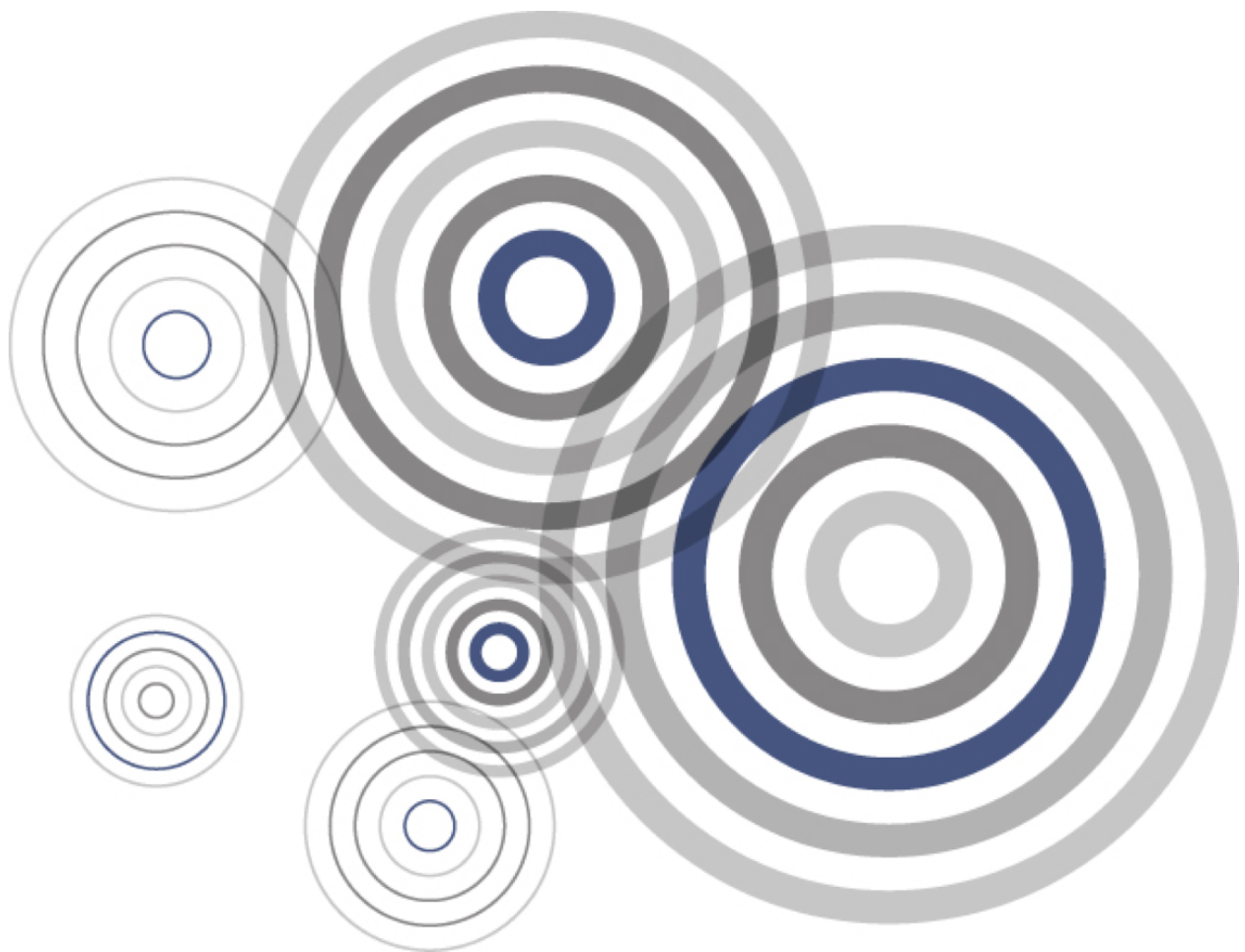


Public

LEI-CDF V2.1 Implementation Guide

FINAL V1.0 , 2017-04-07



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About this Document

This document describes changes and updates required, per data field, to convert LEI Common Data File (LEI-CDF) format information from LEI-CDF V1.0 to the new LEI-CDF V2.1.

The document forms the basis for existing LEI Issuers to implement the new LEI-CDF V2.1.

Change History

| Date | Version | Description of change | Author |
|------------|------------|-----------------------|--------|
| 2017-04-07 | FINAL, 1.0 | GLEIF CEO Approval | GLEIF |
| 2017-03-22 | DRAFT, 1.0 | Final draft | GLEIF |

Terms Used in this Document

| Term(s) | Definition |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Content | The LEI data values (numbers, names, addresses, dates, status codes etc.) contained within the XML formatted data file. The substantial information in the file. <i>This is mostly the same in both versions. No content has been removed in V2.1.</i> |
| Structure (format, elements etc.) | The XML “tags” and their arrangement relative to each other that define the way the content of the file is organized and presented. The formal aspect of the file. <i>This has changed in V2.1 in order to improve the usefulness of the content and make it easier for LOUs to provide.</i> |

1. How to Use this Document

The intent of this document is to assist LOUs' technical departments in adopting the revised XML schema for provision of LEIs and LEI reference data (LE-RD).

The new LEI-CDF V2.1 Technical Specification details the XML data format itself.

