized test for a particular requirement

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).

#### **application schema**

conceptual schema for data required for one or more applications [ISO19101]

#### **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

**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

**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

**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**

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

**non-conformance**

failure to fulfil one or more specified requirements

#### 1.4. Abbreviations

ATS: Abstract Test Suite  
ETS: Executable Test Suite  
IUT: Implementation Under Test  
ICS: Implementation Conformance Statement  
SUT: System Under Test

#### 1.5. Related documents

[1] JRC IPSC/G03/P/VSA/vsa D(2007)(7665)	LPIS Core Conceptual Model: Methodology for Feature Catalogue and Application Schema
[2] JRC IPSC/G03/P/VSA/vsa D(2008)(9482)	Methodology for LPIS Database Quality Assessment
[3] JRC IPSC/G03/P/JDE/wde D(2008)(10146)	Methodological development activities towards a Quality Assurance Framework for LPIS-databases.
[4] JRC IPSC/G03/P/WDE/vsa D(2008)(10198)	Methodological development activities towards a Quality Assurance Framework for LPIS-databases. Status report
[5] JRC IPSC/G03/P/VSA/vsa D(2009)(10272)	LPIS Core Conceptual Model: Technical specification
[6] JRC IPSC/G03/P/WDE/wde D(2009)(11164)	LPIS quality assessment: requirements and methodology

## 2. Conformance testing methodology

### 2.1. Conformance assessment process

2.1.1. The conformance assessment process involves four phases (figure 1):

- a) preparation for testing;
- b) testing campaign;
- c) analysis of results;
- d) conformance test report.

Only preparation/ reporting phases of the testing are under scope of this document version. However, some examples of executable tests (phase b) which can be derived from phase a are given.

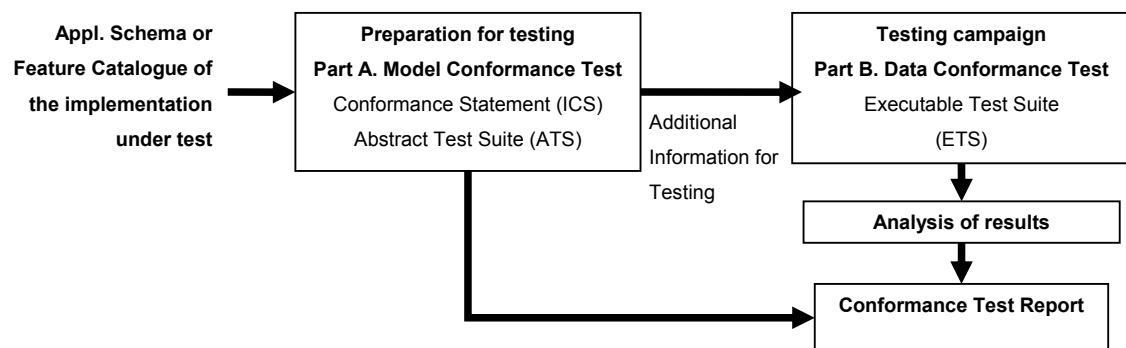


Figure 1. Conformance assessment process (after ISO 19105)

2.1.2. The primary source of information for conformance testing is the database structure as described in the **application schema** or/and **feature catalogue (FC)**<sup>1</sup> of core data<sup>2</sup> layers. It must be provided at the start of the preparation phase. A statement of the options, which have been implemented of a particular LPIS, shall accompany the primary data source (see chap 2).

2.1.3. For the testing campaign an *additional information for testing* data can be collected (ISO19105 Extra Information for Testing, XTI) on elements that are related to the environment in which the implementation shall be tested. In particular, this set of additional information provides the details on organization and storage of concepts in the system and means of accessing system. If needed, conversion methods between the concepts of the tested LIPS implementation and the LCM have to be developed.

