# eCVI Version 2 Standard Contents

Change Log 08/30/2017: Initial draft of version 2.0 attempts to clone version 1 (labeled version 6.0?) with only minor tweaks. 09/01/2017: Added regular expressions to AnimalTags choices. 09/01/2017: Added option for ID/IDREF to Attachment for BrandImage ID Type. 11/16/2017: Collapsed animal tag choices into known structure and not. 12/14/2017: Added Equine description and photos as AnimalTag choices. 01/16/2018: Removed string length restrictions not part of regular expressions. 01/16/2018: Spelled out latitude and longitude in geo point. 01/16/2018: Rearranged TagType to put Type as first attribute. 02/08/2018: Restructured Species to SpeciesCode vs. SpeciesOther. 02/08/2018: Restructured All Binary data into ID/IDREF to eliminate duplication 02/28/2018: Converted comments to annotation elements except where simply labeling code sections, etc. Works with an XSLT to generate skeleton documentation. 03/06-08/2018: Additional annotations added. Ongoing. 04/04/2018: Added Carrier and Transport mode optional elements. Added email in addition to Phone on person. Added miscellaneous attributes element. Changed Breed element to basic string. 04/25/2018: Fixed apostrophe character in Johne's Disease enumeration value. 05/20/2018: Added CVINumberIssuedBy as optional attribute. 05/29/2018: Converted GeoPoint from attributes for Latitude and Longitude to single coordinates element in KML format. 06/06/2018: Simplified Name and Address Block for contacts. 06/25/2018: Clean up documentation. 07/06/2018: Yet another version of AnimalTags defining just the most common. 07/06/2018: Minor edits based on committee input. Further documentation clean up. 07/10/2018: Further edits to Species, AnimalTags, Coordinates, and Statuses.

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# eCVI Document Element

The eCVI xml document contains an extract of data from an interstate certificate of veterinary inspection (normally electronic) used to communicate the information to another computer system. It does not constitute the legal document; that remains the job of the originating application. This schema tries to capture those data elements and the level of detail needed for regulatory decision support, disease traceability, and business interoperability. A large majority of use-cases can be met using the fully-structured (close standard) data. Inevitably, edge cases--even very important ones--have had to be left to open standard features such as "other" choices and free-text entry elements.

## Attributes

* **CviNumber**: Required
* **CviNumberIssuedBy**: Optional
* **IssueDate**: Required
* **ExpirationDate**: Required
* **ShipmentDate**: Optional
* **EntryPermitNumber**: Optional

## Child Elements

* **Veterinarian**: Required
* **MovementPurposes**: Required
* **Origin**: Required
* **Destination**: Required
* **Consignor**: Optional
* **Consignee**: Optional
* **Carrier**: Optional
* **TransportMode**: Optional
* **Accessions**: Optional
* **Animal**: Optional, may repeat
* **GroupLot**: Optional, may repeat
* **Statements**: Optional
* **Attachment**: Optional, may repeat
* **MiscAttribute**: Optional, may repeat
* **Binary**: Optional, may repeat

### Veterinarian

Veterinarian is a required element for iCVIs. When available deterministic identifier such as license number and state or national accreditation number should be provided.

#### Attributes

* **LicenseState**: Optional
* **LicenseNumber**: Optional
* **NationalAccreditationNumber**: Optional

#### Child Elements

* **Person**: Required
* **AddressBlock**: Optional

### Person

Person is defined as a Name string and an optional Phone Number (see Phone). Because of a lack of industry consensus on hanling names, Name can be provided as either a single string (Name) or individual name components (NameParts).

#### Child Elements

* Either:
  + **NameParts**: Required
  + **Name**: Required
* **Phone**: Optional, may repeat
* **Email**: Optional, may repeat

### NameParts

NameParts defines a structured name for a business or person. BusinessName, FirstName, Middle Name, LastName, OtherName are all optional for applications to use one or more (NameParts with on individual components would validate, the schema language to force "one or more of one or more of these parts" would be more complex than necessary.)

#### Child Elements

* **BusinessName**: Optional
* **FirstName**: Optional
* **MiddleName**: Optional
* **LastName**: Optional
* **OtherName**: Optional

### Phone

The Phone Number specifies type (list enumeration values?) and a ten-digit number, and can include a comment.