Additional business rules for creating and updating LE-RD are provided in the State Transition Rules for the LEI Common Data File Format (Including Validation Rules), shortened to ST/VR.

The latest version of the ST/VR can always be found at gleif.org.

The focus in this document is on the XML data format itself, and how to convert and updated existing LE-RD to the new format.

This document does not specify planning, specific management steps or work timelines for implementation. For this reason it is written in general terms. Detailed implementation planning will be agreed separately. Please see the ST/VR for more details on how to manage data in general.

This document contains reference information for use by technical staff within LOUs in converting *existing data* to the *new format*. It is assumed that most LE-RD *content* will not change due to the *format/structure* update.

Each section of the document addresses a general aspect of the update:

- The **Data Transition Management** section describes data elements that can contain standardized values from new code lists (ELF and RAL), which will require some transition management to enable adoption of the official standard without losing information which is currently provided in provisional or proprietary ways.
- The **General Update Types** section lists *categories* of updates to LEI-CDF elements. Each category of updates applies to more than one LEI-CDF element, so for convenience they are summarized here. For each update type:
 - The XML schema restrictions on V1.0 of LEI-CDF are compared with those in V2.1.
 - The new V2.1 restrictions are described and listed in detail for reference.
 - The following symbol indicates where the restriction *can* (i.e. optionally) also be applied to the current LEI-CDF V1.0 data an LOU produces so that each LOU's LEI-CDF V1.0 and V2.1 data files deliver data content that is more closely aligned, higher quality and more convenient for end users:

2 ← → 1

- The **Specific Updates per Data Field** reference section:
 - directly refers to the *general update types* in the previous section. It indicates which of these general categories (sometimes more than one) apply to each element of the V2.1 XML schema.

- It also contains a *semantic mapping* (i.e. it maps the meaning /definition of each element's *content*) from V1.0 to V2.1 LEI-CDF XML elements.

Please note the semantic mapping indicates how the data *content* is expressed using the new *format*. It is **not** a technical mapping that automatically produces the correct XML file for any possible LEI-CDF V1.0 XML input. For this automatic XML transformation the ST/VR rules must also be applied.

- The Appendix contains **Example LEI-CDF V1.0 and V2.1 Records** which illustrate how the same data *content* will appear in both the V1.0 and the V2.1 *structures*.

Please note that these XML examples are not exhaustive, but only **illustrative**. They cannot show every possible combination of elements or type of element content. For a full implementation please refer to the Technical Specification, XML and ST/VR in combination.

2. Data Transition Management

Some LEI-CDF V2.1 fields require additional interim data management procedures even **once the format is in use**, because the required RAL and ELF codes (enumerated values) must first be made available in the official code lists, and in some cases, this may involve additional effort.

Please note:

The provisions in this section are allowed by the LEI-CDF V2.1 XML schema as valid *interim* data. To ensure data quality, temporary codes **must** still be upgraded to officially registered codes in due time.

Use of “not available” codes must be discussed with GLEIF.

2.1. ISO Entity Legal Form (ELF) Code

2.1.1. `EntityLegalFormCode`

This is a required field.

- It must contain content that conforms with the ELF code list.

2.1.2. `OtherLegalForm`

- This is an optional field. Either it is present and contains information. Or it does not exist.
- It is a free form text field without validation of the content.

2.1.3. Considerations

- The ELF code list does not exist yet. But `EntityLegalFormCode` must be populated with some content.
- There will be a period of transition during which the LOUs will implement the ELF code list. This transition will likely be until 1 year after the implementation date of LEI-CDF V2.1.

2.1.4. Guidance to LOUs for implementation of LEI-CDF V2.1

- Transition from current LEI-CDF V1.0 reporting in `LegalForm` to `OtherLegalForm`
- Populate `EntityLegalFormCode` with temporary code '8888' where the LOU has not converted to the ELF code yet.

2.2. GLEIF Registration Authorities List (RAL) Entry

2.2.1. `RegistrationAuthorityID`:

- This is a required field.
- It must contain content that conforms with the RA code list.

2.2.2. `OtherRegistrationAuthorityID`

- This is an optional field. Either it is present and contains information. Or it does not exist.
- It is a free form text field without validation of the content.

2.2.3. Considerations

- Not all LOUs will have transitioned to RA List codes by 1 May 2017. But `RegistrationAuthorityID` must be populated with some content.
- The below original targets for compliance are still valid:
 - - After 12 months: 99% of LEI's issued after publication have the RA code and local number in CDF.
 - - After 18 months: 98% of all LEI's ever issued have the RA-code and local number in CDF.

2.2.4. Guidance to LOUs for implementation of LEI-CDF V2.1

- Transition the current LEI-CDF V1.0 reporting `BusinessRegisterEntityID@register` to `RegistrationAuthorityID` where the LOU has converted to the RA List.
- Transition the current LEI-CDF V1.0 reporting `BusinessRegisterEntityID@register` to `OtherRegistrationAuthorityID` where the LOU has not yet converted to the RA List.
- Populate `RegistrationAuthorityID` with temporary code RA888888 where the LOU has not converted to the RA List yet.

2.2.5. `RegistrationAuthorityEntityID`

- This is an optional field. Either it is present and contains information. Or it does not exist.
- It is a free form text field without validation of the content.
- This is the identifier of the entity at the indicated registration authority.