<sup>1</sup> For methodology to create application schema and FC see JRC IPSC/G03/P/VSA/vsa D(2007)(7665)

<sup>2</sup> Data layers used for identification of agricultural parcels and determination of eligible area

## 2.2. Conformance statement on implementation options (ICS)

- 2.2.1. To evaluate the conformance of a particular implementation, there shall be a statement of the options which have been implemented. Such a statement is called by ISO19105 an **Implementation Conformance Statement (ICS)**.
- 2.2.2. The ICS provides the testing authority with a better understanding of the LPIS **implementation under test (IUT)** for use in the conformance assessment process and it helps to identify the boundaries of the testing domain. An ICS may describe the IUT in terms of optional requirements so the IUT can then be tested against those relevant optional requirements. Relevant options are only those specified within the framework of requirements in the LCM. Therefore, under the current scope of this document, the ICS should not include options outside the LCM framework.
- 2.2.3. The ICS may be generated by a questionnaire that documents the IUT capabilities, required for undertaking the conformance testing. The questionnaire or plain text document shall be provided by authority claiming conformance with LCM. This statement shall include (non-exclusive list):
- a) type of payment scheme (SPS/SAPS)
  - b) presence other CNDP schemas and coupled payments (title IV)
  - c) type of Reference parcel, including internal definition
  - d) rules for producing RP identifier
  - e) process of determination of maximum eligible area for RP
  - f) ....

## 2.3. Abstract Test Suite (ATS)

- 2.3.1. ISO 19105 distinguishes two types of tests that participate in conformance assessment procedure: a) abstract tests and b) executable tests.
- 2.3.2. An **abstract test** is a generalized test for a particular requirement (ISO19105). It is a formal basis for deriving executable test cases. The test is independent of both the model implementation and the data values therein. One or more test purposes can be encapsulated in a single abstract test. An abstract test should be complete in the sense that it leads to an unambiguous decision on each potentially observable test outcome (i.e. sequence of test events). Abstract tests can be standardized for the complete domain because they are based on the common domain requirements. An **Abstract Test Suite (ATS)** therefore specifies all requirements to be satisfied for testing implementation conformance. An ATS consists of modules, and can be hierarchically organized.
- 2.3.3. An **executable test** is a specific test of an IUT to meet particular requirements. In other words, it is a realisation of the abstract test where all implementation-dependent parameters have been assigned specific and well defined values. A set of executable tests is called an **Executable Test Suite (ETS)**. Since those executable tests are always dependent on a particular value for each parameter, they can not be standardized.

## 2.4. Basic versus Capability tests

- 2.4.1. According to the extent to which they provide an indication of conformance, abstract and executable tests can be further sub-divided to: a) **basic test** or b) **capability test**
- 2.4.2. A **basic test** provides only preliminary evidence on IUT conformance. Basic tests shall always be used at the start of the conformance assessment process, e.g. to establish conformance of basic concepts in order to evaluate applicability of all subsequent test procedures. According to ISO19105 basic tests serve: (i) for detecting *obvious* cases of non-conformance, and (ii) as a preliminary step in order to decide whether or not run capability test.
- 2.4.3. A **capability test** checks that the observable capabilities of the implementation under testing are in accordance with the capabilities claimed in the implementation conformance statement (ICS). They endeavour to provide testing which is as comprehensive as possible over the full range of conformance (mandatory and relevant optional) requirements specified in the LCM. According to ISO19105 capability tests serve: (i) to check that the capabilities of the implementation are consistent with the conformance requirements, that is, determine whether or not an IUT conforms, and (ii) investigate causes for failure. Capability tests shall not be used: (i) to test in detail the behaviour associated with each capability, which has been implemented, or (ii) to guarantee completeness.

## 3. Model Conformance Test

- 3.1.1. Input information required for running the LCM Model Conformance Test are:
- The Feature Catalogue (FC) or Application schema of the implementation claimed to be conformant, and
  - The Implementation Conformance Statement (ICS) describing which options of the LCM are realized (see also 2.2)
- 3.1.2. ATS contains three main models of the tests as follows:
- A\_11 Module: Definition of Reference parcel**
- A\_12 Module: Eligibility and Land cover type**
- A\_13 Module: Attributes of Reference parcel**
- A\_131 Mandatory attributes of Reference parcel
  - A\_132 Attributes for xCompliance
  - A\_133 Specific attributes of Reference Parcel



### 3.2. A\_11 Module: Definition and representation of Reference parcel

Module A\_11 can be assigned 'Conformant' value if:

