Appendix: DMLex Examples (Draft)

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This document gives examples which show how to use DMLex to model lexicographic resources. The examples are shown in three formalisms: NVH, XML and JSON.

Each example is shown in NVH first. NVH (Name-Value Hierarchy)[1] is a concise serialization language designed for lexicographic data. NVH encodes data as a hierarchical list of names, values and children, which corresponds exactly to DMLex's own data model. We use NVH here in order to demonstrate the object model at an abstract level.

After that, each example is shown in XML and JSON, two popular serialization languages. The XML and JSON encoding shown here follows DMLex's own implementation guidance for XML and JSON.

Example 0: A basic entry

This is a basic, beginner-level example of how to use DMLex to represent a simple monolingual lexicographic resource consisting of one entry with two senses. It demonstrates some of the basic features of DMLex Core: how to subdivide a entry into senses, how attach various data such as definition, part-of-speech labels to entries and senses, and how to add labels to various objects such as senses and examples.

NVH

```
lexicographicResource: my-dictionary
    entry: abandon-verb
        headword: abandon
        partOfSpeech: verb
        sense: abandon-verb-1
            definition: to suddenly leave a place or a person
            example: I'm sorry I abandoned you like that.
            example: Abandon ship!
                label: idiom
        sense: abandon-verb-2
```

---

[1]https://www.namevaluehierarchy.org/

```
            label: mostly-passive
            definition: to stop supporting an idea
            example: That theory has been abandoned.
```

XML

```xml
<lexicographicResource id="my-dictionary">
    <entry id="abandon-verb">
        <headword>abandon</headword>
        <partOfSpeech value="verb"/>
        <sense id="abandon-verb-1">
            <definition>to suddenly leave a place or a person</definition>
            <example>
                <text>I'm sorry I abandoned you like that.</text>
            </example>
            <example>
                <text>Abandon ship!</text>
                <label value="idiom"/>
            </example>
        <sense id="abandon-verb-2">
            <label value="mostly-passive"/>
            <definition>to stop supporting an idea</definition>
            <example>
                <text>That theory has been abandoned.</text>
            </example>
        </sense>
    </entry>
<lexicographicResource>
```

JSON

```json
{
    "id": "my-dictionary",
    "entry": {
        "id": "abandon-verb",
        "headword": "abandon",
        "partsOfSpeech": ["verb"],
        "senses": [{
            "id": "abandon-verb-1",
            "definitions": [{
                "text": "to suddenly leave a place or a person"
            }],
            "examples": [{
                "text": "I'm sorry I abandoned you like that."
            }, {
```

```
            "text": "Abandon ship!",
            "labels": ["idiom"]
        }]
    }, {
        "id": "abandon-verb-2",
        "labels": ["mostly-passive"],
        "definitions": ["to stop supporting an idea"],
        "examples": [{
            "text": "That theory has been abandoned."
        }]
    }]
  }
}
```

Example 1: How to use `inflectedForm`

This is an entry from a hypothetical Irish dictionary for the headword "folúsghlantóir" ("vacuum cleaner") which gives its two inflected forms, the singular genitive and the plural.

NVH

```
entry: folúsghlantóir-n
    headword: folúsghlantóir
    partOfSpeech: n-masc
    inflectedForm: folúsghlantóra
        inflectedTag: sg-gen
    inflectedForm: folúsghlantóirí
        inflectedTag: pl
    sense: ...
```

XML

```
<entry id="folúsghlantóir-n">
    <headword>folúsghlantóir</headword>
    <partOfSpeech value="n-masc"/>
    <inflectedForm inflectedTag="sg-gen">folúsghlantóra</inflectedForm>
    <inflectedForm inflectedTag="pl">folúsghlantóirí</inflectedForm>
    <sense>...</sense>
</entry>
```

JSON

```json
{
    "id": "folúsghlantóir-n",
    "headword": "folúsghlantóir",
    "partsOfSpeech": ["n-masc"],
    "inflectedForms": [{
        "text": "folúsghlantóra",
        "inflectedTag": "sg-gen",
    }, {
        "text": "folúsghlantóirí",
        "inflectedTag": "pl",
    }],
    "senses": [...]
}
```

Example 2: Pronunciation given as transcription

NVH

```
entry: aardvark-noun
    headword: aardvark
    pronunciation:
        transcription: a:rdva:rk
    sense: ...
```

XML: TBD

JSON: TBD

Example 3: Pronunciation given as a sound file

NVH

```
entry: aardvark-noun
    headword: aardvark
    pronunciation:
        soundFile: aardvark.mp3
    sense: ...
```

XML: TBD

JSON: TBD

Example 4: Pronunciation given both ways

NVH

```
entry: aardvark-noun
    headword: aardvark
    pronunciation:
        transcription: a:rdva:rk
        soundFile: aardvark.mp3
    sense: ...
```

XML: TBD

JSON: TBD

Example 5: How to use `tag`

This is an entry from a hypothetical Irish dictionary for the headword "folúsghlantóir" ("vacuum cleaner"). The meaning of the various tags used in this entry is explained in the `tag` objects.