#### Attributes

* **Number**: Required  
  Pattern(s):
  + \d{10}
* **Comment**: Optional
* **Type**: Required  
  Values:
  + Unknown (Probably the most common.)
  + Landline (If known to be fixed location.)
  + Cellphone (If known to be a mobile phone.)
  + Fax (Fax line.)

### Email

#### Attributes

* **Address**: Required  
  *EmailType*

Optional email address following simplified standard email address pattern.

Pattern(s):

* + [a-zA-Z0-9.\_%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,4}

### AddressBlock

Contacts such as "consignor, if different", "consignee, if different", veterinarian, and carrier may have simple block of text containing more or less structured address.

### MovementPurposes

Movement Purposes is required, however, it may be an empty list. This is a challenging element to populate because there are some many factors that become important in regulatory decision making. This list encompasses many different aspects of the animal's use, reason for movement, etc. As with many elements, the goal has been to enumerate those most often used in regulatory and other decision making but leave "Other" available. If "Other" is selected a reason should be supplied as text in the "OtherReason" element.

#### Child Elements

* **MovementPurpose**: Optional, may repeat  
  Values:
  + Racing ()
  + Sale ()
  + Grazing ()
  + Training ()
  + Slaughter ()
  + Medical Treatment: ()
  + Exhibition/Show/Rodeo ()
  + Breeding ()
  + Competition ()
  + Feeding to condition ()
  + Feeding to slaughter ()
  + Laying Hens ()
  + Hunting for harvest ()
  + Companion Animal ()
  + Personal Travel/Transit ()
  + Owner relocating ()
  + Evacuation from Natural Disaster ()
  + Other ()
* **OtherReason**: Optional

### Origin

The physical location of the animal(s) prior to movement is required. Must be a physical (911) address.

* See: *PremType*

### Destination

The intended physical location of the animal(s) after movement is required. Must be a physical (911) address.

* See: *PremType*

### Consignor

The contact information for the person or business responsible for the animal(s) prior to movement. Only required if different from Origin.

* See: *ContactType*

### Consignee

The contact information for the person or business responsible for the animal(s) after to movement. Only required if different from Destination.

* See: *ContactType*

### Carrier

The contact information for the person or business responsible for moving the animals from origin to destination.

* See: *ContactType*

### TransportMode

If important for certification of ability to travel the mode, air, car, rail, truck or boat (ship).

Values:

* air ()
* boat ()
* car ()
* rail ()
* truck ()
* land ()
* other ()

### Accessions

Because many herd movements have testing performed in one accession, the accession(s) is(are) listed here and referenced by each test rather than duplicating all the accession information for each test on each animal.

#### Child Elements

* **Accession**: Optional, may repeat

### Accession

Accessions are listed for the CVI as a whole and referenced by each test. An accession is defined as... A single Laboratory or Field element may be specified, indicating where tests for this accession were performed. InfieldTest is an optional bool (true/false value) indicating if a test was performed in the field. (Is this redundant with the Field element?) ID (see ID) is required, and is the reference number that associates an animal’s individual tests performed as part of this accession. ID is not the lab accession number. That is a distinct element. For Laboratory accessions: Laboratory is a required, containing the following: LabName is a required string. PremId (see PremIdType) is optional only if unavailable. Address (see AddressType) is optional only if unavailable and should contain the lab (physical? contact?) address. AccessionDate is a required date. AccessionNumber is a required string. For Field accessions: PremId (see PremIdType) is optional only if unavailable. Address (see AddressType) is optional only if unavailable and should contain the (physical? contact?) address of the test location. AccessionDate is a required date.

#### Attributes

* **InfieldTest**: Optional
* **id**: Required

#### Child Elements

* Either:
  + **Laboratory**: Required
  + **Field**: Required

### Laboratory

#### Attributes

* **AccessionDate**: Required
* **AccessionNumber**: Required

#### Child Elements

* **LabName**: Required
* **PremId**: Optional  
  *PremIdType*

PremIdType does minimal validation of true premises identifiers including both PINs (7 characters and LIDs (8 characters). Only nationally registered LIDs are appropriate. Implementing applications are highly encouraged to validate against the appropriate checksum logic.