2.2.6. Guidance to LOUs for implementation of LEI-CDF V2.1

- Transition the current LEI-CDF V1.0 reporting `BusinessRegisterEntityID` to `RegistrationAuthorityEntityID`.

2.2.7. Difference between `RegistrationAuthority` and `ValidationAuthority`:

- `RegistrationAuthority`: mapping to the local registration authority.
- `ValidationAuthority`: the source the LOU used to validate the information supplied by the Legal Entity.
- It is possible that both fields contain the same RA code.

2.2.8. `ValidationAuthority`

- This is a required field.
- It must contain content that conforms with the RA code list.

2.2.9. `OtherValidationAuthority`

- This is an optional field. Either it is present and contains information. Or it does not exist.
- It is a free form text field without validation of the content.

2.2.10. Considerations

- In LEI-CDF V1.0, there is currently no reporting of the `ValidationAuthority`.

2.2.11. Guidance to LOUs for implementation of LEI-CDF V2.1

- Populate `ValidationAuthority` with temporary code 'RA888888' where the LOU has not converted to the RA List yet.

3. General Update Types

The following requirements to update LEI-CDF data from V1.0 to V2.1 apply to several elements each.

Please note:

- The **title** of the update type below is listed next to the elements to which it applies in the **Specific Updates per Data Field** section below.
- Where these are applied below to new V2.1 elements, this only indicates that the XML schema restriction applies to the new element, even though of course there is no V1.0 element in these cases for the V1.0 restriction to apply to.
- No changes are made to LEI-CDF V1.0.
- The elements `NextVersion` and `Extension` are included in V1.0 and V2.1 without changes.
- Although V2.1 is not in general backwards compatible with V1.0, GLEIF recommends that the more restrictive format for some V2.1 element content should be adopted also for V1.0 LEI data during the transition period, where possible, to avoid duplication of work and for consistency. These shared format options are marked as follows:

| |
|---------|
| 2 ← → 1 |
|---------|

3.1. More specific enumerations

Some enumerated values which identify the “type” or category of information that is provided in an XML element have been added in LEI-CDF V2.1 to make these categories more specific and easier to tell apart.

In some cases, they also capture useful information that is not explicitly referred to in the LEI-CDF V1.0, e.g. a previous legal name, or a “trading as” name.

3.2. XML Format Considerations

The following fundamental XML format aspects of the XML schema have been updated.

3.2.1. Enumeration values enforced

| |
|---------|
| 2 ← → 1 |
|---------|

In LEI-CDF V1.0 enumeration values (“code lists”) were provided but not automatically enforced by the XML schema.

In V2.1 these enumeration values are retained (with some small changes) and are additionally automatically enforced by the XML schema.

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This means that only the specific values listed for the LEI-CDF V2.1 elements may appear in an XML file conforming to LEI-CDF V2.1, with no added spaces or other white space characters, otherwise the file will be automatically rejected as XML schema invalid.

3.2.2. Significant Document Order

The **order** of some repeatable elements within an XML file conforming to LEI-CDF V2.1 is significant and must be preserved during creation, transmission and any processing:

- `AdditionalAddressLine`

The order of these identical, repeatable elements is represented purely by their “physical” sequence in the schema-valid XML file itself and is not identified in any other way within the LEI-CDF V2.1 XML schema.

Unless listed here, the order of a repeatable element is not significant according to the LEI-CDF V2.1 specification.

3.3. Now mandatory

2 ← → 1

Some XML elements which are optional according to the V1.0 XML schema now have mandatory equivalents in the V2.1 XML schema.

| V1.0 | V2.1 |
|-----------|------------|
| Optional. | Mandatory. |

3.4. Do not leave empty

2 ← → 1

Some XML elements in the V1.0 XML schema can technically be provided empty (string length zero). The corresponding elements in V2.1 must now contain at least one non-whitespace character.

| V1.0 | V2.1 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| No minimum length (i.e. could be provided empty). | Minimum length = 1 character (if the length is 1 character, this single character must not be whitespace; see above). |

3.5. Automatically enforced content formats

In the V1.0 specification document for LEI-CDF, the following content format restrictions were required (i.e. mandatory) but not automatically enforced by the XML schema.

In V2.1 these restrictions are retained and additionally automatically enforced by the XML schema.

Only the following patterns of characters may be used (with no added spaces or other white space characters), otherwise the file will be automatically rejected as XML schema invalid.

3.5.1. ASCII Transliterated Characters

2 ← → 1

The following LEI-CDF V2.1 XML elements correspond to elements in the V1.0 XML schema that in some cases are required to contain only ASCII characters.

- TransliteratedOtherEntityName.
- Free-text parts of TransliteratedOtherAddress (all except country and region).

The restriction is enforced in the V2.1 XML schema for both sub-categories of transliterated information (“automatic” and “preferred” transliterations are treated the same as they refer only to the source of the transliteration, not the results).

Below is a list of ASCII characters. For avoidance of doubt, the character is displayed with its name and its Unicode value presented as a hexadecimal (hex) number.