- one of the tests A\_1113 OR A\_1114 OR A\_1115 OR A\_1122 OR A\_1123 is 'Conformant'
- AND A\_113 are 'Conformant'

A_111 [module]	Test purpose:	Test method:	Test result	Conformity element
A_1111 [basic test]	verify definition of reference parcel: boundaries	verify if: the reference parcel defined by 'stable' topographic and /or land cover boundaries	<Y/N> if NOT go to A_112	n/a
A_1112 [basic test]	verify definition of reference parcel: land cover	verify if: and include homogenous land cover* under agricultural use	<Y/N> if NOT go to A_1116	n/a
A_1113 [basic test]	verify definition of reference parcel: declaration process	verify if: several farmers can declare several fields (production units) inside reference parcel; -RP delineated by the administration using ortho-photo imagery (without interaction with farmers who cultivate it)	<Y/N>	<Reference parcel CONFORMANT with Physical block definition>
A_1114 [basic test]	verify definition of reference parcel: declaration process	verify if: reference parcel includes -adjacent fields of only one farmer; -defined by the farmer, who cultivates it (manage/execute his tenure rights: ownership, rent etc.) on multi-annual basis and checked by administration using ortho-photo imagery	<Y/N>	<Reference parcel CONFORMANT with Farmer's block definition>
A_1115 [basic test]	verify definition of reference parcel: declaration process	verify if: reference parcel -contains only fields belonging to the same 'crop group'; -defined by farmer, who cultivate it (manage/execute his tenure rights: ownership, rent etc.) on an annual /crop basis	<Y/N>	<Reference parcel CONFORMANT with Agricultural parcel definition>
A_1116 [basic test]	verify definition of reference parcel: declaration process	verify if: reference parcel defined by topographical boundaries, can contain one or more (agricultural and non-agricultural) land cover type(s) AND 1 or several farmers can declare 1 or several fields (production units) inside reference parcel; RP delineated by the administration using ortho-photo imagery (without interaction with farmer(s) who cultivate it)	<Y/N>	<Reference parcel CONFORMANT with Topographical block definition>

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<b>A_112</b> <b>[module]</b>	<b>Test purpose:</b>	<b>Test method:</b>		
<b>A_1121</b> <b>[basic test]</b>	verify definition of reference parcel: boundaries	verify if: the reference parcel defined by ownership or property right boundaries AND	<Y/N>	N/A
<b>A_1122</b> <b>[basic test]</b>	verify definition of reference parcel: land cover	the reference parcel include different land cover units: agriculture production unit AND non-agriculture land units	<Y/N>	<Reference parcel CONFORMANT with Cadastral Parcel definition>
<b>A_1123</b> <b>[basic test]</b>	verify definition of reference parcel: land cover, 2	the reference parcel include different homogenous land cover units: agriculture production unit OR non-agriculture land units	<Y/N>	<Reference parcel CONFORMANT with Cadastral Parcel definition>

<b>A_113</b> <b>[module]</b>	<b>Test purpose:</b>	<b>Test method:</b>	<b>&lt;original name of dataset/layer/table in the system&gt;</b>	<b>&lt;definition, if applicable&gt;</b>	<b>Conformity element</b>
<b>A_1131</b> <b>[capability test]</b>	verify definition of reference parcel: boundaries	verify if: the reference parcel defined by ownership or property right boundaries AND	<name of dataset> <name of dataset> <name of dataset>	<definition> <definition> <definition>	<conformant> <non-conformant>

**3.3. A\_12 Module: Eligibility and land cover type**

**Module A\_12 is 'Conformant' if test A\_121 (points 1, 2 & 3) AND test A\_122 are 'Conformant'**

**Module purpose:**

1/ Art. 2 CR 73/2009- agricultural area: arable land, permanent pasture, permanent crops\*; and  
 2/ Art. 34 CR 73/2009- + short rotation coppice, afforested agricultural land, semi-natural habitats, set aside (former Art 2 and 44(2) of 1782/2003); and  
 3/landscape features of Annex III CR 73/2009 (hedges, ponds, ditches, trees in line, in group or isolated, field margins (appl. 2010), others)

