



RESO[®]

REAL ESTATE STANDARDS ORGANIZATION

Data Dictionary Certification Testing Rules v1.7

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- 1.4 Impact of Future Data Dictionary Changes to these Testing Rules

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1.0 Introduction

This document contains the RESO Data Dictionary Compliance requirements an applicant's Data Dictionary implementation would need to satisfy before receiving RESO Certification.

This document should be read by any organization who want:

- To create Data Dictionary compliant implementation.
- To have a detailed understanding of the certification process.

Processing a Data Dictionary Certification request is a four step internal process that begins with an application submitted through <http://reso.org/certification>. The steps and compliance tests are described throughout this document.

The Data Dictionary certification is a server certification. We are certifying that the server can deliver Data Dictionary structured information.

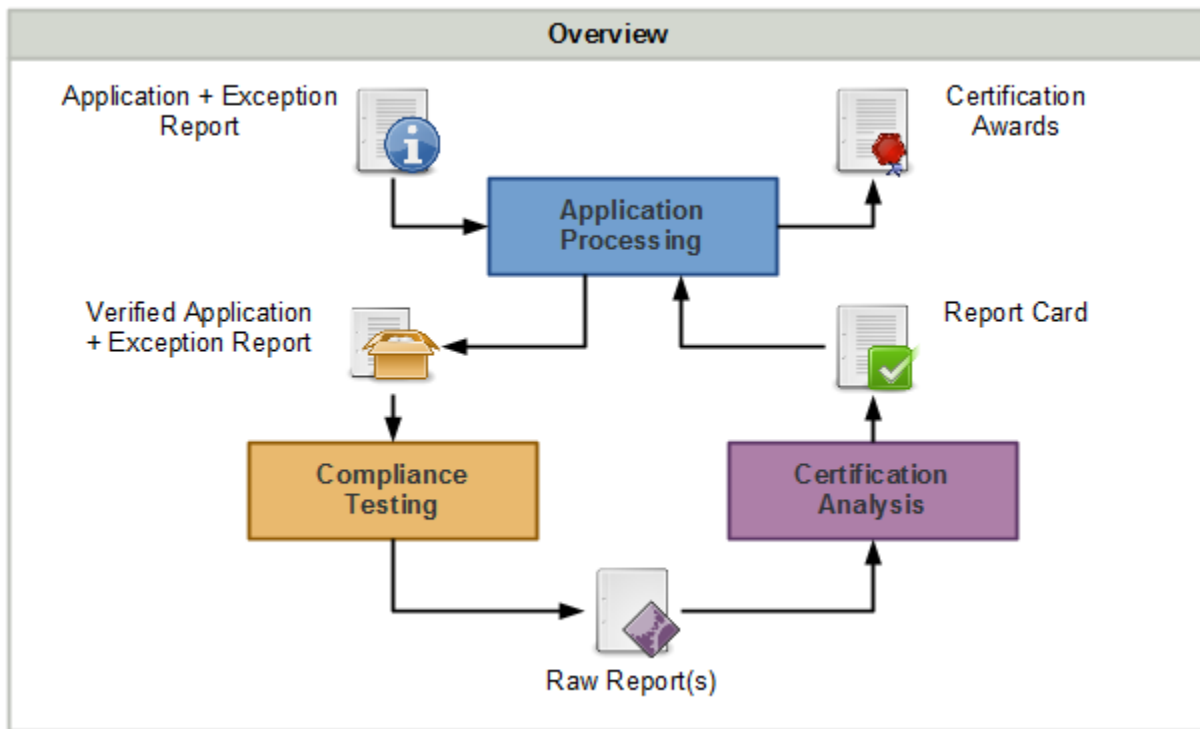
NOTE: We are NOT certifying that Update functionality works without data loss due to mismatched data transfer types. See the DataType and Interpretation section for more information.

1.2 RESO Certification Flow (Summary)

1.3 Supplemental Application Information

1.4 Impact of Future Data Dictionary Changes to these Testing Rules

1.2 RESO Certification Flow (Summary)



RESO Group	Action	Output
Application Processing (Pre-Certification)	Accept and Verify Applicant's <i>'Certification Application'</i> and <i>'Supplemental Application Information'</i> via reso.org/certification	Prepare for Compliance Testing. Pass application and <i>'Supplemental Application Information'</i> to Compliance Department.
Compliance Testing	Test applicant's metadata against well-defined Compliance Rules as set forth by the DD Compliance Workgroup.	Testing results formatted in <i>'Raw Report'</i> package. Pass <i>'Raw Report'</i> to Certification Department.

Certification Analysis	Analyze <i>'Raw Report'</i> to determine if applicant qualifies for a certificate. Create a <i>'Report Card'</i> with findings.	Pass analysis results and <i>'Report Card'</i> back to Application Processing.
Application Processing (Post-Certification)	Act on Certification Department recommendation	Notify applicant of Certificate Pass/Fail. Send notification and <i>'Report Card'</i> back to Applicant.

Application Processing (Pre-Certification)

1.3 Supplemental Application Information

The Supplemental Application Information (SAI) will assist RESO with the Data Dictionary evaluations. It will contain information that may not be easily transmitted through the on-line application form.

Supplemental application information MUST be delivered by the MLS (or source provider) with its application. This supplemental information may provide information required by the RESO Compliance department to perform the evaluation tests.

NOTE: The exact format will be determined by the RESO Compliance Staff. Links to the SAI will be added when available.

It is recommended that the SAI information be made available to the MLS data consumers (public) to help in data mapping efforts.

1.4 Impact of Future Data Dictionary Changes to these Testing Rules

Changes in future versions of the RESO Data Dictionary may impact the certification testing results of the rules in this document. The results of the impacted rules will be modified:

- To help ease the transition to a newer Data Dictionary version; and
- To allow decisions of the Data Dictionary workgroup to be impact certification more quickly.

Generally, the updated test result will go up or down in severity toward the newer standard. No changes to future versions of the Data Dictionary will invalidate current certifications.

If the documented test result is a(n)...	And a new rule or definition makes the same test a(n)...	Then the new result would be a(n)...
ERROR	WARNING	WARNING
ERROR	NOTICE or COMPLIANT	NOTICE
WARNING	ERROR	No Change ¹
WARNING	NOTICE or COMPLIANT	NOTICE
NOTICE	ERROR or WARNING	WARNING
NOTICE	COMPLIANT	No Change ²
COMPLIANT	ERROR or WARNING	WARNING
COMPLIANT	NOTICE	No Change ²

NOTE 1: Changing a WARNING into an ERROR could retroactively disqualify those who have already been certified.

NOTE 2: Since a NOTICE does not have to be fixed within a time-frame, this change has no practical impact on current certification. No change is made to simplify the potential list of changes.

2.0 Data Dictionary Compliance Rules

This section contains the rules that RESO will use in the Compliance testing. The specific set of rules that need must be passed for a "Certification" are discussed in [Section 3](#).

2.1 Certified Transport Requirement

2.2 RETS 1.x Field-Level Compliance

2.3 RETS 1.x Field Compliance Notices and Compliance Warnings

2.4 RESO Web API 1.0.x Field-Level Compliance

2.5 RESO Web API 1.0.x Field Compliance Notices and Compliance Warnings

2.6 Payload Endorsement Testing Rules

2.1 Certified Transport Requirement

NOTE 0-1: Each of the following sections in section 2.0 contains transport specific rules when a Data Dictionary is implemented. While the Data Dictionary may be implemented within any transport, the compliance rules **MAY** vary based on transport.

REQ-DD170-TRANS-1: Multiple Listing Service (MLS) organizations **MUST** implement the RESO Data Dictionary on the RESO Web API transport standard version 1.0.2 or greater in order to obtain a Data Dictionary 1.7.0 certificate.

NOTE 1-1: This rule takes effect starting December 1, 2018,

NOTE 1-2: MLS organizations required to follow this rule includes any associations or boards that functions as an MLS as determined by RESO Staff.

NOTE 1-3: MLS organizations will be awarded both RESO Data Dictionary and RESO Web API certifications at once when the Data Dictionary is implemented on a certified RESO Web API 1.0.2 (or greater) platform.

REQ-DD170-TRANS-2: Multiple Listing Service (MLS) organizations **MAY** implement the RESO Data Dictionary on the RETS transport standard and can obtain an additional Data Dictionary certification with a RETS transport endorsement **ONLY** after **REQ-DD170-TRANS-1** (RESO Web API 1.0.2+) has been satisfied.

REQ-DD170-TRANS-3: The Data Dictionary Certification is independent of transport methods (i.e. RETS 1x, RETS Web API, etc.) for applicant organizations not listed above as determined by RESO Staff.

2.2 RETS 1.x Field-Level Compliance

Data Dictionary compliance will be determined by comparing host's RETS 1.x Metadata fields with those defined by the Data Dictionary. Each of the host's mapped fields **MUST** follow all applicable rules in this and following sub-sections to be considered compliant.

REQ-DD170R1X-FLC-1: Tested field attributes **MUST** be found COMPLIANT for the entire field to be COMPLIANT.¹

A field's compliance is determined by comparing multiple field attributes with the corresponding Data Dictionary attributes. Each tested attribute will receive one of the following results: ERROR, WARNING, NOTICE, or COMPLIANT (listed in descending order of severity). The field status will be the most severe label found within the attribute test results.²

NOTE 1-1: Only the attribute tests required for the field type will be performed as not all attribute tests apply to every field.

NOTE 1-2: A field may have 1 ERROR, 2 WARNING, and 2 COMPLIANT attributes. This field would be an ERROR. A different field may have 1 NOTICE and 4 COMPLIANT attributes. This field would be a NOTICE.

REQ-DD170R1X-FLC-2: All fields that could be mapped to the Data Dictionary **SHOULD** be mapped.³

NOTE 2-1: All fields without a mapping will be reviewed. Any field discovered that has a match with the Data Dictionary **AND** has an **ERROR MAY** disqualify the applicant from receiving a certification.

NOTE 2-2: All fields identified as a duplicate **MUST** have its data available in a compliant Data Dictionary field for the duplicate field to be marked **IGNORED**. Duplicate fields without an identified equivalent **MAY** be subjected to compliance testing and receive the appropriate testing result.

2.2.1 Metadata: StandardName

2.2.2 Metadata: Data Type and Interpretations

2.2.3 Metadata: Precision

2.2.4 Metadata: Suggested MaximumLength

2.2.5 Metadata: Enumerations

2.2.6 Metadata: Data Formatting

2.2.1 Metadata: StandardName

REQ-DD170R1X-SN-1: Any applicant metadata field identified at or below the current minimum certification level **MUST** use a StandardName from the Data Dictionary. Any identifiable minimum field with an incorrect, missing, or misspelled StandardName will be an **ERROR**. Any identifiable higher field will be a **WARNING**.

NOTE 1-1: Data Dictionary StandardName values are case-sensitive. For example, "ListingID" does not match "ListingId". Difference in case will result in an **ERROR**.

NOTE 1-2: Certification testers will attempt to identify fields that should be mapped. This may not be possible if the applicant's SystemName is undecipherable. A good-faith effort to provide complete and correct mappings is expected from all applicants.

NOTE 1-3: All fields identified as a duplicate **MUST** have its data available in a compliant Data Dictionary field for the duplicate field to be marked **IGNORED**. Duplicate fields without an identified equivalent **MAY** be subjected to compliance testing and receive the appropriate testing result.

NOTE 1-4: The current minimum certification level for Data Dictionary 1.7.0 is Gold. Any Core, Bronze, Silver, and Gold fields not following this rule will receive an **ERROR** status. Platinum fields will receive a **WARNING**. In 2020, when Platinum becomes the required minimum, **ALL FIELDS** not following this rule will receive and **ERROR**.

REQ-DD170R1X-SN-2: Applicant metadata fields without a Data Dictionary match **SHOULD** have an empty StandardName. Non-Data Dictionary applicant fields with a StandardName will be given a **NOTICE**.

NOTE 2-1: While using these "extra" non-Data Dictionary StandardNames does not negatively affect certification, the practice is discouraged. These are given a **NOTICE** so that those using the metadata will be forewarned that these are not accepted Data Dictionary StandardNames.

REQ-DD170R1X-SN-3: Any applicant metadata field using StandardName that matches the Data Dictionary Repeating Field name pattern **MAY** have the definition field in the same resource class. The repeating portion of the StandardName **MAY** be found as an enumeration. Though recommended, It is **NOT REQUIRED** to have the field that defines the repeating field content in the system's metadata. These StandardNames will still be **COMPLIANT** even with the missing definitions.

Example 3-1: "RoomLibraryArea" and "RoomBedroom1Area" both match the Room[type]Area pattern. The "RoomType" enumerated field **MAY** be present to define "Library" and "Bedroom 1" as enumerations for the repeating StandardName.

Special considerations will be made when comparing the applicant's field names and definitions with those found in the Data Dictionary.

- Fields with SIMILAR definitions and MATCHING StandardNames are **COMPLIANT**.
- Fields with SIMILAR definitions and DIFFERENT StandardNames are **NOT** compliant. In this situation, the StandardName **MUST** be changed to match the Data Dictionary to be compliant. Only the StandardName needs to be changed for compliance.
- Fields with DIFFERENT definitions and MATCHING StandardNames are allowed but **MUST** be listed in the Supplemental Application Information.

Example 3-2: An applicant's "Subdivision" field has a different definition than the Data Dictionary.