Pattern(s):

* + [A-Z0-9]{6,8}
* **AddressBlock**: Optional

### AddressBlock

Contacts such as "consignor, if different", "consignee, if different", veterinarian, and carrier may have simple block of text containing more or less structured address.

### Field

#### Attributes

* **AccessionDate**: Required

#### Child Elements

* **PremId**: Optional  
  *PremIdType*

PremIdType does minimal validation of true premises identifiers including both PINs (7 characters and LIDs (8 characters). Only nationally registered LIDs are appropriate. Implementing applications are highly encouraged to validate against the appropriate checksum logic.

Pattern(s):

* + [A-Z0-9]{6,8}
* **AddressBlock**: Optional

### AddressBlock

Contacts such as "consignor, if different", "consignee, if different", veterinarian, and carrier may have simple block of text containing more or less structured address.

### Animal

The Animal element is used for all individually identifiable animals in a shipment even when those may have been entered in an electronic source document using shorthand tools such as identifier ranges. Animal species may be designated by code (see SpeciesCode) or other (see SpeciesOther). At least one animal tag (see AnimalTags) is required. Test (see TestType) is optional, and there is no limit on additional Tests. Age is optional (although often required by regulatory policy) and may be specified as either: a number of days, weeks, months or years plus the standard code for units (d|wk|mo|a) (example: 3wk), age definitions adhere to UCUM - http://unitsofmeasure.org/ucum.html), or as a specific date of birth as a four-digit year, two-digit month, and two-digit date, separated by dashes (example: 2001-05-31). Breed is optional and specified by a two or three uppercase letter code or by a string description such as "black". The code list is not specified in the standard but most are available at: https://www.naab-css.org/uniform-breed-codes, and https://www.aphis.usda.gov/animal\_health/vs\_ocio/downloads/date\_standards/icvi\_data\_concepts.pdf. Sex (see SexType) reflects the most common variations needed for regulatory. If other configurations are needed they are provided as a string in SexDetail. "Mixed" is not an allowable value for a single Animal (provided for use with Group). InspectionDate is a required date, and is the date the animals were inspected by the vet. If the inspection took place over multiple days, use the first date.

#### Attributes

* **Age**: Optional  
  *AgeType*

Age can be expressed as days , weeks, months, years, or as date of birth.

Pattern(s):

* + (<|>)? ?\d{1,3} ?(d|wk|mo|a)
  + (19|20)\d\d-(0[1-9]|1[012])-(0[1-9]|[12]\d|3[01])
* **Breed**: Optional
* **Sex**: Optional  
  *SexType*

Sex type only becomes complicated for groups and minor species.

Values:

* + Female ()
  + Male ()
  + Spayed Female ()
  + Neutered Male ()
  + True Hermaphrodite ()
  + Mixed Group (Only applicable to Group.)
  + Gender Unknown (Only applies to minor species in unusual cases such as non sexually dimorphic birds.)
  + Other (Only applies to minor species in unusual cases. Supply explanation in SexDetail)
* **SexDetail**: Optional
* **InspectionDate**: Required

#### Child Elements

* Either:
  + **SpeciesCode**: Required
  + **SpeciesOther**: Required
* **AnimalTags**: Required
* **Test**: Optional, may repeat
* **Vaccination**: Optional, may repeat

### SpeciesCode

For animals with official species codes, the code is required with optional text to add detail if necessary.

#### Attributes

* **Code**: Required  
  *SpeciesCodes*

A subset of USDA species codes to support the most common eCVI usages. All other species can be sent as SpeciesOther which is not enumerated.

Values:

* + AQU ( Aquaculture)
  + BEF ( Beef)
  + BIS ( Bison)
  + BOV ( Bovine (Bison and Cattle))
  + CAM ( Camelid (Alpacas, Llamas, etc.))
  + CAN ( Canine)
  + CAP ( Caprine (Goats))
  + CER ( Cervids)
  + CHI ( Chickens)
  + DAI ( Dairy)
  + EQU ( Equine (Horses, Mules, Donkeys, Burros))
  + FEL ( Feline)
  + OVI ( Ovine (Sheep))
  + POR ( Porcine (Swine))
  + TUR ( Turkeys)
* **Text**: Optional

### SpeciesOther

The species coded in the standard include only those commonly needed for regulatory action related to the movement. Many other official species codes can be found at http://???? Because not all systems may understand these other codes, human readable Text is required in addition to the code. For animals without an official species code, the code may be omitted the default value is OTH and text used to define the actual taxonomy is required.