**Test method:** examine Feature Catalogue, Application schema, Implementation Conformance Statement

	Test purpose:	Test method:	dataset/table	layer	attribute	format	value	definition (eng.)
<b>A_121</b> <b>[basic test]</b>	<b>agricultural area: land cover types</b>	For each eligible land type identify: dataset, layer, attribute, format, code value(s) (if applicable, name in native language and definition in eng.)						
		1. arable land (including set-aside)	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		2. permanent pasture, including:	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		self-seed with shrubs	(optional)					
		self-seed	(optional)					
		sown	(optional)					
		3. permanent crops, including:	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		hops	(optional)					
		olive trees	(optional)					
		orchards (vegetables)	(optional)					
		nuts	(optional)					
		vineyards	(optional)					
		energy crops	(optional)					
		4. woods,						
		short rotation coppices	(optional)					
afforested agricultural land	(optional)							
6. semi-natural habitats	(optional)							

	Test purpose:	Test method:	dataset/table	datalayer	attribute	format	value	definition (eng.)
<b>A_122</b> <b>[capability test]</b>	Representation of <b>historical eligibility</b> (e.g. referred to yr 2003)	Verify if: there are particular dates fixed for MS in question for land eligibility based on a historical date AND if there is a spatial data set recording land eligibility/cover for this date. Inspect the documentation of the AS or FC, ICS.						
		identify the date for historical eligibility if applicable for MS;	<date>					
		identify a spatial layer where historical eligibility is;	<dataset>	<layer>				
		identify eligible land types recorded (optional)			<attribute>	<format>	<value>	<definition (eng.)>

	Test purpose:	Test method:	dataset/table	datalayer	attribute	format	value	definition (eng.)
<b>A_123</b> <b>[basic test, informative]</b>	Verify if there data layer(s) containing <b>ineligible land type</b> in order to support requirement of reference area determination with accuracy of 0.01 ha	Inspect the documentation of the application schema or feature catalogue, ICS: identify data layer(s) names; identify ineligible land types stored;						
		<b>in-eligible land type(s):</b>	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
			<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>

	Test purpose:	Test method:	dataset/table	layer	attribute	format	value	definition (eng.)
<b>A_124</b> <b>[basic test, informative]</b>	Verify representation of <b>landscape features</b>	for each landscape feature type(s) identify dataset, layer, attribute, format, code value(s) (if applicable, name in native language and definition in eng.)						
		<b>landscape feature:</b>						
		Hedges	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		Ponds	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		Ditches	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		trees in line	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		trees in group or isolated	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		field margins (appl. 2010)	<dataset/table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>

### 3.4. A\_13 Module: Attributes of Reference parcel

**Module A\_13 can be assigned 'Conformant' if:**

- test A\_131 is conformant AND
- test A\_132 and A\_133 are 'Conformant'

**Test purpose:** verify all mandatory attributes independent of the RP sub-type

**Test method:** inspect Feature Catalogue, Application schema, Implementation Conformance Statement

#### 3.4.1. A\_131 Mandatory attributes of Reference parcel

**Module A\_131 is 'Conformant' if ALL of tests are 'Conformant'**

Test ID	Test purpose:	Test method:	dataset/table	datalayer	attribute	format	value	definition (eng.)
<b>A_1311</b> [capability test]	verify if there an attribute to store: <b>the unique identifier of the Reference Parcel</b>	verify dataset, datalayer, attribute name, format, range, valid values; compliance to the requirements	<dataset/table >	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
<b>A_1312</b> [capability test]	verify if there an attribute to store: <b>referenceArea</b> (maximum eligible area);	verify dataset, datalayer, attribute name, format, range, valid values; compliance to the requirements	<dataset/table >	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
<b>A_1313</b> [capability test]	verify if there an attribute to store: <b>effectiveDate</b> (date when current version of the parcel became valid)	verify dataset, datalayer, attribute name, format, range, valid values; compliance to the requirements	<dataset/table >	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
<b>A_1314</b> [capability test]	verify if there an attribute to store: <b>digitizedArea</b> ; (GIS-area)	verify dataset, datalayer, attribute name, format, range, valid values; compliance to the requirements	<dataset/table >	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
<b>A_1315</b> [capability test]	verify if there an attribute to store: <b>farmedArea</b> ;	verify dataset, datalayer, attribute name, format, range, valid values; compliance to the requirements	<dataset/table >	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
<b>A_1316</b> [capability test]	verify if there an attribute to store: <b>validityStatus</b>	verify dataset, datalayer, attribute name, format, range, valid values; compliance to the requirements	<dataset/table >	<layer>	<attribute>	<format>	<value>	<definition (eng.)>