- Fields with DIFFERENT definitions and DIFFERENT StandardNames are ignored.

REQ-DD170R1X-SN-4: A Data Dictionary Field **MUST** only be referenced (mapped) by one SystemName per Resource Class. Having multiple SystemNames using the same Data Dictionary StandardName causes a Multi-to-One mapping. This would be considered an **ERROR** for every SystemName that refers to the same Data Dictionary StandardName within the same class.

2.2.2 Metadata: Data Type and Interpretations

The Data Dictionary provides a "Simple Data Type" for each field. The corresponding field within the applicant's metadata **MUST** be a **logical** match. The exact **physical** representation may vary. The following examples highlight the difference between logic and physical matches.

NOTE D1: Multiple tables in the following subsections are provided to give the reader an easier to read visual interpretation.

EXAMPLE 1: Data Dictionary Boolean requires a **logical** true/false indication. (A third "no answer" or empty indication is allowed, but not required.) Booleans may be represented **physically** with 1/0, Y/N, Yes/No, T/F, True/False, or similar. A specific enumeration to represent

a non-response, like “None” OR “N/A,” is allowed in lookups. This non-response enumeration is the same as leaving a number or character boolean field empty.

EXAMPLE 2: Data Dictionary “Number (Whole)” **MAY** be any DataType that represents a whole number: Int, Long, Small, or Tiny. It **MAY NOT** be a Decimal.

NOTE D2: The RETS 1.8 Specification requires each field within the metadata to have attributes describing the data stored. Two of these attributes are “**DataType**” and “**Interpretation**”. These two attributes will be used to determine if the metadata field is logically consistent with the Data Dictionary.

DataType uses one of the following values: Boolean, Character, Date, DateTime, Time, Tiny, Small, Int, Long, and Decimal.

Interpretation uses one of the following values: Number, Currency, Lookup, LookupMulti, and URI

More information about Metadata **DataType** and **Interpretation** may be found in Table 11-15 of Section 11.3.2 in the RETS 1.8 Specification.

REQ-DD170R1X-DTI-1: The applicant Metadata DataType field **MUST** match **logically** to the Data Dictionary DataType. It is recommended that the field **physically** match one of the DataType values as defined in the previous table. Other DataTypes and Interpretations will be evaluated on an as needed basis.

REQ-DD170R1X-DTI-2: Logical allowances of data types **MUST NOT** contradict the requirements of the utilized RETS specification where the Data Dictionary is implemented. For conflicts, the utilized RETS 1.x specification must be followed.

EXAMPLE 2-1: Date and DateTime fields must be formatted as required in the utilized RETS specification. It is not sufficient for a Character field to contain date or datetime data.

REQ-DD170R1X-DTI-3: Any DataType transformation that would result in data loss when data moves from a HOST to a CLIENT is NOT compliant.

EXAMPLE 3-1: A Host has a multi-select enumeration and the Client is expecting a single-select.

2.2.2.1 RETS 1.x Metadata DataType and Interpretation Values (Table)

2.2.2.2 RETS 1.x Compliance Errors for Metadata (Table)

2.2.2.3 RETS 1.x Compliance Notices and Warnings for Metadata (Table)

2.2.2.1 RETS 1.x Metadata DataType and Interpretation Values (Table)

The Data Dictionary provides a “Simple Data Type” for each field defined. This value dictates what is an acceptable value within the applicant’s metadata DataType and Interpretation fields.

The RETS 1.8 Specification requires each field within the metadata to have attributes describing the data stored. Two of these attributes are “**DataType**” and “**Interpretation**”. These two attributes will be used to determine if the metadata field is logically consistent with the Data Dictionary.

DataType uses one of the following values: Boolean, Character, Date, DateTime, Time, Tiny, Small, Int, Long, and Decimal.

Interpretation uses one of the following values: Number, Currency, Lookup, LookupMulti, and URI

More information about Metadata **DataType** and **Interpretation** may be found in Table 11-15 of Section 11.3.2 in the RETS 1.8 Specification.

The Data Dictionary Simple DataType is transport independent. The following chart provides acceptable translations between the single Data Dictionary value and the two RETS 1.x values: DataType and Interpretation.

Following these recommendations will allow the field to be certified without qualification. Where needed, the “Preferred” DataType and Interpretation has been identified. “Acceptable” alternative are also provided.

Requirement ID	DD Simple DataType	Acceptable Metadata DataType(s)	Acceptable Metadata Interpretation(s)
REQ-DD170R1X-DTC-1	Boolean ¹	Preferred: Boolean Acceptable: Int, Long, Small, Tiny, Character	Preferred: Empty Interpretation or Number Acceptable: Lookup
REQ-DD170R1X-DTC-2	Date	Date	Empty Interpretation Expected
REQ-DD170R1X-DTC-3	Number (Whole) ²	Int, Long, Small, Tiny	Preferred: Number Acceptable: Empty Interpretation

REQ-DD170R1X-DTC-4	Number (Decimal)	Decimal	Preferred: Number, Currency Acceptable: Empty Interpretation
REQ-DD170R1X-DTC-5	String ³	Int, Long, Small, Tiny, Character, Decimal, Boolean	Preferred: Empty Interpretation Acceptable: Number, Currency, Lookup
REQ-DD170R1X-DTC-6	StringList, Single ⁴	Int, Long, Small, Tiny, Character, Boolean ⁵	Lookup
REQ-DD170R1X-DTC-7	StringList, Multi ⁴	Int, Long, Small, Tiny, Character	LookupMulti
REQ-DD170R1X-DTC-8	Timestamp	DateTime	Empty Interpretation Expected

NOTE T-1: It is preferred that applicant's Boolean fields have a "Boolean" DataType and an empty or "Number" Interpretation. Since Boolean fields may be represented by many different fields or lookups, the other DataTypes and Interpretations are listed. However, an empty Interpretation is not allowed unless the DataType is Boolean. A character data type with an empty interpretation would be a "String-to-Boolean" mapping. A number data type with an empty interpretation would be a "Number-to-Boolean" mapping. These mappings are an **ERROR** (REQ-DD170R1X-DTE1).

NOTE T-2: Any RETS 1.x DataType that represents a whole number is allowed.

NOTE T-3: Any Number-to-String mapping is allowed (Whole and Decimal Numbers). Any Single-Select Lookup-to-String mapping is allowed.

NOTE T-4: Lookup and LookupMulti fields may be represented in many different ways. These are the most common DataTypes for lookups. Other DataTypes for lookups will be evaluated on a case-by-case basis.

NOTE T-5: Boolean-to-Lookup Single is allowed ONLY when the enumeration list is "Open" or "Open (to be locked)". This mapping for Locked enumerations is NOT allowed.

2.2.2.2 RETS 1.x Compliance Errors for Metadata (Table)

Compliance Error: An "error" is issued for any portion of the Data Dictionary's implementation (field, enumerations, etc.) that does not conform to the requirements. These error disqualify the applicant from certification.

NOTE: Only those "Errors" from DataType mappings are included here. This is NOT an extensive list of errors. Only those that apply specifically to Data Type.

Compliance Errors

Requirement ID	DD Simple Data Type	Compliance Errors DataTypes(s)	Compliance Error Interpretation (s)
REQ-DD170R1X-DTE-1	Boolean	Int, Long, Small, Tiny, Character, Date, Timestamp, Decimal	None ("String-to-Boolean", "Number-to-Boolean", or "Date/Timestamp-to-Boolean" Mapping Errors) An Interpretation is required for Non-Boolean data types.
REQ-DD170R1X-DTE-2	Date ¹	Int, Long, Small, Tiny, Character, Timestamp	<i>None</i>
REQ-DD170R1X-DTE-3	Number ²	(Any DataType used as a Lookup)	Lookup (Any Lookup-to-Number OR LookupMulti-to-Number Mapping)
REQ-DD170R1X-DTE-4	Number (Whole)	Character, Decimal, Date, Timestamp	None ("Character-to-Whole" Mapping Error) None ("Decimal-to-Whole" Mapping Error) See REQ-DD160R1X-P-4 None ("Date-to-Whole" or "Timestamp-to-Whole" Mapping Error)
REQ-DD170R1X-DTE-5	StringList, Multi	Int, Long, Small, Tiny, Character	<i>None</i> (This is the "String-to-LookupMulti" or "Number-to-LookupMulti" Error). The Interpretation cannot be "None" or empty for "StringList, Multi"
REQ-DD170R1X-DTE-6	StringList, Multi ³	Boolean	<i>None</i>
REQ-DD170R1X-DTE-7	StringList, Single ³	Boolean	<i>None</i>

REQ-DD170R1X-DTE-8	StringList, Single	Int, Long, Small, Tiny, Character	None (This is the "String-to-Lookup" or "Number-to-Lookup" Error) The Interpretation cannot be "None" or empty for "StringList, Single"
REQ-DD170R1X-DTE-9	StringList, Single ⁴	(Any DataType used as a Lookup)	LookupMulti (This is the "Multi-to-Single Lookup" Error)
REQ-DD170R1X-DTE-10	Timestamp ¹	Int, Long, Small, Tiny, Character, Date	None
REQ-DD170R1X-DTE-11	(Any Non-Number/String) ⁵	Decimal	Any ("Decimal-to-Non-Number /String" Mapping Error) excluding "Decimal-to-String" mappings, which are compliant.

NOTE T-1: Any transformation of a Date and Timestamp into the other is an error. Some Data Dictionary fields have a Date and Timestamp variant: OnMarketDate v. OnMarketTimestamp or OffMarketDate v. OffMarketTimestamp. Please map to the correct version to avoid receiving a compliance error.

NOTE T-2: Any lookup to be translated into a number field will be an error. The exception is when every lookup value is a pure number, without any additional symbols. If this is the case, the mapping will be given a WARNING. To receive the warning instead of the error, this field and its lookups must be clearly stated in the Supplemental Application Information. LookupMulti-to-Number CAN NOT receive a WARNING because multiple values concatenated together cannot be a number.

For example: A lookup representing the number of bedrooms could have the values "1", "2", "3", "4", and "5+". This would be an ERROR because of the "5+" lookup value. To receive a warning, the last value would need to be changed to "5" AND documented in the Supplemental Application Information.

NOTE T-3: Due to the potential ambiguity of how a Boolean is translated, all of these mappings are considered errors. This applies to "Locked" enumerations lists. Boolean-to-Lookup, Single is allowed when the enumeration list is "Open" or "Open (to be locked)"

NOTE T-4: For Data Dictionary "StringList, Single" fields, the applicant Metadata Interpretation field **SHOULD** be "Lookup". If the applicant Metadata has a "LookupMulti" Interpretation, that creates a "Multi-to-Single" data mapping, this field will NOT be considered compliant.

NOTE T-5: Per "REQ-DD170R1X-DTC-5" the Decimal-to-String mapping is compliant.

2.2.2.3 RETS 1.x Compliance Notices and Warnings for Metadata (Table)

Compliance Notice: A "notice" is issued for any portion of the Data Dictionary's implementation (field, enumerations, etc.) that does not conform to the requirements but does **NOT** disqualify the applicant from certification.

Compliance Warnings: A "warning" is the same as a compliance notice with the additional requirement that it is fixed within a specific time frame. Future certification MAY be denied if a "warning" is not fixed in the required time.

Compliance Notices

The direction the data "flows" is important when translating data fields between different DataTypes. The direction of all of the mappings are from the applicant's metadata (Host's implementation) into the Data Dictionary (Client's expectations). There are some DataType mappings where reversing the direction would result in a loss of data. The DataType transformations that only work going into the Data Dictionary will be marked with a "Compliance Notice."

Also, a "Compliance Notice" MAY be issued for any portion of the Data Dictionary's implementation (field, enumerations, etc.) that does not conform to this or other requirements, but does NOT disqualify the applicant from certification.

Any DataType transformation that could result in a loss of data from the applicant's metadata into the Data Dictionary will not be "Compliant."^{N-1}

Requirement ID	DD Simple Data Type	Compliance Notice DataTypes(s)	Compliance Notice Interpretation (s)
REQ-DD170R1X-DTN-1	String	Int, Long, Small, Tiny, Decimal ²	LookupMulti (LookupMulti-to-String Mapping) ³ See also REQ-DD170R1X-DTC-5

NOTE N-1: Only those "Notices" from DataType mappings are included here. This is NOT an extensive list of compliance notices. Only those that apply specifically to Data Type.

NOTE N-2: A string field can hold any alpha or numeric character. Placing numeric information into a string field is not going to lose data. An example is the Data Dictionary "ListingID" string field. A host's implementation **MAY** use a number field.

NOTE N-3: A multi-select lookup value MAY map into a Data Dictionary String field. An example is the Data Dictionary "OriginatingSystemName" string field. A host may store this as a lookup of predetermined system names. CAUTION: There **MAY**

be too much data when the multi-select lookup values are concatenated to fit within the defined string length. **REQ-DD170R1X-DTC-5** specifies that the Single-Select Lookup-to-String mapping is "Compliant."

Compliance Warnings

A "Compliance Warning" is the same as a compliance notice with an additional deadline requirement. The source of the "warning" must be fixed within a specific timeframe. Future certification MAY be denied if a "warning" is not fixed in the required time.