Please note that the “space” character is listed here as an allowed character, but the way spaces are used is restricted by the “Remove all invalid whitespace” change (see below for details).

| Graphic Symbol | Name | Hex Value | Graphic Symbol | Name | Hex Value |
|----------------|------------------|-----------|----------------|------------------|-----------|
| ! | Exclamation Mark | 21 | M | Capital Letter M | 4D |
| " | Quotation Mark | 22 | N | Capital Letter N | 4E |

| Graphic Symbol | Name | Hex Value | Graphic Symbol | Name | Hex Value |
|----------------|-------------------|-----------|----------------|------------------|-----------|
| % | Percent Sign | 25 | O | Capital Letter O | 4F |
| & | Ampersand | 26 | P | Capital Letter P | 50 |
| ' | Apostrophe | 27 | Q | Capital Letter Q | 51 |
| (| Left Parenthesis | 28 | R | Capital Letter R | 52 |
|) | Right Parenthesis | 29 | S | Capital Letter S | 53 |
| * | Asterisk | 2A | T | Capital Letter T | 54 |
| + | Plus sign | 2B | U | Capital Letter U | 55 |
| , | Comma | 2C | V | Capital Letter V | 56 |
| - | Hyphen/ Minus | 2D | W | Capital Letter W | 57 |
| . | Full Stop | 2E | X | Capital Letter X | 58 |
| / | Solidus | 2F | Y | Capital Letter Y | 59 |
| 0 | Digit Zero | 30 | Z | Capital Letter Z | 5A |
| 1 | Digit One | 31 | — | Low Line | 5F |

| Graphic Symbol | Name | Hex Value | Graphic Symbol | Name | Hex Value |
|----------------|-------------------|-----------|----------------|----------------|-----------|
| 2 | Digit Two | 32 | a | Small Letter a | 61 |
| 3 | Digit Three | 33 | b | Small Letter b | 62 |
| 4 | Digit Four | 34 | c | Small Letter c | 63 |
| 5 | Digit Five | 35 | d | Small Letter d | 64 |
| 6 | Digit Six | 36 | e | Small Letter e | 65 |
| 7 | Digit Seven | 37 | f | Small Letter f | 66 |
| 8 | Digit Eight | 38 | g | Small Letter g | 67 |
| 9 | Digit Nine | 39 | h | Small Letter h | 68 |
| : | Colon | 3A | i | Small Letter i | 69 |
| ; | Semicolon | 3B | j | Small Letter j | 6A |
| < | Less-than Sign | 3C | k | Small Letter k | 6B |
| = | Equals Sign | 3D | l | Small Letter l | 6C |
| > | Greater-than Sign | 3E | m | Small Letter m | 6D |

| Graphic Symbol | Name | Hex Value | Graphic Symbol | Name | Hex Value |
|----------------|------------------|-----------|----------------|----------------|-----------|
| ? | Question Mark | 3F | n | Small Letter n | 6E |
| A | Capital Letter A | 41 | o | Small Letter o | 6F |
| B | Capital Letter B | 42 | p | Small Letter p | 70 |
| C | Capital Letter C | 43 | q | Small Letter q | 71 |
| D | Capital Letter D | 44 | r | Small Letter r | 72 |
| E | Capital Letter E | 45 | s | Small Letter s | 73 |
| F | Capital Letter F | 46 | t | Small Letter t | 74 |
| G | Capital Letter G | 47 | u | Small Letter u | 75 |
| H | Capital Letter H | 48 | v | Small Letter v | 76 |
| I | Capital Letter I | 49 | w | Small Letter w | 77 |
| J | Capital Letter J | 4A | x | Small Letter x | 78 |
| K | Capital Letter K | 4B | y | Small Letter y | 79 |
| L | Capital Letter L | 4C | z | Small Letter z | 7A |

| Graphic Symbol | Name | Hex Value | Graphic Symbol | Name | Hex Value |
|----------------|-------|-----------|----------------|------|-----------|
| | Space | 20 | | | |

3.5.2. Remove all invalid whitespace

| 2 ← → 1 | |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| V1.0 | V2.1 |
| Any UTF-8 character. | UTF-8 excluding the whitespace characters listed below. <ul style="list-style-type: none"> ▪ Carriage returns (#xd). ▪ Line feeds (#xa). ▪ Tabs (#x9). ▪ Spaces (#x20): <ul style="list-style-type: none"> ▪ At the beginning or end (i.e. first or last characters); ▪ Two or more adjacent within the string. |

3.5.3. Mandatory date/time format

| 2 ← → 1 |
|---------|
|---------|

The date/time format in LEI-CDF V1.0 is enforced in a very flexible way by the V.10 XML schema. The format required by the V1.0 documentation is one of many possible formats that follow ISO 8601, and all of these possible formats are allowed by the XML schema.

In V2.1 only the format required by the V1.0 documentation is allowed by the XML schema.

Please note the flexible restriction on the number of decimal places in the seconds part of the date/time format.

| V1.0 | V2.1 |
|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Any ISO 8601 format conforming to <code>xs:dateTime</code> . | <p>Must conform to the precise format:</p> <p>YYYY-MM-DDThh:mm:ss.sssTZ</p> <p>where the components of the above string are as follows:</p> <ul style="list-style-type: none"> ▪ YYYY is the year. ▪ MM is the month (01 = January, ..., 12 = December). ▪ DD is the day of the month (01 = first day of the month). ▪ T is the single character 'T'. ▪ hh is the hours (00 – 23). ▪ mm is the minutes. ▪ ss.sss is the seconds and milliseconds. <p>Between one to three digits may be used for milliseconds, or omitted entirely along with the decimal point.</p> <ul style="list-style-type: none"> ▪ TZ is the time zone specifier, which can be either: <ul style="list-style-type: none"> ▪ Z the single character 'Z', denoting Coordinated Universal Time (UTC); or ▪ +hh:mm denoting a positive offset from UTC; or ▪ -hh:mm denoting a negative offset from UTC. |

4. Specific Updates per Data Field

The table below shows which field content in V1.0 can be mapped to a single equivalent field in V2.1.