3.4.2. A\_132: Attributes of RP for xCompliance

NOTE: This information (LFA, NATURA, slope etc.) is normally come from the different sources and layers, different from RP dataset. Via cross-checks with different spatial data set it is assigned to each parcel, the result can be stored in separate table(s) or directly in RP layer. In some cases, MS states claim, they have 'on-fly' procedure, so it is not possible to check values? on the RP level....

**Module A\_132 is 'Conformant' if ALL of tests are 'Conformant'**

**Test purpose:** verify reference parcel attributes

**Test method:** inspect Feature Catalogue, Application schema, Implementation Conformance Statement

Test ID	Test purpose:	Test method:	dataset/ table	data layer	attribute	format	value	definition, note (eng.)
A_1321 [capability test]	identify where is information on <b>LFA</b> is stored	- define where in dataset attribute, value information <b>per each RP</b> (consolidated data) is stored;	<dataset> <overlay table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		-define original spatial dataset/layer/attribute value where information on LFA is stored, if dataset is integrated into LPIS from different source/authority please specify in definition	<original dataset>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
A_1322 [capability test]	identify where is information on <b>SMR1</b> is stored <b>(birds habitats)</b>	- define where in dataset attribute, value information <b>per each RP</b> (consolidated data) is stored;	<dataset> <overlay table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		-define original spatial dataset/layer/attribute value where information on <b>SMR1</b> is stored, if dataset is integrated into LPIS from different source/authority please specify in definition	<original dataset>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
A_1323 [capability test]	identify where is information on <b>SMR4</b> is stored	- define where in dataset attribute, value information <b>per each RP</b> (consolidated data) is stored;	<dataset> <overlay table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>

	(protection of waters against pollution caused by nitrates from agricultural)	-define original spatial dataset/layer/attribute value where information on <b>nitrate vulnerable zones</b> is stored, if dataset is integrated into LPIS from different source/authority please specify in definition	<original dataset>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
A_1324 [capability test]	identify where is information on <b>SMR5</b> is stored ( <b>natural habitats and wild flora, NATURA</b> )	- define where in dataset attribute, value information <b>per each RP</b> (consolidated data) is stored;	<dataset> <overlay table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		-define original spatial dataset/layer/attribute value where information on <b>SMR5</b> is stored, if dataset is integrated into LPIS from different source/authority please specify in definition	<original dataset>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
A_1325 [capability test]	identify where is information on soil protection GAEC1 & 3 ( <b>erosion and slopes</b> )	- define where in dataset attribute, value information <b>per each RP</b> (consolidated data) is stored;	<dataset> <overlay table>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>
		-define original spatial dataset/layer/attribute value where information on <b>erosion and slopes</b> is stored, if dataset is integrated into LPIS from different source/authority please specify in definition	<original dataset>	<layer>	<attribute>	<format>	<value>	<definition (eng.)>



**3.5. A\_133: Parcel type specific attributes**

**Module A\_133 is 'Conformant' if ALL test applicable for the type of Reference parcel are 'Conformant'**

**Test purpose:** verify reference parcel specific attributes

**Test method:** inspect Feature Catalogue, Application schema, Implementation Conformance Statement

verify: layer or DB table (if different from the RP layer); attributes' name, format, valid values