Any DataType transformation that could result in a loss of data from the applicant's metadata into the Data Dictionary will not be "Compliant."^{W-1}

Requirement ID	DD Simple Data Type	Compliance Warning DataTypes(s)	Compliance Warning Interpretation(s)	Comments / Rule References
REQ-DD170R1X-DTW-1	StringList, Multi	None	Warning ² : Lookup (Any Single-to-Multi Mapping)	Rule: REQ-DD170R1X-DTI-4

NOTE W-1: Only those "Warnings" from DataType mappings are included here. This is NOT an extensive list of compliance notices. Only those that apply specifically to Data Type.

NOTE W-2: A multi-select lookup field may hold the information from a single-select lookup field without losing data.

REQ-DD170R1X-DTI-4: For Data Dictionary "StringList, Multi" fields, the applicant Metadata Interpretation field **SHOULD** be "LookupMulti". If the applicant Metadata has a "Lookup" Interpretation and creates a "Single-to-Multi" data mapping, this field will be marked with a "Compliance Warning."

2.2.3 Metadata: Precision

REQ-DD170R1X-P-1: The applicant Metadata Precision field **SHOULD** be equal to or less than the decimal value in the Data Dictionary "Sug. Max Length" column found in the Data Dictionary. These precision lengths will be marked with as **COMPLIANT**.

REQ-DD170R1X-P-2: The applicant Metadata Precision field **MAY** be zero or not present when the Data Dictionary "Sug. Max Length" column found in the Data Dictionary. These "Whole Number-to-Decimal" mappings will be marked with as **COMPLIANT**.

NOTE 2-1: Where ListPrice equals 14.2, the precision **SHOULD** be 2 or smaller (including "0" or null) to be compliant. Also, where Latitude and Longitude both equal 12.8, the precision **SHOULD** be 8 or smaller to be compliant.

REQ-DD170R1X-P-3: The applicant Metadata Precision field **SHOULD NOT** be greater than than the decimal value in the Data Dictionary "Sug. Max Length" column found in the Data Dictionary. These field lengths will be marked with as **NOTICE**.

NOTE 3-1: Where ListPrice equals 14.2, the precision **MAY** be 3 or greater to receive a notice.

REQ-DD170R1X-P-4: A "Decimal-to-Whole Number" mapping is created when the Host data provides any precision value when the Data Dictionary does not have a value. This mapping may result in data loss and the Host field will be an **ERROR**.

2.2.4 Metadata: Suggested MaximumLength

REQ-DD170R1X-ML-1: The applicant Metadata MaximumLength field **SHOULD** be equal to or less than the "Sug. Max Length" found in the Data Dictionary. These field lengths will be marked with as **COMPLIANT**.

REQ-DD170R1X-ML-2: The applicant Metadata MaximumLength field **SHOULD NOT** be greater than than the "Sug. Max Length" found in the Data Dictionary. These field lengths will be marked as a **NOTICE**.

REQ-DD170R1X-ML-3: When the Data Dictionary provides a Suggested Maximum Length, it is expected that the applicant Metadata MaximumLength provides any value. Failure to provide a length (a null value or empty attribute), that field length will be marked as a **WARNING**.

NOTE 3-1: Until further clarified in separate Non-RETS or Non-Web API Testing Rules, any transport's failure to provide any length for a field where the Data Dictionary provides a length will also be marked as a **WARNING**.

REQ-DD170R1X-ML-4: The applicant Metadata MaximumLength field **MAY** be two more in value than the "Sug. Max Length" found in the Data Dictionary. These field lengths will be marked with as **COMPLIANT**. This is to allow for extra decimal places or sign characters required to represent positive/negative numbers.

NOTE 4-1: The larger value described above is allowed for numeric data types. Non-numeric data types will use the exact Data Dictionary values for the testing rules.

2.2.5 Metadata: Enumerations

REQ-DD170R1X-ENUM-1: The applicant Metadata LongValue **MUST** match the Data Dictionary Enumeration value exactly as defined. Synonyms or spelling variations are not allowed. These synonyms will be marked as an **ERROR**.

Example 1-1: PropertySubType's "Condominium" **MUST** be fully spelled out. "Condo" is not accepted.

NOTE 1-1: This spelling requirement only applies to data transport (e.g. Metadata). How the enumeration value is displayed to users is determined by the system administrators.

NOTE 1-2: Exceptions to this rule **MAY** be granted based on the allowance of "Archived Enumerations" (see rules below.) Exceptions to this rule **MAY NOT** be granted when doing so would contradict other rules, such as duplicate enumerations within the same field, misspellings, or abbreviations.

REQ-DD170R1X-ENUM-2: The applicant Metadata enumeration value **MUST** be found in the same enumeration list as defined in the Data Dictionary. Enumeration values found in the wrong field will receive a **WARNING**. Enumeration fields containing misplaced values will receive a **WARNING**.

NOTE 2-1: The applicant **MUST** make note of the incorrect location in the Supplemental Application Information provided with the application including a time frame on when this will be corrected.

NOTE 2-2: It is acceptable for an enumeration to appear in multiple places if that is desired by the applicant. However, the duplicate would receive a **WARNING** (See Example 2). Duplicate enumerations identified as "archived" will be marked as **IGNORE** and will not impact certification results.

NOTE 2-3: Some enumerations in different locations may appear to be duplicates but are actually unique based on context provided by location. These enumerations are **COMPLIANT** (See Example 3). Some RETS 1.x implementations may have enumerated lists that are unique to a resource class. Duplicates in these situations are **COMPLIANT** (See Example 4).

Example 2-1: RoomType's "Library" **MUST** be found in RoomType. Having "Library" in any other field (and using the same definitions), where it is not defined in the dictionary, will make that field non-compliant (**WARNING**).

Example 2-2: The Enumeration Value "Cabin" **SHOULD** be found in PropertySubType, as specified by the Data Dictionary. It **MAY** also appear in ArchitecturalStyle, if required by the data vendor. The duplicate **MAY** remain if it has a different definition than other enumerations found in the Data Dictionary. Other common examples of unique enumerations based on location context include: "Yes", "No", "Other", "None", and "See Remarks".

Example 2-3: Depending on the resource class chosen, the PropertySubType field **MAY** use a different enumerated list: PropertySubTypeRESI and PropertySubTypeRENT. The Enumeration Value "Single Family Residence" **MAY** appear in both enumerated lists. This is **COMPLIANT** since there is still only one selection for "Single Family Residence" within in a single class.

REQ-DD170R1X-ENUM-3: The applicant enumeration values **MAY** be defined within the metadata OR by an external validation method.

NOTE 3-1: Enumerated fields with values validated outside the metadata **MUST** be noted when applying for certification. Compliance Testers will need the enumerated values found within the field to check for compliance.

Example 3-1: A data vendor that cover a large geographical area may have too many "City" or "MLSAreaMajor" values to enumerate within their metadata. They **MAY** choose to use an external means for validation, such as a database or user interface to enforce proper selection.

REQ-DD170R1X-ENUM-4: A Data Dictionary Field with a LOCKED Enumeration **MUST NOT** have any additional enumerations. This field **MAY** have fewer as determined by the applicant.

REQ-DD170R1X-ENUM-5: A Data Dictionary Field with an OPEN or OPEN (TO BE LOCKED) Enumeration **MAY** have additional OR fewer enumerations as determined by the applicant.

NOTE 5-1: Previously compliant enumerated fields with "OPEN (TO BE LOCKED)" can fall out of compliance in future versions of the Data Dictionary if that field becomes LOCKED.

NOTE 5-2: Enumerations not defined in the Data Dictionary are not under the jurisdiction of compliance testing and will be ignored unless it conflicts with other compliance rules.

REQ-DD170R1X-ENUM-6: A Lookup Field **MUST NOT** have additional enumerations that are synonyms of enumerations already found within the field. This applies to Data Dictionary fields with **Locked** Enumeration Lists. These synonyms will be marked as an **ERROR**.

REQ-DD170R1X-ENUM-7: A Lookup Field **MUST NOT** have additional enumerations that are synonyms of enumerations already found within the field. These additional enumerations will be marked as an **ERROR**. Some Data Dictionary fields have **no enumeration list** defined. Synonym tests on Enumerations only apply on those fields with enumerations defined in the Data Dictionary. Additional enumerations, where there is NOT a Data Dictionary list, will be marked as an **WARNING**.

Example 7-1: The enumerations "Condominium" and "Condo" cannot appear in the same field.

REQ-DD170R1X-ENUM-8: A Lookup Field **SHOULD NOT** have additional enumerations that are duplicates of enumerations already found within the field. These duplicates, within the same field, will be marked as an **ERROR**. The "Archived Enumeration" exemption **WILL NOT** be allowed to excuse these duplicates. Some Data Dictionary fields have **no enumeration list** defined. Duplication tests on Enumerations only apply on those fields with enumerations defined in the Data Dictionary.

NOTE 8-1: RETS 1.x enumerations consists of LongValue, ShortValue, and Value portions. Testing of enumerations normally focuses on only the LongValue. Testing for duplicates will include ALL "*"Value" portions of the enumeration. To be considered a "Duplicate Error," all values **MUST** be identical. (Table 1, Rows 1-3: provides samples from RETS 1.x Metadata with simplified XML for documentation length considerations.)

NOTE 8-2: The "Duplicate Error" for LOCKED Enumerations will be based on the LongValue only. It does not matter if the ShortValue or Value are different in LOCKED Enumerations, only one instance of the LongValue is allowed. Any duplicate enumeration within the LOCKED Enumerations will be marked as an **ERROR**. (Table 1, Row 4 provides sample from RETS 1.x Metadata with simplified XML for documentation length considerations.)

Table 1	Excerpt 1	Excerpt 2
Duplicate Enumerations (All Values Match) ERROR	<pre><LookupType> <MetadataEntryID>INDUSTR< /MetadataEntryID> <LongValue>Industrial< /LongValue> <ShortValue>INDUSTR< /ShortValue> <Value>INDUSTR</Value> </LookupType></pre>	<pre><LookupType> <MetadataEntryID>INDUSTR< /MetadataEntryID> <LongValue>Industrial< /LongValue> <ShortValue>INDUSTR< /ShortValue> <Value>INDUSTR</Value> </LookupType></pre>
Similar Enumerations (Matching LongValue, Other Values Unique) COMPLIANT	<pre><LookupType> <MetadataEntryID>446< /MetadataEntryID> <LongValue>Arlington< /LongValue> <ShortValue>Arlin< /ShortValue> <Value>446</Value> </LookupType></pre>	<pre><LookupType> <MetadataEntryID>837< /MetadataEntryID> <LongValue>Arlington< /LongValue> <ShortValue>ArlWA< /ShortValue> <Value>837</Value> </LookupType></pre>
Unique Enumerations (All Values Unique) COMPLIANT	<pre><LookupType> <MetadataEntryID>937< /MetadataEntryID> <LongValue>Kitchen< /LongValue> <ShortValue>Kitchen< /ShortValue> <Value>937</Value> </LookupType></pre>	<pre><LookupType> <MetadataEntryID>285< /MetadataEntryID> <LongValue>Master Bedroom< /LongValue> <ShortValue>Master Bedroom< /ShortValue> <Value>285</Value> </LookupType></pre>
Duplicate Enumerations for LOCKED Enumerations (Only LongValue Match) ERROR	<pre><LookupType> <MetadataEntryID>86425< /MetadataEntryID> <LongValue>Active< /LongValue> <ShortValue>Active Pending< /ShortValue> <Value>86425</Value> </LookupType></pre>	<pre><LookupType> <MetadataEntryID>12496< /MetadataEntryID> <LongValue>Active< /LongValue> <ShortValue>Active Available</ShortValue> <Value>12496</Value> </LookupType></pre>

REQ-DD170R1X-ENUM-9: A "Combined Enumeration" is a single applicant enumeration with a definition that combines more than one Data Dictionary enumerations. A "Combined Enumeration" will be marked as a **WARNING**.

Example 9-1: The Data Dictionary PropertySubType has the enumerations of "Duplex", "Triplex", and "Quadruplex". An applicant's "Plex" or "Duplex/Triplex/Quadruplex" are examples of the combined enumeration.

Example 9-2: Combined Enumerations that are documented as an "Archived Enumeration" would be marked **IGNORE** for certification purposes.

REQ-DD170R1X-ENUM-10: A "Specified Enumeration" is a single applicant enumeration with a definition that is more specified than any one Data Dictionary enumeration. A "Specified Enumeration" is **IGNORED** for certification purposes.

Example 10-1: The Data Dictionary PropertySubType has an enumeration of "Duplex". An applicant's "Duplex Other", "Duplex Side-by-Side", and "Duplex Up-and-Down" enumerations each would be ignored.

REQ-DD170R1X-ENUM-11: An applicant **MAY** define an enumeration as an "Archived Enumeration" in the Supplemental Application Information. The "Archived Enumerations" are marked **IGNORE** in certification testing results.

NOTE 11-1: An "Archived Enumeration" is any duplicate enumeration kept within the metadata to preserve information collected in old records or to provide backward or forward compatibility.

NOTE 11-2: Replacement enumeration(s) **MUST** be defined in the Supplemental Application Information.

NOTE 11-3: The replacement enumeration(s) created by moving, combining, or splitting **MUST** be a compliant Data Dictionary enumeration.

REQ-DD170R1X-ENUM-12: The enumeration value "Retail" will be excluded from the **REQ-DD170R1X-ENUM-1** and **REQ-DD170R1X-ENUM-2** testing rules when this value is found in the following Data Dictionary fields: PropertyType, PropertySubType, and BusinessType. Using "Retail" in any of these three fields will be **COMPLIANT**.