Please note:

- Usually the name and **relative** location of the field within its context (XPATH) are the same in V2.1 as in V1.0.
- However, the V2.1 elements are totally distinct from those in V1.0 as the namespace URI has been updated (major change).
- Many **absolute** XPATHs have changed due to addition of new elements.
- General update types are shown in **bold** in the “Other changes” column.
- Entirely new elements are indicated by the following insertion marker:

→

- Elements contained within other (structural) elements are shown right-aligned beneath the immediately containing elements. Only one level of indentation is used. For precise XML structures please refer to the XML schema and LEI-CDF technical specifications.
- Top level structural elements are shaded in grey.

4.1. File and Header Format

| V1.0 | V2.1 | Other changes (where needed) |
|-------------|-------------|-------------------------------------------------------------|
| LEIData | LEIData | |
| LEIHeader | LEIHeader | Now mandatory. |
| ContentDate | ContentDate | Now mandatory. Mandatory date/time format. |
| Originator | Originator | |

| V1.0 | V2.1 | Other changes (where needed) |
|-------------|-------------|--------------------------------------------------------------------------------------------------|
| FileContent | FileContent | Now mandatory. Enumeration values enforced. Some enumeration values updated. |
| DeltaStart | DeltaStart | Mandatory date/time format. |
| RecordCount | RecordCount | Now mandatory. May not be negative. |
| LEIRecords | LEIRecords | |
| LEIRecord | LEIRecord | |

4.2. LEI Record Format

The following three sections are all contained inside the `LEIRecord` element.

4.2.1. LEI

The LEI section contains only the LEI code of the legal entity. This remains unchanged in V2.1.

| V1.0 | V2.1 | Other changes (where needed) |
|------|------|------------------------------|
| LEI | LEI | |

4.2.2. Entity Section

Please note:

The Entity section contains the following structures and content which are described separately below for convenience:

- Address Format
- Transliterated Address Format

| V1.0 | V2.1 | Other changes (where needed) |
|--------------------------|--------------------------------|-------------------------------------------------------------------------|
| Entity | Entity | |
| LegalName | LegalName | Remove all invalid whitespace. Do not leave empty. |
| LegalName+xml:lang | LegalName+xml:lang | |
| OtherEntityNames | OtherEntityNames | |
| OtherEntityName | OtherEntityName | Remove all invalid whitespace. Do not leave empty. |
| OtherEntityName@type | OtherEntityName@type | Enumeration values enforced. Some enumeration values updated. |
| OtherEntityName+xml:lang | OtherEntityName+xml:lang | |
| → | TransliteratedOtherEntityNames | |

| V1.0 | V2.1 | Other changes (where needed) |
|--------------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------|
| → | TransliteratedOtherEntityName | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |
| → | TransliteratedOtherEntityName@type | Enumeration values enforced. |
| LegalAddress | LegalAddress | Please see address format. |
| HeadquartersAddress | HeadquartersAddress | Please see address format. |
| OtherAddresses | OtherAddresses | |
| OtherAddress | OtherAddress | Please see address format. |
| → | TransliteratedOtherAddresses | |
| → | TransliteratedOtherAddress | Please see <u>transliterated</u> address format. |
| → | TransliteratedOtherAddress+xml:lang | |
| → | TransliteratedOtherAddress@type | Enumeration values enforced. |
| → | RegistrationAuthority | |
| BusinessRegisterEntityID | RegistrationAuthorityEntityID | Occurs <u>after</u> RegistrationAuthorityID or OtherRegistrationAuthorityID |

| V1.0 | V2.1 | Other changes (where needed) |
|-----------------------------------|----------------------------------------------------------|---------------------------------------------------------------|
| BusinessRegisterEntityID@register | RegistrationAuthorityID, OtherRegistrationAuthorityID | GLEIF Registration Authorities List (RAL) Entry. |
| LegalJurisdiction | LegalJurisdiction | |
| → | EntityCategory | Enumeration values enforced. |
| → | LegalForm | Now structural element, not content. |
| LegalForm | EntityLegalFormCode, OtherLegalForm | ISO Entity Legal Form (ELF) Code. |
| AssociatedEntity | AssociatedEntity | |
| AssociatedEntity@type | AssociatedEntity@type | Enumeration values enforced. |
| AssociatedEntityName | AssociatedEntityName | Remove all invalid whitespace. Do not leave empty. |
| AssociatedLEI | AssociatedLEI | |
| EntityStatus | EntityStatus | Enumeration values enforced. |
| EntityExpirationDate | EntityExpirationDate | Mandatory date/time format. |
| EntityExpirationReason | EntityExpirationReason | Enumeration values enforced. |
| SuccessorEntity | SuccessorEntity | |

| V1.0 | V2.1 | Other changes (where needed) |
|---------------------|---------------------|---------------------------------------------------------------|
| SuccessorLEI | SuccessorLEI | |
| SuccessorEntityName | SuccessorEntityName | Remove all invalid whitespace. Do not leave empty. |