NVH

```
entry: folúsghlantóir-n
    headword: folúsghlantóir
    partOfSpeech: n-masc
    inflectedForm: folúsghlantóra
        inflectedTag: sg-gen
    inflectedForm: folúsghlantóirí
        inflectedTag: pl
    sense: ...

tag: n-masc
    description: noun, masculine
    target: partOfSpeech
tag: n-fem
    description: noun, feminine
    target: partOfSpeech

tag: sg-gen
    description: singular genitive
    target: inflectedTag
    partOfSpeechConstraint: n-masc
    partOfSpeechConstraint: n-fem
```

```
tag: pl
    description: plural
    target: inflectedTag
    partOfSpeechConstraint: n-masc
    partOfSpeechConstraint: n-fem
```

XML: TBD

JSON: TBD

Example 6: Mapping `tag` to external inventories

This shows how to map the value of a tag such as `n-masc` and `n-fem` to items in an external inventory such as LexInfo.

NVH

```
tag: n-masc
    description: noun, masculine
    target: partOfSpeech
    sameAs: http://www.lexinfo.net/ontology/3.0/lexinfo#noun
    sameAs: http://www.lexinfo.net/ontology/3.0/lexinfo#masculine
tag: n-fem
    description: noun, feminine
    target: partOfSpeech
    sameAs: http://www.lexinfo.net/ontology/3.0/lexinfo#noun
    sameAs: http://www.lexinfo.net/ontology/3.0/lexinfo#feminine
```

XML: TBD

JSON: TBD

Example 7: Defining a bilingual lexicographic resource

This defines a lexicographic resource where the source language is German and the translation language is English and the English translations are going to come with pronunciation transcriptions in English IPA.

NVH

```
lexicographicResource: deueng
    description: My German-English Dictionary
    language: de
    translationLanguage: en
```

XML: TBD

JSON: TBD

Example 8: How to use `headwordTranslation`

This is an entry from a hypothetical English-German dictionary for English-speaking learners of German.

NVH

```
entry: doctor-n
    headword: doctor
    sense: doctor-n-1
        indicator: medical doctor
        headwordTranslation: Arzt
            partOfSpeech: n-masc
        headwordTranslation: Ärztin
            partOfSpeech: n-fem
    sense: doctor-n-2
        indicator: academic title
        headwordTranslation: Doktor
            partOfSpeech: n-masc
        headwordTranslation: Doktorin
            partOfSpeech: n-fem
            label: rare
```

XML: TBD

JSON: TBD

Example 9: How to use `headwordExplanation`

NVH

```
entry: treppenwitz
    headword: Treppenwitz
    partOfSpeech: n-masc
    sense: treppenwitz-1
        headwordExplanation: belated realisation of what one could have said
        headwordTranslation: staircase wit
```

XML: TBD

JSON: TBD

Example 10: Defining a multilingual lexicographic resource

This defines a lexicographic resource where the source language is Irish and the translation languages are English, German and Czech.

NVH

```
lexicographicResource: irish-multilingual
    description: My Irish-Multilingual Dictionary
    language: ga
    translationLanguage: en
    translationLanguage: de
    translationLanguage: cs
```

XML: TBD

JSON: TBD

Example 11: How to use `headwordTranslation` in a multilingual lexicographic resource

This is an entry from a hypothetical Irish-multilingual dictionary.

NVH

```
entry: fómhar-n
    headword: fómhar
    partOfSpeech: n-masc
    inflectedForm: fómhair
        inflectedTag: genitive-case
    sense: fómhar-n-1
        headwordTranslation: autumn
            language: en
        headwordTranslation: fall
            language: en
        headwordTranslation: Herbst
            language: de
        headwordTranslation: podzim
            language: cs
```

```
    sense: fómhar-n-2
        headwordTranslation: harvest
            language: en
        headwordTranslation: Ernte
            language: de
        headwordTranslation: sklizeň
            language: cs
```

XML: TBD

JSON: TBD

Example 12: Modelling parts and wholes

We have three entries with one sense each: "glasses", "microscope" and "lens". We want to represent the fact that "lens" is a meronym of both "glasses" and "microscope", and simultanously that "glasses" and "microscope" are both holonyms of "lens".