REQ-DD170R1X-ENUM-13: Enumerated Fields **MUST** have at least **ONE** enumerated value within the field. The enumerated values may be of any certification result: COMPLIANT, WARNING, NOTICE, or IGNORE. Failure to provide at least ONE enumerated value will result in an ERROR for the field. (Enumerations with ERRORS will only be allowed in those fields where having the error will not prevent certification, i.e. Platinum fields during 2019.)

Best Practices:

The transitional benefits of "Archived Fields" carries with it the concern of non-standard enumeration values only appearing in an Archive field. Extensibility is the cornerstone of the Dictionary's flexibility to support any region's unique characteristics. If the extended non-standard enumerated values of an Archived Field did not also appear in the related standard field(s), this would require a client application to sift through both the standard and archived fields for a complete set of enumerated values. **It is highly recommended that all enumerations from an archived field also be included in its related standard field(s).**

2.2.6 Metadata: Data Formatting

REQ-DD170R1X-DF-1: Compliance testing will **NOT** take field formatting into account (i.e. Parcel number, Phone numbers).

Example 1-1: Different Phone number formats: 555-555-1234, (555) 555-1234, 555.555.1234, etc. All of these are accepted as long as the other field attributes are compliant: DataType, MaximumLength, etc.

2.3 RETS 1.x Field Compliance Notices and Compliance Warnings

There are multiple situations where a compliance notice or warning is assigned to a RETS 1.x field. These notices or warnings may fit in one of many cases described in the tables below.

Each compliance warning is assigned a "probation time" in which it is expected that the warning is corrected. **Failure to correct a compliance warning during the probation time may result in a loss of certification.** Compliance notices are NOT assigned a "probation time."

Compliance Notices

Type	Compliance Notice Descriptions	Comments / Rule References
Data Types	Where a host provides a data type that does not exactly match what a client is expecting but there wouldn't be a loss of data in the conversion. Example: Host Number --> Client String;	Section 2.2.2.2: These may remain as long as required by the applicant. These CWs will not impact Data Dictionary certification levels.
Suggested Maximum Length	Where a host has a longer maximum length that a client is expecting. There is a potential for data truncation but not guaranteed if the data in the listing does not use the full length allowed.	Rule: REQ-DD170R1X-ML-1
Precision	Where a host provides a precision on a decimal number longer than the client is expecting.	Rule: REQ-DD170R1X-P-1

Compliance Warnings

Type	Compliance Warning Descriptions	CW Probation Time	Comments / Rule References
Lookup Multi	Where a host provides a single-select lookup but the client is expecting a multi-select.	1 Year	Rule: REQ-DD170R1X-DTI-4
Enumerations	A duplicate enumeration is found in a field not specified by the Data Dictionary.	1 Year	Rule: REQ-DD170R1X-ENUM-2

NOTE W-1: As new situations arise, they will be handled on a case-by-case basis, added to this table, and subject to review.

2.4 RESO Web API 1.0.x Field-Level Compliance

Data Dictionary compliance will be determined by comparing host's RESO Web API 1.0.x data structure fields with those defined by the Data Dictionary. Each of the host's mapped fields **MUST** follow all applicable rules in this and following sub-sections to be considered compliant.

REQ-DD170WA1X-FLC-1: Tested field attributes **MUST** be found COMPLIANT for the entire field to be COMPLIANT.¹⁻¹

A field's compliance is determined by comparing multiple field attributes with the corresponding Data Dictionary attributes. Each tested attribute will receive one of the following results: ERROR, WARNING, NOTICE, or COMPLIANT (listed in descending order of severity). The field status will be the most severe label found within the attribute test results.¹⁻²

NOTE 1-1: Only the attribute tests required for the field type will be performed as not all attribute tests apply to every field.

NOTE 1-2: A field may have 1 ERROR, 2 WARNING, and 2 COMPLIANT attributes. This field would be an ERROR. A different field may have 1 NOTICE and 4 COMPLIANT attributes. This field would be a NOTICE.

REQ-DD170WA1X-FLC-2: All fields that could be mapped to the Data Dictionary **SHOULD** be mapped.²⁻¹

NOTE 2-1: All fields without a mapping will be reviewed. Any field discovered that has a match with the Data Dictionary **AND** has an **ERROR MAY** disqualify the applicant from receiving a certification.

NOTE 2-2: All fields identified as a duplicate **MUST** have its data available in a compliant Data Dictionary field for the duplicate field to be marked **IGNORED**. Duplicate fields without an identified equivalent **MAY** be subjected to compliance testing and receive the appropriate testing result.

2.4.1 EDMX: StandardName

2.4.2 EDMX: Data Type

2.4.3 EDMX: Scale

2.4.4 EDMX: Precision

2.4.5 EDMX: Enumerations

2.4.6 EDMX: Data Formatting

2.4.1 EDMX: StandardName

REQ-DD170WA1X-SN-1: Any applicant metadata field identified at or below the current minimum certification level **MUST** use a StandardName from the Data Dictionary. Any identifiable minimum field with an incorrect, missing, or misspelled StandardName will be an **ERROR**. Any identifiable higher field will be a **WARNING**.

NOTE 1-1: Data Dictionary StandardName values are case-sensitive. For example, "ListingID" does not match "ListingId". Difference in case will result in an ERROR.

NOTE 1-2: Certification testers will attempt to identify fields that should be mapped. This may not be possible if the applicant's SystemName is undecipherable. A good-faith effort to provide complete and correct mappings is expected from all applicants.

NOTE 1-3: All fields identified as a duplicate **MUST** have its data available in a compliant Data Dictionary field for the duplicate field to be marked **IGNORED**. Duplicate fields without an identified equivalent **MAY** be subjected to compliance testing and receive the appropriate testing result.

NOTE 1-4: The current minimum certification level for Data Dictionary 1.7.0 is Gold. Any Core, Bronze, Silver, and Gold fields not following this rule will receive an **ERROR** status. Platinum fields will receive a **WARNING**. In 2020, when Platinum becomes the required minimum, **ALL FIELDS** not following this rule will receive and **ERROR**.

REQ-DD170WA1X-SN-2: Applicant metadata fields without a Data Dictionary match **SHOULD** have an empty StandardName. Non-Data Dictionary applicant fields with a StandardName will be given a **NOTICE**.

NOTE 2-1: While using these "extra" non-Data Dictionary StandardNames does not negatively affect certification, the practice is discouraged. These are given a **NOTICE** so that those using the metadata will be forewarned that these are not accepted Data Dictionary StandardNames.

REQ-DD170WA1X-SN-3: Any applicant metadata field using StandardName that matches the Data Dictionary Repeating Field name pattern **MAY** have the definition field in the same resource class. The repeating portion of the StandardName **MAY** be found as an enumeration. Though recommended, It is **NOT REQUIRED** to have the field that defines the repeating field content in the system's metadata. These StandardNames will still be **COMPLIANT** even with the missing definitions.

Example 3-1: "RoomLibraryArea" and "RoomBedroom1Area" both match the Room[type]Area pattern. The "RoomType" enumerated field **MAY** be present to define "Library" and "Bedroom 1" as enumerations for the repeating StandardName.

Special considerations will be made when comparing the applicant's field names and definitions with those found in the Data Dictionary.

- Fields with SIMILAR definitions and MATCHING StandardNames are **COMPLIANT**.
- Fields with SIMILAR definitions and DIFFERENT StandardNames are **NOT** compliant. In this situation, the StandardName **MUST** be changed to match the Data Dictionary to be compliant. Only the StandardName needs to be changed for compliance.
- Fields with DIFFERENT definitions and MATCHING StandardNames are allowed but **MUST** be listed in the Supplemental Application Information.

Example 3-2: An applicant's "Subdivision" field has a different definition than the Data Dictionary.

- Fields with DIFFERENT definitions and DIFFERENT StandardNames are ignored.

REQ-DD170WA1X-SN-4: A Data Dictionary Field **MUST** only be referenced (mapped) by one SystemName per Resource Class. Having multiple SystemNames using the same Data Dictionary StandardName causes a Multi-to-One mapping. This would be considered an ERROR for every SystemName that refers to the same Data Dictionary StandardName within the same class.

2.4.2 EDMX: Data Type

The Data Dictionary provides a "Simple Data Type" for each field. The corresponding field within the applicant's EDMX **MUST** be a **logical** match. The exact **physical** representation may vary. The following examples highlight the difference between logic and physical matches.

NOTE D1: Multiple tables in the following subsections are provided to give the reader an easier to read visual interpretation.

EXAMPLE 1: Data Dictionary Boolean requires a **logical** true/false indication. (A third "no answer" or empty indication is allowed, but not required.) Booleans may be represented **physically** with 1/0, Y/N, Yes/No, T/F, True/False, or similar. A specific enumeration to represent a non-response, like "None" OR "N/A," is allowed in lookups. This non-response enumeration is the same as leaving a number or character boolean field empty.

EXAMPLE 2: Data Dictionary "Number (Whole)" **MAY** be any DataType that represents a whole number: Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, or Edm.Int64. It **MAY NOT** be a Edm.Decimal.

NOTE D2: The Web API 1.0.2 Specification requires each field within the EDMX to have attributes describing the data stored. One of these attributes is "**DataType**". This attribute will be used to determine if the EDMX field is logically consistent with the Data Dictionary.

DataType uses one of the following values: Edm.Boolean, Edm.Byte, Edm.Date, Edm.DateTimeOffset, Edm.Decimal, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.SByte, Edm.String, Edm.TimeOfDay, or Edm.EnumType. Other values may exist but do not relate with the Data Dictionary Testing Rules.

More information about **Edm DataType** may be found in the table found in Section 2.4.3 Data Type in the Web API 1.0.2 Specification.

REQ-DD170WA1X-DTI-1: The applicant EDMX DataType field **MUST** match **logically** to the Data Dictionary DataType. It is recommended that the field **physically** match one of the DataType values as defined in the previous table. Other DataTypes and Interpretations will be evaluated on an as needed basis.

REQ-DD170WA1X-DTI-2: Logical allowances of data types **MUST NOT** contradict the requirements of the utilized RESO Web API specification where the Data Dictionary is implemented. For conflicts, the utilized RESO Web API 1.x.x specification must be followed.

EXAMPLE 2-1: Edm.Date and Edm.TimeOfDay fields must be formatted are required in the utilized RESO Web API 1.x.x specification. It is not sufficient for a Character field to contain date or time data.

REQ-DD170WA1X-DTI-3: Any DataType transformation that would result in data loss when data moves from a HOST to a CLIENT is NOT compliant.

EXAMPLE 3-1: A Host has a multi-select enumeration and the Client is expecting a single-select.

2.4.2.1 RESO Web API 1.x.x EDMX DataType Values (Table)

2.4.2.2 RESO Web API 1.x.x Compliance Errors for EDMX (Table)

2.4.2.3 RESO Web API 1.x.x Compliance Notices and Warnings for Metadata (Table)

2.4.2.1 RESO Web API 1.x.x EDMX DataType Values (Table)

The Data Dictionary provides a “Simple Data Type” for each field defined. This value dictates what is an acceptable value within the applicant’s EDMX field’s DataType attribute.

The Web API 1.0.2 Specification requires each field within the EDMX to have attributes describing the data stored. One of these attributes is “**DataType**”. This attribute will be used to determine if the EDMX field is logically consistent with the Data Dictionary.

DataType uses one of the following values: Edm.Boolean, Edm.Byte, Edm.Date, Edm.DateTimeOffset, Edm.Decimal, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.SByte, Edm.String, Edm.TimeOfDay, or Edm.EnumType. Other values may exist but do not relate with the Data Dictionary Testing Rules.

More information about **Edm DataType** may be found in the table found in Section 2.4.3 Data Type in the Web API 1.0.2 Specification.

The Data Dictionary Simple DataType is transport independent. The following chart provides acceptable translations between the single Data Dictionary value and the RESO Web API 1.x.x DataType value.

Following these recommendations will allow the field to be certified without qualification. Where needed, the “Preferred” DataType and Interpretation has been identified. “Acceptable” alternative are also provided.

Requirement ID	DD Simple DataType	Acceptable EDMX DataType(s)	Compliant UnderlyingType
REQ-DD170WA1X-DTC-1	Boolean	Preferred: Edm.Boolean	Acceptable (Single-Valued Lookup): Edm.EnumType and UnderlyingType="Edm.Int32" ¹
REQ-DD170WA1X-DTC-2	Date	Edm.Date	None
REQ-DD170WA1X-DTC-3	Number (Whole) ²	Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64	None
REQ-DD170WA1X-DTC-4	Number (Decimal)	Edm.Decimal	None
REQ-DD170WA1X-DTC-5	String	Preferred: Edm.String Acceptable: Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.Decimal, Edm.Boolean ³	Acceptable (Single-Valued Lookup): Edm.EnumType and UnderlyingType="Edm.Int32" ⁴
REQ-DD170WA1X-DTC-6	StringList, Single	Edm.EnumType without the IsFlags attribute	"Edm.Int32" only
REQ-DD170WA1X-DTC-7	StringList, Multi	Edm.EnumType and IsFlags="true"	"Edm.Int32" or "Edm.Int64"
REQ-DD170WA1X-DTC-8	Timestamp	Edm.TimeOfDay, Edm.DateTimeOffset	None

NOTE T-1: It is preferred that applicant’s Boolean fields have an "Edm.Boolean" DataType. Since Boolean fields may be represented by a lookup with the Edm.EnumType, an UnderlyingType of "Edm.Int32", and only two True/False like values (a third NULL-type value is permitted). See **REQ-DD170WA1X-DTE-1** for more information.