4.2.3. Registration Section

Please note:

- The OtherValidationAuthority structure contains elements that re-use the content restrictions applying to ValidationAuthority.

| V1.0 | V2.1 | Other changes (where needed) |
|-------------------------|-----------------------------|---------------------------------------------------------|
| Registration | Registration | |
| InitialRegistrationDate | InitialRegistrationDate | Mandatory date/time format. |
| LastUpdateDate | LastUpdateDate | Mandatory date/time format. |
| RegistrationStatus | RegistrationStatus | Enumeration values enforced. |
| NextRenewalDate | NextRenewalDate | Mandatory date/time format. |
| ManagingLOU | ManagingLOU | |
| ValidationSources | ValidationSources | Enumeration values enforced. |
| → | ValidationAuthority | |
| → | ValidationAuthority | GLEIF Registration Authorities List (RAL) Entry. |
| → | OtherValidationAuthority | GLEIF Registration Authorities List (RAL) Entry. |
| → | ValidationAuthorityEntityID | |
| | OtherValidationAuthorities | |
| | OtherValidationAuthority | See ValidationAuthority above. |

4.3. Address Format

The address format is part of the `Entity` Section of the `LEIRecord` but is presented separately here for ease of reading and reference.

| V1.0 | V2.1 | Other changes (where needed) |
|-------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Line1 | FirstAddressLine | Remove all invalid whitespace. Do not leave empty. |
| → | AddressNumber | |
| → | AddressNumberWithinBuilding | |
| → | MailRouting | |
| Line2 | FurtherAddressLine[1] | Significant document order. Must become the first instance of <code>FurtherAddressLine</code> , in document order. |
| Line3 | FurtherAddressLine[2] | Significant document order. Must become the second instance of <code>FurtherAddressLine</code> , in document order. |
| Line4 | FurtherAddressLine[3] | Significant document order. Must become the third instance of <code>FurtherAddressLine</code> , in document order. |

| V1.0 | V2.1 | Other changes (where needed) |
|------------|------------|-------------------------------------------------------|
| City | City | Remove all invalid whitespace. Do not leave empty. |
| Region | Region | |
| Country | Country | |
| PostalCode | PostalCode | Remove all invalid whitespace. Do not leave empty. |

4.4. Transliterated Address Format

The transliterated address format is part of the `Entity` Section of the `LEIRecord` but is presented separately here for ease of reading and reference.

- In LEI-CDF V1.0 transliterated versions of addresses can appear in the same `OtherAddress` element as non-transliterated (original) versions of addresses.
- In the V2.1 XML schema there is a separate element to contain this type of content.
- For this reason, the V1.0 column contains no dedicated V1.0 elements corresponding to the V2.1 structure (even though the element names are the same, the context is different).

| V1.0 | V2.1 | Other changes (where needed) |
|------|-------------------------------|-------------------------------------------------------------------------------------------|
| → | <code>FirstAddressLine</code> | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |
| → | <code>AddressNumber</code> | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |

| V1.0 | V2.1 | Other changes (where needed) |
|------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| → | AddressNumberWithinBuilding | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |
| → | MailRouting | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |
| → | FurtherAddressLine[1] | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. Significant document order. Must become the first instance of FurtherAddressLine, in document order. |
| → | FurtherAddressLine[2] | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. Significant document order. Must become the second instance of FurtherAddressLine, in document order. |

| V1.0 | V2.1 | Other changes (where needed) |
|------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| → | FurtherAddressLine[3] | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. Significant document order. Must become the third instance of FurtherAddressLine, in document order. |
| → | City | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |
| → | Region | |
| → | Country | |
| → | PostalCode | ASCII Transliterated Characters. Remove all invalid whitespace. Do not leave empty. |

5. Appendix – Example LEI-CDF V1.0 and V2.1 Records

The following 2 example LEI-CDF records are based on the example record included in the LEI-CDF V1.0 technical specification.

Please note:

- The records are provided for illustration only. They must not be used as a guide to creating LEI data records, but only for understanding what can be validated (or not) against each version of the XML schema.
- The sample data included in these records validates against the respective schemas but does not fulfill additional data quality criteria.
- The LEI-CDF V1.0 record includes some additional deliberate mistakes.