NVH

```
lexicographicResource:
    language: en

    entry: glasses
        headword: glasses
        sense: glasses-1
            definition: an optical seeing aid
    entry: microscope
        headword: microscope
        sense: microscope-1
            definition: equipment for looking at very small things
    entry: lens
        headword: lens
        sense: lens-1
            definition: curved glass that makes things seem bigger

    relation: meronymy
        member: glasses-1
            role: whole
        member: lens-1
            role: part
    relation: meronymy
        member: microscrope-1
            role: whole
```

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```
        member: lens-1
            role: part

    relationType: meronomy
        description: used for modelling part-whole relationships
        memberRole: whole
            description: the whole
            memberType: sense
            min: 1
            max: 1
            action: navigate
        memberRole: part
            description: the part
            memberType: sense
            min: 1
            max: 1
            action: navigate
```

XML: TBD

JSON: TBD

Suggested rendering of the entry "lens" for human users:

lens

- curved glass that makes things seem bigger
  things that contain lens: **glasses**, **microscope**

Example 13: Modelling antonyms

We have two entries for the verbs "buy" and "sell" with one sense each. We want to express the fact that the senses are antonyms.

NVH

```
lexicographicResource:
    language: en
    entry: buy
        headword: buy
        sense: buy-1
            definition: get something by paying money for it
    entry: sell
        headword: sell
        sense: see-1
```

```
                  definition: exchange something for money

      relation: ants
          member: buy-1
          member: sell-1

      relationType: ants
          description: antonyms
          memberRole:
              memberType: sense
              min: 2
              max: 2
              action: navigate
```

XML: TBD

JSON: TBD

Suggested rendering of the entry "buy" for human users:

> **buy**
>
> - get something by paying money for it
>   *opposite meaning:* **sell**

Example 14: Modelling synonyms

We have three German entries with one sense each, two which mean "sea" and one which means "ocean". We want to set up a relation which brings these three sense together as near-synonyms.

NVH

```
lexicographicResource:
    language: de
    translationLanguage: en

    entry: die-see
        headword: See
        partOfSpeech: n-fem
        sense: die-see-1
            headwordTranslation: see

    entry: das-meer
        headword: Meer
```

```
        partOfSpeech: n-neut
        sense: das-meer-1
            headwordTranslation: see

    entry: der-ozean
        headword: Ozean
        partOfSpeech: n-masc
        sense: der-ozean-1
            translation: ocean

    relation: syns
        description: words that mean sea and ocean
        member: die-see-1
        member: das-meer-1
        member: der-ozean-1

    relationType: syns
        description: synonyms and near synonyms
        memberRole:
            memberType: sense
            min: 2
            action: navigate
```

XML: TBD

JSON: TBD

Suggested rendering of the entry "See" for human users:

> **See** *feminine noun*
>
> - sea
>   *same or similar meaning:* **Meer**, **Ozean**

Example 15: Modelling variants

We have two entries in our lexicographic resource, one for the headword "colour" and one for the headword "color". We want to create a relation to represent the fact that these are spelling variants.

NVH

```
lexicographicResource:
    language: en
    entry: colour
```

```
    headword: colour
    partOfSpeech: n
    label: europeanSpelling
    sense: colour-1
        definition: red, blue, yellow etc.
        example: What is your favourite colour?
entry: color
    headword: color
    partOfSpeech: n
    label: americanSpelling

relation: vars
    member: colour
    member: color

relationType: vars
    description: variants, words which differ only in spelling
    memberRole:
        memberType: entry
        min: 2
        action: navigate
```

XML: TBD

JSON: TBD

Suggested rendering of the entry "colour" for human users:

colour *noun, European spelling*

- red, blue, yellow etc.
  What is your favourite colour?

see also: color

Example 16: Modelling subsenses

We have an entry for the noun "colour" with four senses. We want to express the fact that senses number two and three are subsenses of sense number one, and should be displayed as such to human users.

NVH

```
lexicographicResource:
    language: en

    entry: colour
        headword: colour
            sense: colour-1
                definition: red, blue, yellow etc.
                example: What is your favourite colour?
            sense: colour-2
                definition: not being black and white
                example: Back then owning a colour TV meant you were rich.
            sense: colour-3
                definition: a sign of a person's race
                example: We welcome people of all creeds and colours.
            sense: colour-4
                definition: interest or excitement
                example: Examples add colour to your writing.