NOTE T-2: Any RESO Web API 1.x.x DataType that represents a whole number is allowed.

NOTE T-3: Any Number-to-String mapping is allowed (Whole and Decimal Numbers).

NOTE T-4: Any Single-Valued Lookup-to-String mapping is allowed.

2.4.2.2 RESO Web API 1.x.x Compliance Errors for EDMX (Table)

Compliance Error: An "error" is issued for any portion of the Data Dictionary’s implementation (field, enumerations, etc.) that does not conform to the requirements. These error disqualify the applicant from certification.

NOTE: Only those "Errors" from DataType mappings are included here. This is NOT an extensive list of errors. Only those that apply specifically to Data Type.

Compliance Errors

Requirement ID	DD Simple Data Type	Compliance Errors DataTypes(s)	Compliance Error UnderlyingType
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REQ-DD170WA1X-DTE-1	Boolean	Edm.String, Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.Decimal, Edm.Date, Edm.TimeOfDay	None ("String-to-Boolean", "Number-to-Boolean", or "Date/Edm.TimeOfDay-to-Boolean" Mapping Errors) An UnderlyingType is required for Non-Boolean data types (enumerations) that act like a Boolean value.
REQ-DD170WA1X-DTE-2	Date ¹	Edm.TimeOfDay, Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64	None
REQ-DD170WA1X-DTE-3	Number ²	(Any DataType used as a Lookup)	UnderlyingType="Edm.Int32" or UnderlyingType="Edm.Int64" (Any Lookup-to-Number OR LookupMulti-to-Number Mapping)
REQ-DD170WA1X-DTE-4	Number (Whole)	Edm.String, Edm.Decimal, Edm.Date, Edm.TimeOfDay	None ("Edm.String-to-Whole" Mapping Error) None ("Edm.Decimal-to-Whole" Mapping Error) See REQ-DD160WA1X-P-4 None ("Edm.Date-to-Whole" or "Edm.TimeOfDay-to-Whole" Mapping Error)
REQ-DD170WA1X-DTE-5	StringList, Multi	Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.String	None (This is the "String-to-LookupMulti" or "Number-to-LookupMulti" Error). The UnderlyingType cannot be "None" or empty for "StringList, Multi"
REQ-DD170WA1X-DTE-6	StringList, Multi ³	Edm.Boolean	None
REQ-DD170WA1X-DTE-7	StringList, Single ³	Edm.Boolean	None
REQ-DD170WA1X-DTE-8	StringList, Single	Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.String	None (This is the "String-to-Lookup" or "Number-to-Lookup" Error) The Interpretation cannot be "None" or empty for "StringList, Single"
REQ-DD170WA1X-DTE-9	StringList, Single ⁴	(Any DataType used as a Lookup)	LookupMulti (This is the "Multi-to-Single Lookup" Error) <<OPEN>>
REQ-DD170WA1X-DTE-10	Timestamp ¹	Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.String, Edm.Date	None
REQ-DD170WA1X-DTE-11	(Any Non-Number/String) ⁵	Edm.Decimal	Any ("Edm.Decimal-to-Non-Number/Edm.String" Mapping Error) excluding "Edm.Decimal-to-Edm.String" mappings, which are compliant.

NOTE T-1: Any transformation of a Date and Timestamp into the other is an error. Some Data Dictionary fields have a Date and Timestamp variant: OnMarketDate v. OnMarketTimestamp or OffMarketDate v. OffMarketTimestamp. Please map to the correct version to avoid receiving a compliance error.

NOTE T-2: Any lookup to be translated into a number field will be an error. The exception is when every lookup value is a pure number, without any additional symbols. If this is the case, the mapping will be given a WARNING. To receive the warning instead of the error, this field and its lookups must be clearly stated in the Supplemental Application Information. LookupMulti-to-Number CAN NOT receive a WARNING because multiple values concatenated together cannot be a number.

For example: A lookup representing the number of bedrooms could have the values "1", "2", "3", "4", and "5+". This would be an ERROR because of the "5+" lookup value. To receive a warning, the last value would need to be changed to "5" AND documented in the Supplemental Application Information.

NOTE T-3: Due to the potential ambiguity of how a Boolean is translated, all of these mappings are considered errors. This applies to "Locked" enumerations lists. Boolean-to-Lookup, Single is allowed when the enumeration list is "Open" or "Open (to be locked)"

NOTE T-4: For Data Dictionary "StringList, Single" fields, the applicant Metadata Interpretation field **SHOULD** be "Lookup". If the applicant Metadata has a "LookupMulti" Interpretation, that creates a "Multi-to-Single" data mapping, this field will NOT be considered compliant.

NOTE T-5: Per "REQ-DD170WA1X-DTC-5" the Edm.Decimal-to-String mapping is compliant.

2.4.2.3 RESO Web API 1.x.x Compliance Notices and Warnings for Metadata (Table)

Compliance Notice: A "notice" is issued for any portion of the Data Dictionary's implementation (field, enumerations, etc.) that does not conform to the requirements but does **NOT** disqualify the applicant from certification.

Compliance Warnings: A "warning" is the same as a compliance notice with the additional requirement that it is fixed within a specific time frame. Future certification **MAY** be denied if a "warning" is not fixed in the required time.

Compliance Notices

The direction the data "flows" is important when translating data fields between different DataTypes. The direction of all of the mappings are from the applicant's metadata (Host's implementation) into the Data Dictionary (Client's expectations). There are some DataType mappings where reversing the direction would result in a loss of data. The DataType transformations that only work going into the Data Dictionary will be marked with a "Compliance Notice."

Also, a "Compliance Notice" **MAY** be issued for any portion of the Data Dictionary's implementation (field, enumerations, etc.) that does not conform to this or other requirements, but does **NOT** disqualify the applicant from certification.

Any DataType transformation that could result in a loss of data from the applicant's metadata into the Data Dictionary will not be "Compliant."^{N-1}

Requirement ID	DD Simple Data Type	Compliance Notice DataTypes(s)	Compliance Notice UnderlyingType
REQ-DD170WA1X-DTN-1	String	Edm.SByte, Edm.Byte, Edm.Double, Edm.Int16, Edm.Int32, Edm.Int64, Edm.Decimal ²	LookupMulti (LookupMulti-to-String Mapping) ³ See also REQ-DD170WA1X-DTC-5

NOTE N-1: Only those "Notices" from DataType mappings are included here. This is NOT an extensive list of compliance notices. Only those that apply specifically to Data Type.

NOTE N-2: A string field can hold any alpha or numeric character. Placing numeric information into a string field is not going to lose data. An example is the Data Dictionary "ListingID" string field. A host's implementation **MAY** use a number field.

NOTE N-3: A multi-select lookup value **MAY** map into a Data Dictionary String field. An example is the Data Dictionary "OriginatingSystemName" string field. A host may store this as a lookup of predetermined system names. CAUTION: There **MAY** be too much data when the multi-select lookup values are concatenated to fit within the defined string length. **REQ-DD170WA1X-DTC-5** specifies that the Single-Select Lookup-to-String mapping is "Compliant."

Compliance Warnings

A "Compliance Warning" is the same as a compliance notice with an additional deadline requirement. The source of the "warning" must be fixed within a specific timeframe. Future certification **MAY** be denied if a "warning" is not fixed in the required time.

Any DataType transformation that could result in a loss of data from the applicant's metadata into the Data Dictionary will not be "Compliant."^{W-1}

Requirement ID	DD Simple Data Type	Compliance Warning DataTypes(s)	Compliance Warning UnderlyingType	Comments / Rule References
REQ-DD170WA1X-DTW-1	StringList, Multi	None	Warning ^{W-2} : Lookup (Any Single-to-Multi Mapping)	Rule: REQ-DD170WA1X-DTI-4

NOTE W-1: Only those "Warnings" from DataType mappings are included here. This is NOT an extensive list of compliance notices. Only those that apply specifically to Data Type.

NOTE W-2: A multi-select lookup field may hold the information from a single-select lookup field without losing data.

REQ-DD170WA1X-DTI-4: For Data Dictionary "StringList, Multi" fields, the applicant Metadata Interpretation field **SHOULD** be "LookupMulti". If the applicant EDMX has data structure that creates a "Single-to-Multi" data mapping, this field will be marked with a "Compliance Warning."

NOTE W-3: The RESO Web API 1.0.2 describes how "Single-Valued Lookups" (2.4.9) and "Multi-Valued Lookups (2.4.10) are to be constructed within the EDMX:

- Single-Valued Lookups **MUST** have an UnderlyingType of either "Edm.Int32" or "Edm.Int64" without the IsFlags attribute, and
- Multi-Valued Lookups **MUST** have an UnderlyingType of either "Edm.Int32" or "Edm.Int64" AND the IsFlags attribute is "true".

2.4.3 EDMX: Scale

NOTE S1: OData "Scale" is equivalent to the RETS "Precision". This is not to be confused with OData "Precision" which is equivalent with RETS "MaxLength"

REQ-DD170WA1X-S-1: The "Scale" testing rules apply to the following EDM data types: Decimal.

NOTE 1-1: [OData Version 4.0 Part 3 Section 6.2.4 Scale](#) states: "A decimal property **MAY** define a non-negative integer value or variable *f* or the Scale attribute." For Data Dictionary implementation, "variable" is **NOT** an acceptable Scale value as is cannot be compared to subsequent testing rules.

REQ-DD170WA1X-S-2: The applicant's data structure Scale attribute **SHOULD** be equal to or less than the decimal value in the Data Dictionary "Sug. Max Length" column found in the Data Dictionary. These precision lengths will be marked with as **COMPLIANT**.

REQ-DD170WA1X-S-3: The applicant's data structure Scale attribute **MAY** be zero or not present when the Data Dictionary "Sug. Max Length" column found in the Data Dictionary. These "Whole Number-to-Decimal" mappings will be marked with as **COMPLIANT**.

NOTE 3-1: Where ListPrice equals 14.2, the Scale attribute **SHOULD** be 2 or smaller (including "0" or null) to be compliant. Also, where Latitude and Longitude both equal 12.8, the scale attribute **SHOULD** be 8 or smaller to be compliant.

REQ-DD170WA1X-S-4: The applicant's data structure Scale attribute **SHOULD NOT** be greater than than the decimal value in the Data Dictionary "Sug. Max Length" column found in the Data Dictionary. These field lengths will be marked with as **NOTICE**.

NOTE 4-1: Where ListPrice equals 14.2, the Scale attribute **MAY** be 3 or greater to receive a notice.

REQ-DD170WA1X-S-5: A "Decimal-to-Whole Number" mapping is created when the Host data provides any precision value when the Data Dictionary does not have a value. This mapping may result in data loss and the Host field will be an **ERROR**.

2.4.4 EDMX: Precision

NOTE P1: OData "Precision" is equivalent to the RETS "MaxLength". This is not to be confused with RETS "Precision" which is equivalent with OData "Scale."

REQ-DD170WA1X-P-1: The "Precision" testing rules apply to the following EDM data types: Byte, DateTime, DateTimeOffset, Decimal, Double, Float, Guid, Int16, Int32, Int64, SByte, String, and Time. Any field using "MaxLength" (instead of "Precision") will be tested with all of the same rules as if it used "Precision."

NOTE 1-1: [OData Version 4.0 Part 3 Section 6.2.3 Precision](#) states: "A datetime-with-offset, decimal, duration, or time-of-day property **MAY** define a value for the Precision attribute."

NOTE 1-2: As the OData specification does not forbid additional EDM data types to use "precision", RESO allows "precision" to be added to all data types listed above.

REQ-DD170WA1X-P-2: The applicant EDMX Precision value **SHOULD** be equal to or less than the "Sug. Max Length" found in the Data Dictionary. These field lengths will be marked with as **COMPLIANT**.

REQ-DD170WA1X-P-3: The applicant EDMX Precision value **SHOULD NOT** be greater than than the "Sug. Max Length" found in the Data Dictionary. These field lengths will be marked as a **NOTICE**.

REQ-DD170WA1X-P-4: When the Data Dictionary provides a Suggested Maximum Length, it is expected that the applicant EDMX Precision value provides any value. Failure to provide a length (a null value or empty attribute), that field length will be marked as a **WARNING**.

NOTE 4-1: Until further clarified in separate Non-RETS or Non-Web API Testing Rules, any transport's failure to provide any length for a field where the Data Dictionary provides a length will also be marked as a **WARNING**.

REQ-DD170WA1X-P-5: The applicant EDMX Precision value **MAY** be two more in value than the "Sug. Max Length" found in the Data Dictionary. These field lengths will be marked with as **COMPLIANT**. This is to allow for extra decimal places or sign characters required to represent positive/negative numbers.

NOTE 5-1: The larger value described above is allowed for numeric data types. Non-numeric data types will use the exact Data Dictionary values for the testing rules.

2.4.5 EDMX: Enumerations

REQ-DD170WA1X-ENUM-1: The applicant Metadata LongValue **MUST** match the Data Dictionary Enumeration value exactly as defined. Synonyms or spelling variations are not allowed.