#### Attributes

* **Code**: Optional
* **Text**: Required

### AnimalTags

This is a jumble of type of ID with the type of device holding the ID. "Tags" is a misnomer. An ID may be either one of the most common known formats (840, 900 series manufacturer tags, NUES9 or NUES8) matching one of the list of regular expressions for common official animal IDs, or some other official type, either or a non-official managment tag. This field also supports brand descriptions, brand images, and equine description or photographs. These can appear in any order up to six IDs per animal

#### Child Elements

* Either:
  + **AIN**: Required
  + **MfrRFID**: Required
  + **NUES9**: Required
  + **NUES8**: Required
  + **OtherOfficialID**: Required
  + **ManagementID**: Required
  + **BrandImage**: Required
  + **EquineDescription**: Required
  + **EquinePhotographs**: Required

### AIN

840 (usually RFIF) tags or chips.

#### Attributes

* **Number**: Required  
  *AINType*

840 AIN (usually RFID) tag.

Pattern(s):

* + (840)\d{12} (840 RFID: 840 followed by 12 digits)

### MfrRFID

900 series but not "900" RFID tags or chips.

#### Attributes

* **Number**: Required  
  *MfrRFIDType*

900 Series manufacturer tags (always RFID?).

Pattern(s):

* + ((9[0-8]\d)|(9\d[0-8])|(124)|(484))\d{12} ( Non 840 RFID: Company prefix (not 999) followed by 12 digits )

### NUES9

NUES9 tags most commonly on metal "brite" tags.

#### Attributes

* **Number**: Required  
  *NUES9Type*

9 Character NUES (brite) tags.

Pattern(s):

* + (\d{2}|MD|MN|NM|NY|US|WY)[A-Z]{3}\d{4} ( NUES 9 Character: Two digits + three letters + four digits or some state's alpha codes followed by three more letters and four digits )

### NUES8

NUES8 tags most commonly on the smaller sized metal "brite" tags. Because the pattern of characters matches backtags, it is important that these rarely used tags be recorded by type when they do appear on CVIs.

#### Attributes

* **Number**: Required  
  *NUES8Type*

8 Character NUES (brite) tags.

Pattern(s):

* + \d{2}[A-Z]{2}\d{4} ( NUES 8 Character: Two digits + two letters + four digits (Note: matches cattle backtag pattern.) )

### OtherOfficialID

Other Formats: No restrictions

#### Attributes

* **Type**: Optional  
  *TagType*

This lists the known tag types that are supported.

Values:

* + AMID (American ID)
  + BT (Backtag)
  + IMP ()
  + OFORID (What is this?)
  + NAME (Name?)
  + SGFLID (Scrapie group flock ID)
  + NPIN (Swine PIN Tag)
  + TAT (Tattoo)
  + OTHER (We would like to always know the type but can't have captured them all.)
* **Number**: Required

### ManagementID

Other Formats: No restrictions

#### Attributes

* **Number**: Required

### BrandImage

This should be PNG/JPEG/GIF/PDF format. The format is specified in the Binary mime type.

#### Attributes

* **BrandImageRef**: Required
* **Description**: Optional

### EquineDescription

Equine registered name is only legal identification with description

#### Attributes

* **Name**: Optional
* **Description**: Required

### EquinePhotographs

Photos are also official.

#### Child Elements

* **Photograph**: Required, may repeat

### Test

Individual test results are included with each animal and reference via ID/IDREF an accession. For herd testing this allows one accession with many tests. For tests such as Equine Coggins tests that are one per accession it results in slight extra overhead.

#### Attributes

* **AccessionRef**: Required
* **TestCode**: Required

#### Child Elements

* **Result**: Required, may repeat

### Vaccination

Vaccination information for animal or group. For now the type of vaccine is left as a simple string. Ideally will become a coded value from a standard set. The date is optional but highly suggested.