    relation: subsensing
        member: colour-1
            role: supersense
        member: colour-2
            role: subsense
    relation: subsensing
        member: colour-1
            role: supersense
        member: colour-3
            role: subsense

    relationType: subsensing
        description: expresses the fact that a sense is a subsense of another sense
        scope: sameEntry
        memberRole: supersense
            memberType: sense
            min: 1
            max: 1
            action: none
        memberRole: subsense
            memberType: sense
            min: 1
            max: 1
            action: embed
```

XML: TBD

JSON: TBD

Suggested rendering of the entry for human users:

colour

1. red, blue, yellow etc.
   What is your favourite colour?
     a. not being black and white
        Back then owning a colour TV meant you were rich.
     b. a sign of a person's race
        We welcome people of all creeds and colours.
2. interest or excitement
   Examples add colour to your writing.

Example 17: Modelling subentries (at subsense level)

We have an entry for the adjective "safe" with two senses, and an entry for the multi-word expression "better safe than sorry" with one sense. We want to express the fact that the multi-word entry should appear under the first sense of "safe" as a subentry.

NVH

```
lexicographicResource:
    language: en

    entry: safe
        headword: safe
        sense: safe-1
            indicator: protected from harm
            example: It isn't safe to park here.
        sense: safe-2
            indicator: not likely to cause harm
            example: Is the ride safe for a small child?

    entry: better-safe
        headword: better safe than sorry
        sense:
            definition: you should be careful even if it seems unnecessary

    relation: subentrying
        membership: safe-2
            role: container
        membership: better-safe
```

```
            role: subentry

    relationType: subentrying
        scope: sameResource
        memberRole: container
            memberType: sense
            min: 1
            max: 1
            action: navigate
        memberRole: subentry
            memberType: entry
            min: 1
            max: 1
            action: embed
```

XML: TBD

JSON: TBD

Suggested rendering of the entry "safe" for human users:

> **safe**
>
> 1. protected from harm: *It isn't safe to park here.*
>   - **better safe than sorry** you should be careful even if it seems unnecessary
> 2. not likely to cause harm: *Is the ride safe for a small child?*

Suggested rendering of the entry "better safe than sorry" for human users:

> **better safe than sorry**
>
> - you should be careful even if it seems unnecessary
>
> see also: safe

Example 18: Modelling subentries (at sense level)

We have an entry for the word "bible" and another entry for the expression "the Bible". We want to make sure that, when a human user is viewing the entry for "bible", the entry for "the Bible" is shown as a subentry of it, as if it were its first sense.

NVH

```
lexicographicResource:
    language: en

    entry: the-bible
        headword: the Bible
        Sense: the-bible-1
            definition: the book considered holy by Christians

    entry: bible
        headword: bible
        sense: bible-1
        sense: bible-2
            definition: a book considered important for a subject

    relation: subentrying
        member: bible-1
            role: container
        member: the-bible
            role: subentry

    relationType: subentrying
        scope: sameResource
        memberRole: container
            memberType: sense
            min: 1
            max: 1
            action: navigate
        memberRole: subentry
            memberType: entry
            min: 1
            max: 1
            action: embed
```

XML: TBD

JSON: TBD

Suggested rendering of the entry "bible" for human users:

bible

1. **the Bible** the book considered holy by Christians
2. a book considered important for a subject

Suggested rendering of the entry "the Bible" for human users:

the Bible

- the book considered holy by Christians

see also: bible

Example 19: Using `placeholderMarker`

NVH

```
lexicographicResource:
    language: en
    entry: continue-studies
        headword: continue your studies
            placeholderMarker: your
        sense: ...
```

XML: TBD

JSON: TBD

Example 20: Using `placeholderMarker` in a bilingual lexicographic resource

NVH

```
lexicographicResource:
    language: en
    translationLanguage: de
    entry: beat-up
        headword: beat sb. up
            placeholderMarker: sb.
        sense: beat-up-1
            headwordTranslation: jemanden verprügeln
                placeholderMarker: jemanden
```

XML: TBD

JSON: TBD

Example 21: Using `headwordMarker`

NVH

```
lexicographicResource:
    language: en
    translationLanguage: cs
    entry: autopsy
        headword: autopsy
        sense: autopsy-1
            headwordTranslation: pitva
            example: The coroner performed an autopsy.
                headwordMarker: autopsy
                exampleTranslation: Koroner provedl pitvu.
                    headwordMarker: pitvu
```

XML: TBD

JSON: TBD

Example 22: Using `collocateMarker`

NVH

```
lexicographicResource:
    language: en
    translationLanguage: cs
    entry: autopsy
        headword: autopsy
        sense: autopsy-1
            headwordTranslation: pitva
            example: The coroner performed an autopsy.
                headwordMarker: autopsy
                collocateMarker: performed
                    lemma: perform
                exampleTranslation: Koroner provedl pitvu.
                    headwordMarker: pitvu
                    collocateMarker: provedl
                        lemma: provést
```

XML: TBD

JSON: TBD