Test ID		Test purpose: /Test method:	dataset/ table	data layer	attribute	format	value	definition, note (eng.)
A_1331 [capability test]	[FarB, AgP, CadP*]	verify attribute <b>farmID or farmerID</b> ;	<dataset> <table>	<layer>	<attribute >	<format >	<value >	<definition (eng.)>
A_1332 [capability test]	[AgP]	verify attribute <b>crop group</b> (land use)	<dataset> <table>	<layer>	<attribute >	<format >	<value >	<definition (eng.)>
A_1333 [capability test]	[ FarB*, AgP,]	verify attribute <b>crop</b> (land use)	<dataset> <table>	<layer>	<attribute >	<format >	<value >	<definition (eng.)>
A_1334 [capability test]	[PhB*, FarB, AgP, CadP*]	verify attribute <b>land cover</b> <i>(in the meaning of the A_12)</i>	<dataset> <table>	<layer>	<attribute >	<format >	<value >	<definition (eng.)>
A_1335 [capability test]	[AgP]	verify attribute <b>paymentType</b>	<dataset> <table>	<layer>	<attribute >	<format >	<value >	<definition (eng.)>
A_1336 [capability test]	[AgP]	verify attribute <b>perimeter</b>	<dataset> <table>	<layer>	<attribute >	<format >	<value >	<definition (eng.)>

!

## 4. Conformance test report

### 4.1. Abstract test suite log

4.1.1. Tests findings shall be documented in the **ATS-log report**, one record per each test. For module A\_11 the definition of the reference parcel shall be stated and examined. For each particular test of the modules A\_12 and A\_13 is assigned "Conformant", if for each element of the LCM, a corresponding feature from LPIS under testing is found. Following information for these feature types shall be documented:

- 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.

### 4.2. Aggregation of results

4.2.1. The ATS-scoreboard represents a summary of the ATS-log report. For each test in the ATS, it shall specify a conformity element that can take one of the following values:

- Conformant (Conformant) - the implementation is fully conformant with the LCM specification.
- Not Conformant (notConformant) - the implementation does not conform to the LCM specification.
- Not evaluated (notEvaluated) - conformance has not been evaluated.

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.

4.2.2. Aggregation of results at the modules level shall be done as follows:

Module A_11	can be assigned 'Conformant' value if one of the tests A_1113 OR A_1114 OR A_1115 OR A_1122 OR A_1123 is 'Conformant' AND A_113 are
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	'Conformant'
Module A_12	is 'Conformant' if test ALL applicable tests (not optional) are 'Conformant'
Module A_13	can be assigned 'Conformant' if: sub-module A_131 is conformant "AND" sub-module A_132 is conformant "AND" sub-module A_133 is conformant
Sub-Module A_131	is 'CONFORMANT' if ALL tests are 'Conformant'
Sub-Module A_132	is 'CONFORMANT' if ALL tests are 'Conformant'
Sub-Module A_133	is 'CONFORMANT' if ALL tests are 'Conformant'

4.2.3. Aggregation of results **at the LPIS** level is presented in the 'Conclusions' section of the ATS-scoreboard report, which shall state either:

-All modules are 'Conformant' **OR**

-define module(s) which are nonConformant, and explain the reason for this statement(s). In case the alternative solution does/does not exist for non-conformant module/test, the explanation shall be given in order to arrive at the assessment, if the existing solution appropriate/ not appropriate. Mitigation measures in order to deal with non-conformance may be proposed here.

-The final statement on LPIS conformance /non-conformance shall close this section of the report.

### 4.3. The ATS reporting package

4.3.1. The ATS reporting package shall consist of:

- the input documentation (application schema OR feature catalogue);
- the ATS-log report;
- the ATS-scoreboard and conformance statement report.

4.3.2. The ATS shall be performed as a preparation of the annual data quality assessment (ETS). It is envisaged that the ETS will be an annual procedure. In case if, there were not any structural changes in the database due to e.g. mitigation actions or changes in the requirements, there is no need to repeat the ATS each year. In the annual ETS report, it should be mentioned when the last ATS was done and what is/was the conformance statement. If any mitigation measures for non-conformance were proposed by last ATS, the testing procedure shall be repeated. In the annual LPIS assessment report, it should be mentioned when the last ATS was done and what was the conformance statement.

#### **4.4. Report templates**

The template for ATS-log report: [ftp://mars.jrc.ec.europa.eu/LPIS/Templates/ATS\\_template\\_v0.xls](ftp://mars.jrc.ec.europa.eu/LPIS/Templates/ATS_template_v0.xls)

The template for ATS-scoreboard:

[ftp://mars.jrc.ec.europa.eu/LPIS/Templates/ATS\\_scoreboard\\_temp\\_v0.doc](ftp://mars.jrc.ec.europa.eu/LPIS/Templates/ATS_scoreboard_temp_v0.doc)

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