#### Attributes

* **Type**: Required
* **Date**: Optional

### GroupLot

GroupLot is used for any grouping of similar animals that do not require individual identification. Rules for what constitute legal groups are defined in the federal ADT rule and various other legal sources. In general groups contain only animals of the same species and general age. All attributes apply to all members of the group. If significant variation exists, multiple GroupLot elements may be needed. Description is the phrase recorded on the iCVI that defines the group and justifies the absence of individual animal IDs. Because this phrase is not easily computer interpretable, various structured elements are included that may overlap the contents of the description. Species may be designated by code (see SpeciesCodeType) or other (see SpeciesOtherType). A single GroupLotID is allowed as a single string, not further defined in order to be species neutral. Quantity is a optional number. Unit by default is "Number", as in a count. A different unit can be specified as an optional string (guidelines on standardized units?). Edge cases might require number to be a total weight of things like fish or shellfish. In those cases "number" may be a decimal. Age is optional and may be specified as either: a number of days, weeks, months or years plus the standard code for units (d|wk|mo|a) (example: 3wk), age definitions adhere to UCUM - http://unitsofmeasure.org/ucum.html), or as a specific date of birth as a four-digit year, two-digit month, and two-digit date, separated by dashes (example: 2001-05-31). It is understood that groups consist of individuals varying in age so that the Age element here represents a rough mid-point. In practice, Age is often omitted and included in the Description such as "Feeder steers under 18 months." Breed is optional and specified by two or three uppercase letters. The list is not specified in the standard but most are available at: https://www.naab-css.org/uniform-breed-codes, and https://www.aphis.usda.gov/animal\_health/vs\_ocio/downloads/date\_standards/icvi\_data\_concepts.pdf. Sex (see SexType) is optional. SexDetail is an optional string. .

#### Attributes

* **Quantity**: Optional
* **Unit**: Optional
* **Age**: Optional  
  *AgeType*

Age can be expressed as days , weeks, months, years, or as date of birth.

Pattern(s):

* + (<|>)? ?\d{1,3} ?(d|wk|mo|a)
  + (19|20)\d\d-(0[1-9]|1[012])-(0[1-9]|[12]\d|3[01])
* **Breed**: Optional
* **Sex**: Optional  
  *SexType*

Sex type only becomes complicated for groups and minor species.

Values:

* + Female ()
  + Male ()
  + Spayed Female ()
  + Neutered Male ()
  + True Hermaphrodite ()
  + Mixed Group (Only applicable to Group.)
  + Gender Unknown (Only applies to minor species in unusual cases such as non sexually dimorphic birds.)
  + Other (Only applies to minor species in unusual cases. Supply explanation in SexDetail)
* **SexDetail**: Optional
* **Description**: Required

#### Child Elements

* Either:
  + **SpeciesCode**: Required
  + **SpeciesOther**: Required
* **GroupLotID**: Optional
* **Test**: Optional, may repeat
* **Vaccination**: Optional, may repeat

### SpeciesCode

For animals with official species codes, the code is required with optional text to add detail if necessary.

#### Attributes

* **Code**: Required  
  *SpeciesCodes*

A subset of USDA species codes to support the most common eCVI usages. All other species can be sent as SpeciesOther which is not enumerated.

Values:

* + AQU ( Aquaculture)
  + BEF ( Beef)
  + BIS ( Bison)
  + BOV ( Bovine (Bison and Cattle))
  + CAM ( Camelid (Alpacas, Llamas, etc.))
  + CAN ( Canine)
  + CAP ( Caprine (Goats))
  + CER ( Cervids)
  + CHI ( Chickens)
  + DAI ( Dairy)
  + EQU ( Equine (Horses, Mules, Donkeys, Burros))
  + FEL ( Feline)
  + OVI ( Ovine (Sheep))
  + POR ( Porcine (Swine))
  + TUR ( Turkeys)
* **Text**: Optional

### SpeciesOther

The species coded in the standard include only those commonly needed for regulatory action related to the movement. Many other official species codes can be found at http://???? Because not all systems may understand these other codes, human readable Text is required in addition to the code. For animals without an official species code, the code may be omitted the default value is OTH and text used to define the actual taxonomy is required.