5.1. LEI-CDF V1.0

```
<?xml version="1.0" encoding="UTF-8"?>
<lei:LEIData xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.leiroc.org/data/schema/leidata/2014"
  xmlns:lei="http://www.leiroc.org/data/schema/leidata/2014">
  <lei:LEIHeader>
    <!-- Optional lei:ContentDate can be omitted in V1.0; results in
lower data quality -->
    <lei:FileContent>COU_DELTA_PUBLISHED</lei:FileContent>
    <lei:DeltaStart>2001-11-30T12:00:00.123456</lei:DeltaStart>
    <lei:RecordCount>-1</lei:RecordCount>
  </lei:LEIHeader>
  <lei:LEIRecords>
    <lei:LEIRecord>
      <lei:LEI>12345678901234567890</lei:LEI>
      <lei:Entity>
        <lei:LegalName xml:lang="en">Example
Corporation</lei:LegalName>
        <lei:OtherEntityNames>
          <lei:OtherEntityName xml:lang="fr"
type="OTHER_LEGAL">Exemple
Société</lei:OtherEntityName>
          <lei:OtherEntityName xml:lang="fr"
type="AUTO_ROMANIZED_LEGAL">Exemple
Société</lei:OtherEntityName>
        </lei:OtherEntityNames>
        <lei:LegalAddress xml:lang="en">
Public
```

```

        <lei:Line1> 1234 Legal Entity Lane </lei:Line1>
        <lei:Line2>Suite 4321</lei:Line2>
        <lei:City>Exampleville</lei:City>
        <lei:Region>US-MA</lei:Region>
        <lei:Country>US</lei:Country>
        <lei:PostalCode>02400</lei:PostalCode>
    </lei:LegalAddress>
    <lei:HeadquartersAddress xml:lang="en">
        <lei:Line1>One Large Office Building</lei:Line1>
        <lei:Line2>500th Floor</lei:Line2>
        <lei:Line3>Suite 444</lei:Line3>
        <lei:City>Côte d'Exemple</lei:City>
        <lei:Region>FR-D</lei:Region>
        <lei:Country>FR</lei:Country>
    </lei:HeadquartersAddress>
    <lei:OtherAddresses>
        <lei:OtherAddress xml:lang="fr"
type="HEADQUARTERS_ADDRESS">
            <lei:Line1>Un Grand Immeuble de Bureaux</lei:Line1>
            <lei:Line2>500e étage</lei:Line2>
            <lei:Line3>Suite 444</lei:Line3>
            <lei:City>Côte d'Exemple</lei:City>
            <lei:Region>FR-D</lei:Region>
            <lei:Country>FR</lei:Country>
            <lei:PostalCode>lei:PostalCode</lei:PostalCode>
        </lei:OtherAddress>
    </lei:OtherAddresses>
    <lei:BusinessRegisterEntityID register="BR-US-MA">2-
        718281828</lei:BusinessRegisterEntityID>
    <lei:LegalJurisdiction>US-MA</lei:LegalJurisdiction>
    <lei:LegalForm xml:lang="en">C Corporation</lei:LegalForm>
    <lei:AssociatedEntity type="FUND_MANAGER">

<lei:AssociatedLEI>98765432109876543210</lei:AssociatedLEI>
    </lei:AssociatedEntity>
    <lei:EntityStatus>INACTIVE</lei:EntityStatus>
    <lei:EntityExpirationDate>2013-12-
31T01:02:03</lei:EntityExpirationDate>

```

```

<lei:EntityExpirationReason>CORPORATE_ACTION</lei:EntityExpirationReason>
    <lei:SuccessorEntity>
        <lei:SuccessorLEI>17320508075680000000</lei:SuccessorLEI>
    </lei:SuccessorEntity>
</lei:Entity>
<lei:Registration>
    <lei:InitialRegistrationDate>2001-11-
30T12:00:00</lei:InitialRegistrationDate>
    <lei:LastUpdateDate>2014-03-15T12:00:00</lei:LastUpdateDate>
    <lei:RegistrationStatus>MERGED</lei:RegistrationStatus>
    <lei:NextRenewalDate>2015-12-
31T01:02:03</lei:NextRenewalDate>
    <lei:ManagingLOU>31415926535897932384</lei:ManagingLOU>
    <lei:ValidationSources>TEST_DATA_ONLY</lei:ValidationSources>
</lei:Registration>
</lei:LEIRecord>
</lei:LEIRecords>
</lei:LEIData>

```

5.2. LEI-CDF V2.1

```

<?xml version="1.0" encoding="UTF-8"?>
<lei:LEIData xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://www.gleif.org/data/schema/leidata/2016"
    xmlns:lei="http://www.gleif.org/data/schema/leidata/2016">
    <lei:LEIHeader>
        <lei:ContentDate>2001-11-30T12:00:00Z</lei:ContentDate>
        <!-- Decimal places may be omitted -->
        <lei:FileContent>GLEIF_DELTA_PUBLISHED</lei:FileContent>
        <lei:DeltaStart>2001-11-30T12:00:00.1Z</lei:DeltaStart>
        <!-- 1 decimal place is valid -->
        <lei:RecordCount>1</lei:RecordCount>
        <!-- Must be a positive integer -->
    </lei:LEIHeader>
    <lei:LEIRecords>
        <lei:LEIRecord>
            <lei:LEI>12345678901234567890</lei:LEI>