Example 1-1: PropertySubType's "Condominium" **MUST** be fully spelled out. "Condo" is not accepted.

NOTE 1-1: This spelling requirement only applies to data transport (e.g. Metadata). How the enumeration value is displayed to users is determined by the system administrators.

NOTE 1-2: Exceptions to this rule **MAY** be granted based on the allowance of "Archived Enumerations" (see rules below.) Exceptions to this rule **MAY NOT** be granted when doing so would contradict other rules, such as duplicate enumerations within the same field, misspellings, or abbreviations.

REQ-DD170WA1X-ENUM-2: The applicant Metadata enumeration value **MUST** be found in the same enumeration list as defined in the Data Dictionary. Enumeration values found in the wrong field will receive a **WARNING**. Enumeration fields containing misplaced values will receive a **WARNING**.

NOTE 2-1: The applicant **MUST** make note of the incorrect location in the Supplemental Application Information provided with the application including a time frame on when this will be corrected.

NOTE 2-2: It is acceptable for an enumeration to appear in multiple places if that is desired by the applicant. However, the duplicate would receive a **WARNING** (See Example 2). Duplicate enumerations identified as "archived" will be marked as **IGNORE** and will not impact certification results.

NOTE 2-3: Some enumerations in different locations may appear to be duplicates but are actually unique based on context provided by location. These enumerations are **COMPLIANT** (See Example 3). Some RESO Web API 1.0.x implementations may have enumerated lists that are unique to a resource class. Duplicates in these situations are **COMPLIANT** (See Example 4).

Example 2-1: RoomType's "Library" **SHOULD** be found in RoomType. Having "Library" in any other field (and using the same definitions), where it is not defined in the dictionary, will make that field non-compliant (**WARNING**). If the reuse of the same enumerated value is for system compatibility, a documented "Archived" enumeration will be marked **IGNORE**.

Example 2-2: The Enumeration Value "Cabin" **SHOULD** be found in PropertySubType, as specified by the Data Dictionary. It **MAY** also appear in ArchitecturalStyle, if required by the data vendor. The duplicate **MAY** remain if it has a different definition than other enumerations found in the Data Dictionary. Other common examples of unique enumerations based on location context include: "Yes", "No", "Other", "None", and "See Remarks".

Example 2-3: Depending on the resource class chosen, the PropertySubType field **MAY** use a different enumerated list: PropertySubTypeRESI and PropertySubTypeRENT. The Enumeration Value "Single Family Residence" **MAY** appear in both enumerated lists. This is **COMPLIANT** since there is still only one selection for "Single Family Residence" within in a single class.

REQ-DD170WA1X-ENUM-3: The applicant enumeration values **MAY** be defined within the metadata OR by an external validation method.

NOTE 3-1: Enumerated fields with values validated outside the metadata **MUST** be noted when applying for certification. Compliance Testers will need the enumerated values found within the field to check for compliance.

Example 3-1: A data vendor that cover a large geographical area may have too many "City" or "MLSAreaMajor" values to enumerate within their metadata. They **MAY** choose to use an external means for validation, such as a database or user interface to enforce proper selection.

REQ-DD170WA1X-ENUM-4: A Data Dictionary Field with a LOCKED Enumeration **MUST NOT** have any additional enumerations. This field **MAY** have fewer as determined by the applicant.

REQ-DD170WA1X-ENUM-5: A Data Dictionary Field with an OPEN or OPEN (TO BE LOCKED) Enumeration **MAY** have additional OR fewer enumerations as determined by the applicant.

NOTE 4-1: Previously compliant enumerated fields with "OPEN (TO BE LOCKED)" can fall out of compliance in future versions of the Data Dictionary if that field becomes LOCKED.

NOTE 4-2: Enumerations not defined in the Data Dictionary are not under the jurisdiction of compliance testing and will be ignored unless it conflicts with other compliance rules.

REQ-DD170WA1X-ENUM-6: A Lookup Field **MUST NOT** have additional enumerations that are synonyms of enumerations already found within the field. This applies to Data Dictionary fields with **Locked** Enumeration Lists. These synonyms will be marked as an **ERROR**.

REQ-DD170WA1X-ENUM-7: A Lookup Field **MUST NOT** have additional enumerations that are synonyms of enumerations already found within the field. These additional enumerations will be marked as an **ERROR**. Some Data Dictionary fields have **no enumeration list** defined. Synonym tests on Enumerations only apply on those fields with enumerations defined in the Data Dictionary. Additional enumerations, where there is NOT a Data Dictionary list, will be marked as an **WARNING**.

Example 7-1: The enumerations "Condominium" and "Condo" cannot appear in the same field.

REQ-DD170WA1X-ENUM-8: A Lookup Field **SHOULD NOT** have additional enumerations that are duplicates of enumerations already found within the field. These duplicates, within the same field, will be marked as an **ERROR**. The "Archived Enumeration" exemption **WILL NOT** be allowed to excuse these duplicates. Some Data Dictionary fields have **no enumeration list** defined. Duplication tests on Enumerations only apply on those fields with enumerations defined in the Data Dictionary.

NOTE 10-1: RESO Web API 1.0.x enumerations consists of a "Name" attribute in the enumeration definition. Testing for duplicates will include ALL "*"Value" portions of the enumeration. To be considered a "Duplicate Error," all values **MUST** be identical.

REQ-DD170WA1X-ENUM-9: A "Combined Enumeration" is a single applicant enumeration with a definition that combines more than one Data Dictionary enumerations. A "Combined Enumeration" will be marked as a **WARNING**.

Example 9-1: The Data Dictionary PropertySubType has the enumerations of "Duplex", "Triplex", and "Quadruplex". An applicant's "Plex" or "Duplex/Triplex/Quadruplex" are examples of the combined enumeration.

Example 9-2: Combined Enumerations that are documented as an "Archived Enumeration" would be marked **IGNORE** for certification purposes

REQ-DD170WA1X-ENUM-10: A "Specified Enumeration" is a single applicant enumeration with a definition that is more specified than any one Data Dictionary enumeration. A "Specified Enumeration" is **IGNORED** for certification purposes.

Example 10-1: The Data Dictionary PropertySubType has an enumeration of "Duplex". An applicant's "Duplex Other", "Duplex Side-by-Side", and "Duplex Up-and-Down" enumerations each would be ignored.

REQ-DD170R1X-ENUM-11: An applicant **MAY** define an enumeration as an "Archived Enumeration" in the Supplemental Application Information. The "Archived Enumerations" are marked **IGNORE** in certification testing results.

NOTE 11-1: An "Archived Enumeration" is any duplicate enumeration kept within the metadata to preserve information collected in old records or to provide backward or forward compatibility.

NOTE 11-2: Replacement enumeration(s) **MUST** be defined in the Supplemental Application Information.

NOTE 11-3: The replacement enumeration(s) created by moving, combining, or splitting **MUST** be a compliant Data Dictionary enumeration.

REQ-DD170WA1X-ENUM-12: The enumeration value "Retail" will be excluded from the **REQ-DD170WA1X-ENUM-1** and **REQ-DD170WA1X-ENUM-2** testing rules when this value is found in the following Data Dictionary fields: PropertyType, PropertySubType, and BusinessType. Using "Retail" in any of these three fields will be **COMPLIANT**.

REQ-DD170WA1X-ENUM-13: Enumerated Fields **MUST** have at least **ONE** enumerated value within the field. The enumerated values may be of any certification result: COMPLIANT, WARNING, NOTICE, or IGNORE. Failure to provide at least ONE enumerated value will result in an ERROR for the field. (Enumerations with ERRORS will only be allowed in those fields where having the error will not prevent certification, i.e. Platinum fields during 2019.)

REFERENCE: RESO Web API 1.0.2 Implementation Details

The RESO Web API 1.0.2 describes how "Single-Valued Lookups" (2.4.9) and "Multi-Valued Lookups (2.4.10) are to be constructed within the EDMX:

- Single-Valued Lookups **MUST** have an UnderlyingType of either "Edm.Int32" or "Edm.Int64" without the IsFlags attribute, and
- Multi-Valued Lookups **MUST** have an UnderlyingType of either "Edm.Int32" or "Edm.Int64" **AND** the IsFlags attribute is "true".

Best Practices:

The transitional benefits of "Archived Fields" carries with it the concern of non-standard enumeration values only appearing in an Archive field. Extensibility is the cornerstone of the Dictionary's flexibility to support any region's unique characteristics. If the extended non-standard enumerated values of an Archived Field did not also appear in the related standard field(s), this would require a client application to sift through both the standard and archived fields for a complete set of enumerated values. **It is highly recommended that all enumerations from an archived field also be included in its related standard field(s).**

2.4.6 EDMX: Data Formatting

REQ-DD170WA1X-DF-1: Compliance testing will **NOT** take field formatting into account (i.e. Parcel number, Phone numbers).

Example 1-1: Different Phone number formats: 555-555-1234, (555) 555-1234, 555.555.1234, etc. All of these are accepted as long as the other field attributes are compliant: DataType, MaximumLength, etc.

2.5 RESO Web API 1.0.x Field Compliance Notices and Compliance Warnings

There are multiple situations where a compliance notice or warning is assigned to a RETS 1.x field. These notices or warnings may fit in one of many cases described in the tables below.

Each compliance warning is assigned a "probation time" in which it is expected that the warning is corrected. **Failure to correct a compliance warning during the probation time may result in a loss of certification.** Compliance notices are NOT assigned a "probation time."

Compliance Notices

Type	Compliance Notice Descriptions	Comments / Rule References
Data Types	Where a host provides a data type that does not exactly match what a client is expecting but there wouldn't be a loss of data in the conversion. Example: Host Number --> Client String;	Section 2.2.2.2: These may remain as long as required by the applicant. These CWs will not impact Data Dictionary certification levels.
Suggested Maximum Length	Where a host has a longer maximum length than a client is expecting. There is a potential for data truncation but not guaranteed if the data in the listing does not use the full length allowed.	Rule: REQ-DD170WA1X-ML-1
Precision	Where a host provides a precision on a decimal number longer than the client is expecting.	Rule: REQ-DD170WA1X-P-1

Compliance Warnings

Type	Compliance Warning Descriptions	CW Probation Time	Comments / Rule References
Lookup Multi	Where a host provides a single-select lookup but the client is expecting a multi-select.	1 Year	Rule: REQ-DD170WA1X-DTI-4
Enumerations	A duplicate enumeration is found in a field not specified by the Data Dictionary.	1 Year	Rule: REQ-DD170WA1X-ENUM-2

NOTE W-1: As new situations arise, they will be handled on a case-by-case basis, added to this table, and subject to review.

2.6 Payload Endorsement Testing Rules

RESO has defined Payloads as "Any number of fields representing the payloads found in RESO transports."

A Payload Endorsement is an additional recognition (for those who have earned a Data Dictionary Certificate) demonstrating that a specific sets of fields are available in a data feed of the same name.

NOTE 0-1: A "certificate" refers to the whole Data Dictionary. An "endorsement" refers specifically to payloads. An applicant **MUST** receive a Data Dictionary Certification (at any level) **BEFORE** receiving an endorsement. An example could be an applicant receiving a "Data Dictionary 1.5.0 Gold **Certificate** with an IDX Payload **Endorsement**." When referring to the payload itself, it may be referred to as a "RESO Endorsed IDX Data Feed."

The following are requirements for ALL Payload Endorsements.

REQ-DD170-PE-1: The Payload Endorsement requires access to a transport data structure a feed with payload-specific permissions. Separate server credentials configured for the payload feed **MUST** be provided during the application process. The Payload Endorsement may be granted on any RESO Transport Standard eligible for Data Dictionary Certification.

REQ-DD170-PE-2: ALL Data Dictionary fields in a payload have one of three classifications that describes how the field should be presented and populated in the applicant's payload data structure:

1. **REQUIRED:** The field **MUST** be present and **MUST** be populated for all records returned using the payload data structure.
2. **BLANK:** The field **MUST** be present and **MUST** be populated for any record where the data of the field exists. The field **MAY** be blank if the field is optional **OR** does not exist in system configuration.
3. **NULL:** The field **MUST** be present and **MAY** be populated for any record based on organizational business rules or legal liabilities.

NOTE 2-1: Categorized payload fields **MUST** be in in the applicant's IDX Payload. This **WILL** apply to any fields the applicant does not have in the full feed used for Data Dictionary certification. (This is why Data Dictionary Certification **MUST** precede Payload Endorsements. Both feeds are required for comparison purposes.)

Example 2-1: Required Fields: The following are **examples** of fields that **MUST** be found in every IDX Payload:

- City, ListingId, ListOfficeMlsId, ListOfficeName, ListPrice, ModificationTimestamp, PropertyType, StandardStatus, StatusChangeTimestamp

Example 2-2: Blank Fields: The following are **examples** of fields that **MUST** be found in every IDX Payload but **MAY BE** empty per listing needs:

- Association Fields when a listing is not in an Association, such as AssociationAmenities, AssociationFee, AssociationFeeFrequency, and AssociationFeeIncludes.
- Closed Fields when a listing is still Active, such as CloseDate and ClosePrice.
- Mobile/Manufactured Home Fields when describing other property types, such as Skirt.

