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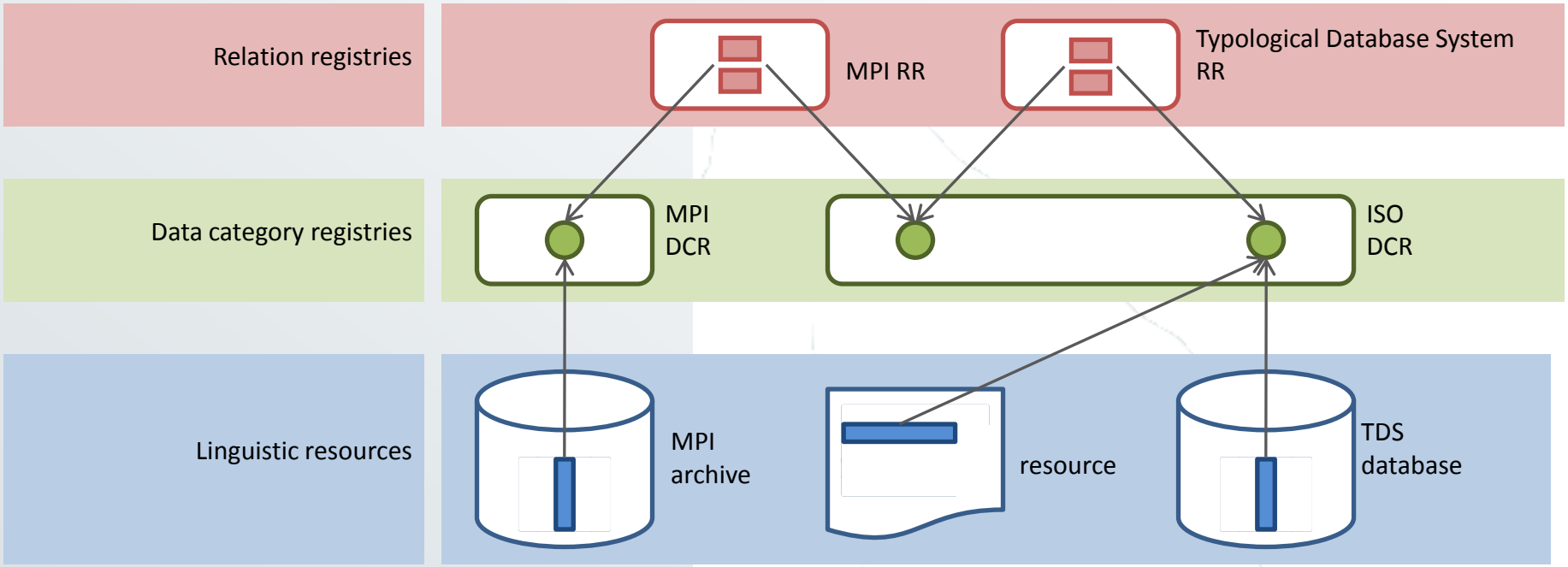
RELcat and friends

Vision


Relation registries
MPI RR
Typological Database System RR
Data category registries
MPI DCR
ISO DCR
Linguistic resources
MPI archive
resource
TDS database

How can you use a Data Category Registry?

- You can:
  - Find Data Categories relevant for your resources and embed references to them so the semantics of (parts of) your resources are made explicit
    - This can be supported by tools you use, e.g., ELAN, LEXUS and the CMDI Component Editor directly interact with ISOcat
  - Interact with Data Category owners to improve (the coverage of) their Data Categories
  - Create (together with others) new Data Categories and/or selections needed for your resources and share those
  - Submit (your) Data Categories for standardization
  - Free of charge
  - Grass roots approach

Referencing Data Categories

- Each Data Category should be uniquely identifiable
  - Ambiguity: different domains use the same term but mean different 'things'
  - Semantic rot: even in the same domain the meaning of a term changes over time
  - Persistence: for archived resources Data Category references should still be resolvable and point to the specification as it was at/close to time of creation
- Persistent IDentifiers
  - ISO 24619:2011 Language resource management -- Persistent identification and access in language technology applications
  - ISOcat uses 'cool URIs'
    - http://www.isocat.org/datcat/DC-1297 (/*grammaticalGender/*)

Where do you put these references?

- Preferably in a schema
- Or in the resource itself (redundant)
- Or in the metadata of the resource (less specific)

What is a schema?

- “comes from the Greek word "σχήμα" (skhēma), which means *shape,* or more generally, *plan*.” (wikipedia)
- A collection of building blocks and rules on how to combine them into a valid resource
  - XML document:
    - DTD, XML Schema, Relax NG, …
    - easy; see http://www.isocat.org/12620
  - Text document:
    - A grammar
      - Extended Backus–Naur Form (EBNF)
      - …
    - how to embed Data Category PIDs?
  - …

XML resource

```
<lmf:lexicon xml:lang="jp" alphabet="ipa">
   <lmf:entry>
        <lmf:lemma>
              <lmf:writtenForm>nihongo</…>
              …
        </…>
        …
   </…>
   …
</…>
```

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XML Relax NG schema

```
<rng:attribute name="alphabet"
    dcr:datcat="http://www.isocat.org/datcat/…">
  <rng:value
  dcr:datcat="http://www.isocat.org/datcat/…">
    ipa
  </…>
  …
</…>
```

ISOcat
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CGN/DCOI grammar

tag = pos '(' feat* ')‘

pos = 'N' | ' ADJ' | 'WW' | 'TW' | 'VNW' | 'LID' | 'VZ' | 'VG' | 'BW' | 'TSW'

feat = 'NTYPE' | 'GETAL' | 'GRAAD | 'GENUS | 'NAAMVAL' | 'POSITIE' | 'BUIGING | 'GETAL-N' | 'WVORM | 'PVTIJD | 'PVAGR' | 'NUMTYPE' | 'VWTYPE' | 'PDTYPE' | 'PERSOON' | 'STATUS' | 'NPAGR' | 'LWTYPE' | 'VZTYPE’ | 'CONJTYPE' | 'SPECTYPE'