#### Attributes

* **Code**: Optional
* **Text**: Required

### Test

Individual test results are included with each animal and reference via ID/IDREF an accession. For herd testing this allows one accession with many tests. For tests such as Equine Coggins tests that are one per accession it results in slight extra overhead.

#### Attributes

* **AccessionRef**: Required
* **TestCode**: Required

#### Child Elements

* **Result**: Required, may repeat

### Vaccination

Vaccination information for animal or group. For now the type of vaccine is left as a simple string. Ideally will become a coded value from a standard set. The date is optional but highly suggested.

#### Attributes

* **Type**: Required
* **Date**: Optional

### Statements

Additional statements that may be required by various jurisdictions may be included here. These statements must not take the place of or modify the structured content found elsewhere in the standard.

### Attachment

Attachments can be used for text or binary additional information not specifically carried in one of the other Binary elements. Assumed to be from a file so Filename is required along with a reference to the Binary content. Be aware that receiving applications may ignore unknown or unexpected attachments. The actual binary content of the attachment is carried in the Binary element as are any other Binary fields. DocType is a required string. (put enumeration values in table somehow? Is this list adequate?). Filename is a required string. (Why require a file name? many may never have actually resided in a named file.) Comment is an optional string. (For what purpose?)

#### Attributes

* **AttachmentRef**: Required
* **DocType**: Required  
  Values:
  + Scanned Paper CVI (For sending an image of original paper CVI along with the extracted data. These may be image PDF or other image format. )
  + Scanned Test Chart (For sending scanned test charts along with electronic CVI or extracted data. These may be image PDF or other image format. )
  + PDF CVI (For sending data form PDF CVI along with extracted data. These would be Adobe PDF forms, or XFA forms. )
  + PDF Test Chart (For sending data form PDF Test Chart along with electronic CVI or extracted data. These would be Adobe PDF forms, or XFA forms. )
  + Other (All other uses.)
* **Filename**: Required
* **Comment**: Optional

### MiscAttribute

Any additional information needed by specific implementations can be provided as name/value pairs represented as strings. These data must not be essential to proper understanding of the structured content of the standard data but only extend it.

#### Attributes

* **Name**: Required
* **Value**: Required

### Binary

All binary content is included as Binary and referenced in specific elements by ID/IDREF.

#### Attributes

* **ID**: Required
* **MimeType**: Optional  
  *MimeType*

For complete information see: https://www.iana.org/assignments/media-types/media-types.xhtml. For common examples see: https://en.wikipedia.org/wiki/Media\_type

Pattern(s):

* + .{1,127}/.{1,127}

#### Child Elements

* **Payload**: Required

## Defined Types:

### PremType

PremType is used for origin and destination, and must be actual physical (animal?) locations. PremId (see PremIdType) is optional only if unavailable. PremName is an optional string. Address is required (see AddressType). ProgramStatus (see ProgramStatusType) is optional, but there is no limit on additional ProgramStatuses. Person (see PersonType) is required (why?), and there is no limit on additional Persons.

#### Child Elements

* **PremId**: Optional  
  *PremIdType*

PremIdType does minimal validation of true premises identifiers including both PINs (7 characters and LIDs (8 characters). Only nationally registered LIDs are appropriate. Implementing applications are highly encouraged to validate against the appropriate checksum logic.

Pattern(s):

* + [A-Z0-9]{6,8}
* **PremName**: Optional
* **Address**: Required
* **StateZoneOrAreaStatus**: Optional, may repeat
* **HerdOrFlockStatus**: Optional, may repeat
* **Person**: Optional, may repeat

**See:** *Address*  
**See:** *StateZoneOrAreaStatus*  
**See:** *HerdOrFlockStatus*  
**See:** *Person*

### ContactType

ContactType is used for consignor and consignee that may be actual physical locations or other postal addresses. The AddressBlock form of address is used for maximum flexibility because the actual location of contacts in less important than is the best available means of contact.

#### Child Elements

* **AddressBlock**: Optional
* **Person**: Required, may repeat

**See:** *AddressBlock*  
**See:** *Person*