Example 2-3: NULL Fields: The following are **examples** of fields that **MUST** be found in every IDX Payload:

- BuyerAgent, CoBuyerAgent Fields: For those systems without specific "agent" fields not included in previous categories
- School Fields: ElementarySchool, MiddleOrJuniorSchool, HighSchool,ElementarySchoolDistrict, MiddleOrJuniorSchoolDistrict, HighSchoolDistrict
- Any field that may be prohibited for liability reasons due to disclosure or other laws.

REQ-DD170-PE-3: One or more records from the applicant's server **MAY** be retrieved during the testing process. The applicant **SHOULD** provide examples of production records with the required data **if requested** by RESO Staff. The record(s) **MAY** be pulled using server credentials provided during the application **OR** those provided to the applicant's end-users.

NOTE 3-1: This requirement is to ensure the fields required by the payload are populated in the search results. Due to variance of actual production record data, every field **DOES NOT** need to be populated. An empty place holder **MAY** be accepted. If RESO Staff requests a record with a specific field populated, it **MUST** be provided using the application or end-user credentials.

NOTE 3-2: Failure to provide records with populated data **MAY** result in the loss of the Payload Endorsements previously received. Any recipient of an applicant's payload feed **MAY** report the applicant to RESO Staff for non-compliance.

REQ-DD170-PE-4: **ALL** of the applicant's data structure fields that are found within the Data Dictionary Payload **MUST** satisfy the "StandardName" mapping requirements of the data transport. The applicant **MAY** have additional fields within their payload that does not match fields defined in the Data Dictionary payload.

NOTE 4-1: Please refer to [2.2.1 Metadata: StandardName](#) for RETS Transport and [2.4.1 EDMX: StandardName](#) for RESO Web API Transport requirements.

NOTE 4-2: No other aspect of "Field-Level Compliance" testing will be used for payload endorsement testing: Data Type, Precision, Scale, Suggested MaximumLength, Enumerations, or Data Formatting. Payload fields could have ERRORS in other aspects of RESO Data Dictionary Certification testing and the system still qualifies to receive payload endorsements. These non-compliant results **MUST NOT** prevent any certification required by other certification testing rules.

REQ-DD170-PE-5: An applicant data structure **MUST** include all fields as required by previous rules. However, applicants **WILL NOT** be required to provide any data, enumeration, or information within those fields that would open applicants to legal liability. (i.e. the fields will be present but empty.) **ALL** missing data covered by this requirement **MUST** be documented in the [Supplemental Application Information](#). These fields **SHOULD BE** those already categorized as NULL Fields under **REQ-DD170-PE-2**.

Example 5-1: ClosePrice is NOT required to be included in payload feeds if "sold" information is not publicly accessible.

Example 5-2: Latitude and Longitude are NOT required if licensing restrictions prevent the geo-spatial information from being shared.

REQ-DD170-PE-6: The applicant's data feed being analyzed for an endorsement **MUST** be described with the same name as the Payload Endorsement, or equivalent RESO approved synonym, within the testing rules. Other feeds provided by the applicant **MUST NOT** be referred to with the same name as a Data Dictionary Payload.

Example 6-1: The term "IDX" feed **MUST** refer to a data feed that conforms to all of the rules that are specified here and in the [Internet Data Exchange \(IDX\) Payload for Broker Reciprocity](#) requirements section. Any feed that does not satisfy these requirements **MUST** be called by another name. When end users request and qualify to receive the "RESO Endorsed IDX Data Feed," they **MUST** be provided with the payload feed tested and endorsed by RESO. (RESO does **NOT** require any applicant to provide any data to end-users that do not meet MLS policy requirements for receiving data.)

NOTE 6-1: This requirement is satisfied by proper documentation in the [Supplemental Application Information](#). Applicants **MUST** provide the name and description of the Payload being evaluated for endorsement.

NOTE 6-2: This requirement is to avoid possible confusion with the wide variety of feeds that an applicant **MAY** be able to provide.

2.6.1 Internet Data Exchange (IDX) Payload for Broker Reciprocity

2.6.1 Internet Data Exchange (IDX) Payload for Broker Reciprocity

Internet Data Exchange (IDX) Payload, also referred to as the Broker Reciprocity Payload, allows applicants to provide a sub-set of all fields collected for a specific record. The Data Dictionary 1.7.0 IDX Payload consists of 219 fields from the Property Resource.

NOTE 0-1: Internet Data Exchange (IDX) Payload **DOES NOT** refer to any MLS display rules. RESO **DOES NOT** require changes to an MLS' Display Rules Policy to receive this endorsement. Additional information on National Association of Realtors' (NAR) "Policies Applicable to Multiple Listing Services" may be found on Realtor.org: [Advertising \(Print and Electronic\): Section 1: Internet Data Exchange \(IDX\) Policy](#).

NOTE 0-2: More information on the National Association of Realtors (NAR) IDX policy can be found on Realtor.org: [Internet Data Exchange \(IDX\) Background and FAQ](#).

REQ-DD170-PEIDX-1: ALL Data Dictionary IDX Payload fields **MUST** be provided in the evaluated data feed based on their field category.

NOTE 1-1: Please refer to **REQ-DD170-PE-2** for more information regarding how IDX fields should be presented and populated.

REQ-DD170-PEIDX-2: The IDX Payload has defined "field sets" that allows users to **POPULATE** different field collections based on individual systems' configuration and data availability. Applicant payload data structures **MUST** have **ALL PAYLOAD FIELDS** based on their assigned classification from **REQ-DD170-PE-2**. Applicant's records retrieved from their IDX Payload systems **MUST** be populated within one of the acceptable field sets as required by **ALL** of the following rules (PEIDXSET). Applicant's records **MAY** use more than one acceptable fields sets per each of the following rules (PEIDXSET).

NOTE 2-1: This rule **DOES NOT** allow fields to be removed or missing from the IDX Payload, only that some fields not used in a specific field set **MAY** be empty.

NOTE 2-2: Please refer to **REQ-DD170-PE-2** for more information regarding how IDX fields should be presented and populated.

NOTE 2-3: Please refer to the following table for acceptable field sets.

Set Requirement (Description)	Resource	Set A	Set B	Set C
REQ-DD170-PEIDXSET-P01 Bathrooms	Property	BathroomsFull AND BathroomsPartial	BathroomsFull AND (BathroomsHalf AND/OR BathroomsOneQuarter AND /OR BathroomsThreeQuarter) Acceptable 1: BathroomsFull AND BathroomsHalf	BathroomsTotalInteger
REQ-DD170-PEIDXSET-P02 Buyer Agent Name	Property	BuyerAgentFirstName AND BuyerAgentLastName	BuyerAgentFullName	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P03 Co Buyer Agent Name	Property	CoBuyerAgentFirstName AND CoBuyerAgentLastName	CoBuyerAgentFullName	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P04 Co Listing Agent Name	Property	CoListAgentFirstName AND CoListAgentLastName	CoListAgentFullName	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P05 Listing Agent Name	Property	ListAgentFirstName AND ListAgentLastName	ListAgentFullName	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P06 Listing Contract Date	Property	ListingContractDate	OnMarketDate	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P07 Listing Key	Property	ListingKey	ListingKeyNumeric	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P08 Lot Size	Property	LotSizeAcres	LotSizeSquareFeet	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P09 Originating System	Property	OriginatingSystemKey	OriginatingSystemName	<i>(Select either Set A or Set B)</i>
REQ-DD170-PEIDXSET-P10 Street Address	Property	(StreetNumberNumeric AND /OR StreetNumber) AND StreetName AND (StreetDirPrefix AND/OR StreetDirSuffix AND/OR StreetSuffix AND/OR StreetSuffixModifier AND /OR UnitNumber)	UnparsedAddress	<i>(Select either Set A or Set B)</i>

		<p>Acceptable 1: StreetNumberNumeric AND StreetName AND StreetSuffix <i>Example 1: 109 Blue Diamond Way</i></p> <p>Acceptable 2: StreetNumber AND StreetName AND StreetDirSuffix <i>Example 2: 109-B Blue Diamond N</i></p> <p>Acceptable 3: StreetNumber AND StreetName AND StreetSuffix AND UnitNumber <i>Example 3: 109-B Blue Diamond Way 10</i></p> <p>NOT Acceptable: StreetName NOT Acceptable: StreetName AND StreetNumber NOT Acceptable: StreetName AND StreetSuffix AND UnitNumber</p>		
REQ-DD170-PEIDXSET-OF01 Main Office Key	Office	MainOfficeKey	MainOfficeKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-OF02 Office Broker Key	Office	OfficeBrokerKey	OfficeBrokerKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-MB01 Member Key	Member	MemberKey	MemberKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-MB02 Office Key	Member	OfficeKey	OfficeKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-MB03 Member Id	Member	MemberMlsId	MemberLoginId	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-MB04 Member Name	Member	MemberFullName	MemberFirstName AND MemberLastName	MemberFirstName AND MemberLastName AND (MemberMiddleName AND /OR MemberNameSuffix)
REQ-DD170-PEIDXSET-OH01 Listing Key	Open House	ListingKey	ListingKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-OH02 Open House Key	Open House	OpenHouseKey	OpenHouseKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-OH03 Showing Agent Key	Open House	ShowingAgentKey	ShowingAgentKeyNumeric	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-MA01 Media Description	Media	ImageOf	LongDescription AND/OR ShortDescription	LongDescription AND/OR ShortDescription AND/OR ImageOf
REQ-DD170-PEIDXSET-MA02	Media	MediaKey	MediaKeyNumeric	(Select either Set A or Set B)

Media Key				
REQ-DD170-PEIDXSET-MA03 Modification Timestamp	Media	MediaModificationTimestamp	ModificationTimestamp	(Select either Set A or Set B)
REQ-DD170-PEIDXSET-MA04 Resource Record Key	Media	ResourceRecordKey	ResourceRecordKeyNumeric	(Select either Set A or Set B)

3.0 Data Dictionary Certification Rules

This section contains all of the rules that RESO will use in awarding Data Dictionary Certificates. The specific set of rules that must be passed for "Compliance" are discussed in Section 2.

Certification is awarded when all Data Dictionary fields used within an applicant's Data Dictionary Implementation are mapped and found compliant.

NOTE 1: A guiding principle behind Data Dictionary Certification is: "If you do it and the dictionary does it, then you must do it the dictionary way." The Data Dictionary is filled with many "entries" expressed as fields or enumerations. If the data host has a "data container" (field or enumeration) that is similar to the Data Dictionary entry, that container **MUST** be made compliant with the corresponding Data Dictionary entry.

NOTE 2: No Data Dictionary fields are "required." An implementation of the Data Dictionary may use as many or as few fields the data host wishes to satisfy their business needs.

NOTE 3: A data host may use any additional data fields not found within the Data Dictionary. Any field not defined within the Data Dictionary **SHOULD** be implemented according to the requirements of the transport protocol: RESO RETS 1.x, RESO Web API, etc. These fields may be specific to a host's region or required for operations.

Data Dictionary Certification Expiration Rules

REQ-DD170-DD-1: Active certifications for any type of organization certified will expire when the awarded certification is older than the two most recent versions of a specific standard.

Example 1-1: Data Dictionary 1.7.0 Certificates will expire when Data Dictionary 1.9.0 has been ratified, presuming Data Dictionary 1.8.0 and Data Dictionary 1.9.0 are the most recent ratified versions.

NOTE 1-1: *RESO currently provides certification on the two most recent ratified versions of the RESO Data Dictionary and the RESO Web API standards. The exact numbering of these recent ratified version are determined by the RESO Board of Directors.*

NOTE 1-2: RESO will continue to retain the right to revoke an active certification if the certified platform falls out of compliance with the requirements of certification.

NOTE 1-3: This rule replaces previous practices of a Data Dictionary Certificate expiring 1 year (12 month) after being issued.

3.1 Certification Levels Definition Summary

3.2 Certification Level Testing Rules

3.1 Certification Levels Definition Summary

Different Data Dictionary Certification levels have been defined to recognize those who implement more than the minimum requirements. These higher levels are named after different precious metals: Bronze, Silver, Gold, and Platinum.

NOTE 1-1: Each certification level builds upon the previous level. Being "Core" is a requirement for "Bronze"; being "Bronze" for "Silver", "Silver" for "Gold", and "Gold" for "Platinum." Generally speaking, failing at a specific level will result in receiving certification at the next level below.

Every field within the Data Dictionary has been assigned to one of these different levels. To be certified at any of these level, all fields used by an applicant at that level **MUST** be compliant.

EXAMPLE 1-1: To be "GOLD" certified, all Core, Bronze, Silver, and Gold fields found in the applicant's implementation must be compliant. To be "Platinum" certified, all fields must be compliant.

3.2 Certification Level Testing Rules

Data Dictionary Certification is awarded at different levels. These level provide additional recognition to those who implement more than the minimum requirement.

Core Compliance is the first level of Data Dictionary certification. Higher levels are named after different precious metals: Bronze, Silver, Gold, Platinum.

NOTE 0-1: Compliance and Certification have specific meanings in the testing rules. "Certification" is the single over-all level that is provided at the end of the testing process. "Compliance" refers to how well individual resources or fields comply with the testing rules.

NOTE 0-2: The Core, Bronze, and Silver Compliance levels no longer qualify for Data Dictionary Certification. (See “Minimum Certification Requirements Timeline” below.) Any previous rule that would have allowed Core, Bronze, and Silver compliance will now be considered “Not Compliant.”

Data Dictionary Resource Certification Testing

Each Data Dictionary Resource is evaluated separately and given a compliance level: Core, Bronze, Silver, Gold, or Platinum.