```

```

<lei:Entity>
  <lei:LegalName xml:lang="en">Example
Corporation</lei:LegalName>
  <lei:OtherEntityNames>
    <lei:OtherEntityName xml:lang="fr"
type="ALTERNATIVE_LANGUAGE_LEGAL_NAME">Exemple Société</lei:OtherEntityName>
  </lei:OtherEntityNames>
  <!-- Transliterations provided in separate field which only
allows ASCII characters -->
  <lei:TransliteratedOtherEntityNames>
    <lei:TransliteratedOtherEntityName
type="AUTO_ASCII_TRANSLITERATED_LEGAL_NAME">Exemple
Societe</lei:TransliteratedOtherEntityName>
  </lei:TransliteratedOtherEntityNames>
  <lei:LegalAddress xml:lang="en">
    <lei:FirstAddressLine>1234 Legal Entity
Lane</lei:FirstAddressLine>
    <lei:AdditionalAddressLine>Suite
4321</lei:AdditionalAddressLine>
    <lei:City>Exampleville</lei:City>
    <lei:Region>US-MA</lei:Region>
    <lei:Country>US</lei:Country>
    <lei:PostalCode>02400</lei:PostalCode>
  </lei:LegalAddress>
  <lei:HeadquartersAddress xml:lang="en">
    <lei:FirstAddressLine>One Large Office
Building</lei:FirstAddressLine>
    <lei:AdditionalAddressLine>500th
Floor</lei:AdditionalAddressLine>
    <lei:AdditionalAddressLine>Suite
444</lei:AdditionalAddressLine>
    <lei:City>Côte d'Exemple</lei:City>
    <lei:Region>FR-D</lei:Region>
    <lei:Country>FR</lei:Country>
  </lei:HeadquartersAddress>
  <lei:OtherAddresses>
    <lei:OtherAddress xml:lang="fr"
type="ALTERNATIVE_LANGUAGE_HEADQUARTERS_ADDRESS">
    <lei:FirstAddressLine>Un Grand Immeuble de
Bureaux</lei:FirstAddressLine>
    <lei:AdditionalAddressLine>500e
étage</lei:AdditionalAddressLine>
Public

```



```

        <lei:AdditionalAddressLine>Suite
444</lei:AdditionalAddressLine>
        <lei:City>Côte d'Exemple</lei:City>
        <lei:Region>FR-D</lei:Region>
        <lei:Country>FR</lei:Country>
        <lei:PostalCode>lei:PostalCode</lei:PostalCode>
    </lei:OtherAddress>
</lei:OtherAddresses>
    <!-- Transliterations provided in separate field which only
allows ASCII characters -->
    <lei:TransliteratedOtherAddresses>
        <lei:TransliteratedOtherAddress xml:lang="fr"
type="PREFERRED_ASCII_TRANSLITERATED_HEADQUARTERS_ADDRESS">
            <lei:FirstAddressLine>Un Grand Immeuble de
Bureaux</lei:FirstAddressLine>
            <lei:AdditionalAddressLine>500e
eetage</lei:AdditionalAddressLine>
            <lei:AdditionalAddressLine>Suite
444</lei:AdditionalAddressLine>
            <lei:City>Cote d'Exemple</lei:City>
            <lei:Region>FR-D</lei:Region>
            <lei:Country>FR</lei:Country>
            <lei:PostalCode>lei:PostalCode</lei:PostalCode>
        </lei:TransliteratedOtherAddress>
    </lei:TransliteratedOtherAddresses>
    <lei:RegistrationAuthority>

<lei:RegistrationAuthorityID>RA888888</lei:RegistrationAuthorityID>
    <lei:OtherRegistrationAuthorityID>BR-US-
MA</lei:OtherRegistrationAuthorityID>

<lei:RegistrationAuthorityEntityID>718281828</lei:RegistrationAuthorityEntity
ID>
    </lei:RegistrationAuthority>
    <lei:LegalJurisdiction>US-MA</lei:LegalJurisdiction>
    <lei:LegalForm>
        <lei:EntityLegalFormCode>8888</lei:EntityLegalFormCode>
        <lei:OtherLegalForm>C Corporation</lei:OtherLegalForm>
    </lei:LegalForm>
    <lei:AssociatedEntity type="FUND_FAMILY">

```

```

<lei:AssociatedLEI>98765432109876543210</lei:AssociatedLEI>
    </lei:AssociatedEntity>
    <lei:EntityStatus>INACTIVE</lei:EntityStatus>
    <lei:EntityExpirationDate>2013-12-
31T01:02:03Z</lei:EntityExpirationDate>

<lei:EntityExpirationReason>CORPORATE_ACTION</lei:EntityExpirationReason>
    <lei:SuccessorEntity>
        <lei:SuccessorLEI>17320508075680000000</lei:SuccessorLEI>
    </lei:SuccessorEntity>
</lei:Entity>
<lei:Registration>
    <lei:InitialRegistrationDate>2001-11-
30T12:00:00Z</lei:InitialRegistrationDate>
    <lei:LastUpdateDate>2014-03-15T12:00:00Z</lei:LastUpdateDate>
    <lei:RegistrationStatus>MERGED</lei:RegistrationStatus>
    <lei:NextRenewalDate>2015-12-
31T01:02:03Z</lei:NextRenewalDate>
    <lei:ManagingLOU>31415926535897932384</lei:ManagingLOU>

<lei:ValidationSources>FULLY_CORROBORATED</lei:ValidationSources>
    <lei:ValidationAuthority>

<lei:ValidationAuthorityID>RA888888</lei:ValidationAuthorityID>
    <lei:OtherValidationAuthorityID>BR-US-
MA</lei:OtherValidationAuthorityID>

<lei:ValidationAuthorityEntityID>718281828</lei:ValidationAuthorityEntityID>
    </lei:ValidationAuthority>
    <lei:OtherValidationAuthorities>
        <lei:OtherValidationAuthority>

<lei:ValidationAuthorityID>RA999999</lei:ValidationAuthorityID>
    </lei:OtherValidationAuthority>
    </lei:OtherValidationAuthorities>
</lei:Registration>
</lei:LEIRecord>
</lei:LEIRecords>
</lei:LEIData>

```