The fields in Data Dictionary Resources are categorized into one of five compliance levels: Core, Bronze, Silver, Gold, or Platinum.

More information on the rules for determining each resources' compliance level are described in later subsections.

Combining Resource and Field Compliance Levels

REQ-DD170-CR-1: Data structures with multiple resources **MAY** have different compliance levels for each resource. The lowest resource compliance level of any of the resources will be the combined certification level.

EXAMPLE 1: An ERROR, WARNING, or NOTICE on any of these fields will prevent compliance at the level of the field.

- If one of the PLATINUM rules are broken (for any resource), GOLD is the highest certification level that can be awarded.
- If one of the GOLD rules are broken (for any resource), no certification level will be can be awarded even if there are resources with higher compliance levels (i.e. PLATINUM).

NOTE 1-1: While larger resources use all five compliance levels, smaller resources may use only a few of them. A resource without fields from a compliance level **MAY** not be able to achieve that level.

NOTE 1-2: Data Dictionary certification does not require fields to be implemented. Exceptions to the previous examples are made for resources without some compliance levels.

REQ-DD170-CR-2: When resources are assigned a lower compliance level because (1) a higher level is not available or (2) higher-level fields were not implemented in the data structure, these lower compliance levels will **NOT** lower the over-all certification level.

EXAMPLE 2: A hypothetical data structure has only one CORE-compliant resource. Meaning, no BRONZE, SILVER, GOLD or PLATINUM fields or other resources have been implemented.

- PLATINUM certification level is awarded if no NOTICES or WARNINGS are found for any field.
- GOLD certification is awarded if one CORE field has a NOTICE (the PLATINUM rule **REQ-DD170-DDP-2** is broken).
- SILVER certification is awarded if one CORE field has a WARNING (the GOLD rule **REQ-DD170-DDG-2** is broken).
- BRONZE certification is awarded if one CORE field has a WARNING for a Field DataType conversion (the SILVER rule **REQ-DD170-DDS-2** is broken).
- No certification is awarded if one CORE field has an ERROR of any type (the CORE rule **REQ-DD170-DDC-1** is broken).

EXAMPLE 3: A hypothetical data structure has a SILVER-compliant HistoryTransactional and GOLD-compliant Property, Member, Office, Contacts, and Media. (HistoryTransactional only has PLATINUM and SILVER-level fields.)

- If the data structure has a HistoryTransactional PLATINUM field with an ERROR, WARNING, or NOTICE, the combined certification level is SILVER regardless of the other resource levels.
- If the HistoryTransactional only uses compliant SILVER fields, the combined certification level will be GOLD. (**REQ-DD170-CR-3** provides additional logic for this statement.)

EXAMPLE 4: A hypothetical data structure has PLATINUM-compliant Property, Member, Office, and Contacts resources and a Media resource using only CORE fields. The combined certification level will be PLATINUM provided there are no NOTICES or WARNINGS in any resource.

NOTE 2-1: The logic defined in this rule is valid regardless of the impact of the “Minimum Certification Requirements Timeline” rules. **However, No certifications will be awarded contrary to the timeline requirements.**

REQ-DD170-CR-3: Some Data Dictionary resources do not use all five of the certification levels. If a resource is NOT able to satisfy the Certification Rules for the lowest field level used in the resource, the next level down **SHOULD** be used for determining the overall certification level.

NOTE 3-1: Applicants **MAY** request a review of testing results if the examples are not sufficiently broad to cover a specific result set.

EXAMPLE 5: A hypothetical data structure has a HistoryTransactional Resource consisting of fields assigned to the SILVER-compliance level. One SILVER field has a Data Type Conversion WARNING. This WARNING breaks rule **REQ-DD170-DDS-2**. This WARNING prevents this HistoryTransactional Resource from being SILVER compliant. This resource will be considered a BRONZE resource for determining overall certification.

EXAMPLE 6: A hypothetical data structure has a HistoryTransactional Resource consisting of fields assigned to both SILVER and PLATINUM compliance levels. One PLATINUM field has a WARNING or NOTICE of any kind. This NOTICE breaks rule **REQ-DD170-DDP-**

2. This NOTICE prevents this HistoryTransactional Resource from being PLATINUM compliant. This resource will be considered a GOLD resource for determining overall certification.

EXAMPLE 7: A hypothetical data structure has a HistoryTransactional Resource consisting of fields assigned to both SILVER and PLATINUM compliance levels. One SILVER field has a NOTICE that's NOT on a DataType Conversion. This NOTICE breaks rule **REQ-DD170-DDP-2** but does NOT break rule **REQ-DD170-DDG-3**. This NOTICE prevents this HistoryTransactional Resource from being PLATINUM compliant. This resource will be considered a GOLD resource for determining overall certification as all SILVER rules are satisfied.

NOTE 3-1: The logic defined in this rule is valid regardless of the impact of the "Minimum Certification Requirements Timeline" rules. **However, No certifications will be awarded contrary to the timeline requirements.**

Minimum Certification Requirements Timeline

The minimum compliance levels required to receive a Data Dictionary Certificate will change based on the year the application is tested:

- Starting January 1st, 2015, a Data Dictionary Certificate can be awarded for achieving the CORE compliance level or higher.
- Starting January 1st, 2017, a Data Dictionary Certificate can be awarded for achieving the BRONZE compliance level or higher.
- Starting January 1st, 2018, a Data Dictionary Certificate can be awarded for achieving the SILVER compliance level or higher.
- Starting January 1st, 2019, a Data Dictionary Certificate can be awarded for achieving the GOLD compliance level or higher.
- Starting January 1st, 2020, a Data Dictionary Certificate can be awarded for achieving the PLATINUM compliance level.

Year	2015-2016	2017	2018	2019	2020+
Effective	1/1/2015	1/1/2017	1/1/2018	1/1/2019	1/1/2020
Level	Core	Bronze	Silver	Gold	Platinum

NOTE T-1: For the Data Dictionary 1.7.0, GOLD is the minimum certification level. CORE, BRONZE, and SILVER Certificates will not be awarded for the Data Dictionary 1.7.0.

NOTE T-2: In any situation **NOT** covered by previous rules, fields assigned to an expired compliance level **MAY** be treated as the minimal compliance level for that given year. For example, CORE, BRONZE, and SILVER will be treated as GOLD in 2019. All fields will be considered PLATINUM in 2020.

3.2.1 Data Dictionary Gold Certification

3.2.2 Data Dictionary Platinum Certification (Maximum)

3.2.1 Data Dictionary Gold Certification

REQ-DD170-DDG-1: All Data Dictionary Core, Bronze, Silver, and Gold Fields found **AND** mapped within the applicant's system **MUST** be found compliant. Fields from these levels that are found within the applicant's Data Dictionary implementation that are **NOT** mapped or found to be **NOT** compliant will **NOT** be awarded certification.

REQ-DD170-DDG-2: No Cautionary Warnings of any type are allowed on Core, Bronze, Silver, or Gold fields.

NOTE 2-1: **ALL** WARNING results from **ALL** testing rule found on any Core, Bronze, Silver, or Gold field, or enumerated value, will be treated the same as an **ERROR**.

REQ-DD170-DDG-3: No Cautionary Notices for Field DataType Conversions are allowed on Core, Bronze, Silver, or Gold fields.

NOTE 0-1: Some of the smaller resources do not have Gold level fields. Any field assigned to the CORE, BRONZE, or SILVER compliance level **MAY** be treated as the GOLD compliance level for certification purposes.

NOTE 0-2: This is the first level where the presence of cautionary notices impacts certification results.

NOTE 0-3: It is **NOT** required to implement all Data Dictionary resources. Certification **MAY** be awarded for any number of implemented resources. However, if a Data Dictionary resource is implemented, it **MUST** meet Gold standards for the whole implementation to be considered compliant. RESO reserves the right to review and **MAY** revoke any Data Dictionary Certificate if it is discovered that untested resources are provided to end users that were not submitted for compliance testing. (For example, untested OpenHouse and Media resources are being used along side certified Property, Member, and Office resources.)

NOTE 0-4: The "Gold Certification" requirements will roll up into the Platinum requirements at the end of 2019. The Platinum Certification will become the only level for Data Dictionary certification in 2020.

REQ-DD170-DDG-4: Applicant systems **MUST** have all of the Data Dictionary resource found within the IDX Payload and **MUST** receive an IDX Payload Endorsement.

NOTE 3-1: The Data Dictionary Certification is awarded by testing an applicant's metadata with credentials granting FULL access to the server's information. The IDX Payload Endorsement is awarded based on the additional evaluation of a feed with IDX-only permissions. Separate server credentials configured for an IDX Feed MUST be provided during the application process. Please refer to Payload Endorsement Testing Rules for full information.

NOTE 3-2: Systems without ALL of the IDX Payload Resource CANNOT receive an IDX Payload Endorsement. However, systems that do not provide IDX Feeds ARE NOT required to receive this endorsement. Examples of such system may include: Tax Systems, Membership Systems, Open House Referral System, etc.

3.2.2 Data Dictionary Platinum Certification (Maximum)

Platinum is the highest level of certification. This is the 100% compliance level.

REQ-DD170-DDP-1: All Data Dictionary Platinum Fields found AND mapped within the applicant's system MUST be found compliant. Platinum Fields found within the applicant's Data Dictionary implementation that is NOT mapped or found to be compliant will will not be awarded Platinum certification but may be eligible for lower levels.

REQ-DD170-DDP-2: No Cautionary Warnings or Notices of any type are allowed.

REQ-DD170-DDP-3: Satisfies all requirements for "Gold" certification.

NOTE 3-1: The Platinum Certification will become the only level for Data Dictionary certification in 2020.

4.0 Data Dictionary Report Card and Specifications

The Data Dictionary Report Card is used to report to the applicant the certification findings.

This will include a list of the "Compliance Warnings" and "Compliance Notices" that were found during testing.

The structure of the Report Card is based on the current RESO Data Dictionary spreadsheet. The exact format will be determined by the RESO Compliance Staff.

Glossary

What is the Data Dictionary?

The Data Dictionary is a set of rules that instructs host providers how to construct (i.e. name, data type, length) a specific set of an agreed upon fields.

General Data Dictionary Terminology:

DD: A common abbreviation for "Data Dictionary."

DD Compliance Rules: A set of rules applied to an applicant's metadata to determine if it adheres to the Data Dictionary.

DD Certification: A DD certificate is awarded if that applicant's metadata adheres to the set of DD Compliance Rules as dictated by this workgroup.

DD Entry: Any object, value, time, person or idea that has been defined in the dictionary and given a standard name. It is often represented as a row within the Data Dictionary spreadsheet.

DD Implementation: The data set constructed by the Host provider.

DD Starter Kit: This Starter Kit is geared towards a source provider (like an MLS). This kit will guide them through the steps to become Data Dictionary compliant.

Data Dictionary Core Fields:

DD Core fields are those fields that **MUST** be compliant to receive certification. If a Core field is not present in the host providers data set, it does not need to be added. Missing Core fields will not be considered in the certification process.

A host provider is strongly encourage to have all of its fields (Core and Non Core) compliant to the Data Dictionary.

All DD Entries tagged as Core fields **AND** that exist within an applicant's DD data set, **MUST** be compliant to receive certification.

Compliance Terminology:

Compliance Notice: A **NOTICE** is issued for any portion of the Data Dictionary's implementation (field, enumerations, etc.) that does not conform to the requirements but does **NOT** disqualify the applicant from certification.

Compliance Warnings: A **WARNING** is the same as a compliance notice with the additional requirement that it is fixed within a specific timeframe. Future certification **MAY** be denied if a "warning" is not fixed in the required time.

Host/Client: The host is the party in a transaction that delivers data to a client. The client is the party in the transaction that receives data via client get or host put. The direction of data flow is important in determining compliance for DataType conversions and other mappings.

Requirement IDs: Each compliance rule in this document is identified by a unique ID. They take the format similar to "**REQ-DD###\$\$\$-XXX-%**" and are found immediately before the rule. This ID is provided to help those discussing these rules to identify rules in this document.

***NOTE:** REQ-DD is an abbreviation for "Requirement-Data Dictionary".*

is the Data Dictionary version number -- 160 is Data Dictionary 1.5.

\$\$\$ is the Transport -- R1X is RETS 1.x, WA1X is Web API 1.x.x.

XXX is the compliance rule group -- SN = StandardName, ENUM = Enumerations, etc.

% is a unique number when one or more rule(s) are in a section.

Synonym: Another name for any definition within the dictionary other than the stated standard name. Synonyms are provided in the dictionary as a reference to aid in understanding the field or enumeration's meaning. Use of synonyms in place of the standard name, whether listed in the dictionary or not, is not allowed.

Certification & Procedures Terminology:

Application Processes, Compliance Testing, and Certification Analysis: RESO staff process all certification applications through three phases. Application processing ensures that all information required to process the application is gathered. Compliance testing compares the applicant's Data Dictionary implementation with the compliance rules. Certification Analysis determines if a certificate is to be awarded. More details are in "1.2 RESO Certification Flow (Summary)" of the Data Dictionary Testing Rules.

Supplemental Application Information: A report of additional details that an MLS MUST provide along with the application. The information in this report supplements that found when retrieving the applicant's Data Dictionary implementation.

NOTE: The Supplemental Application Information was previously called 'Exception Report'.



RESO Data Dictionary Certification Glossary

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