NTYPE = 'soortnaam' | 'eigennaam'

GETAL = 'enkelvoud' | 'meervoud' | 'getal'

GRAAD = 'basis' | 'comparatief' | 'superlatief' | 'diminutief'

GENUS = 'genus' | 'zijdig' | 'masculien' | 'feminien' | 'onzijdig'

NAAMVAL = 'standaard' | 'nominatief' | 'oblique' | 'bijzonder' | 'genitief' | 'datief'

POSITIE = 'prenominaal' | 'nominaal' | 'postnominaal 'vrij'

BUIGING = 'zonder' | 'met-e' | 'met-s'

GETAL-N = 'zonder-n' | 'meervoud-n'

WVORM = 'persoonsvorm' | 'buigbaar' | 'innitief' | 'onvdw' | 'voltdw‘

PVTIJD = 'tegenwoordig' | 'verleden' | 'conjunctief'

PVAGR = 'enkelvoud' | 'meervoud' | 'met-t'

NUMTUPE = 'hoofdtelwoord' | 'rangtelwoord'

VWTYPE = 'pr' | 'persoonlijk' | 'reexief' | 'reciprook' | 'bezittelijk' | 'vb' | 'vragend' | 'betrekkelijk' | 'exclamatief' | 'aanwijzend' | 'onbepaald'

PDTYPE = 'pronomen' | 'adv-pronimen' | 'determiner' | 'gradeerbaar'

PERSOON = 'persoon' | '1' | '2' | '2v' | '2b' | '3' | '3p' | '3' | '3v' | '3o'

STATUS = 'vol' | 'gereduceerd' | 'nadruk'

NPAGR = 'agr' | 'evon' | 'rest' | 'evz' | 'mv' | 'agr3' | 'evmo' | 'rest3' | 'evf' | 'mv'

LWTYPE = 'bepaald' | 'onbepaald'

VZTYPE = 'initieel' | 'versmolten' | 'naal'

CONJTYPE = 'nevenschikkend' | 'onderschikkend'

SPECTYPE = 'afgebroken' | 'onverstaanbaar' | 'vreemd' | 'deeleigen' | 'meta' | 'commentaar' | 'achtergrond' | 'afkorting' | 'symbool' | 'dialect'

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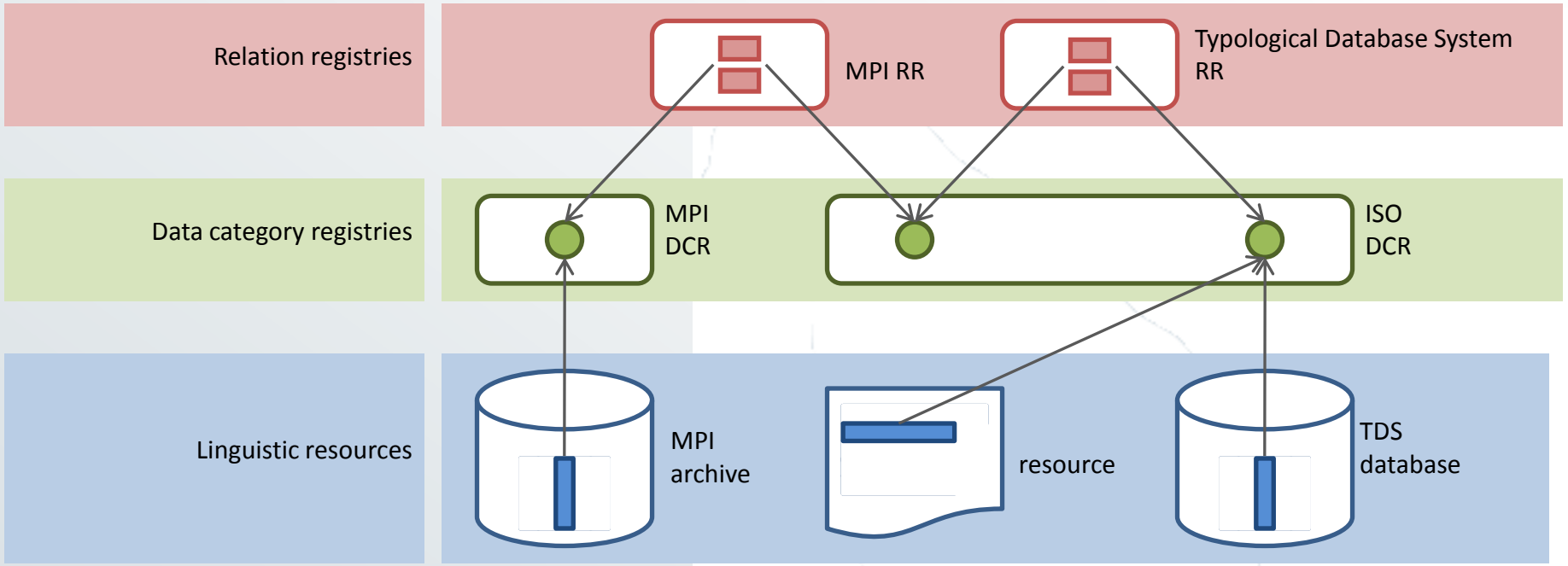
CGN/DCOI grammar with DC references

```
tag = pos '(' feat* ')'
# @datcat 'WW' http://www.isocat.org/datacat/DC-1424
# @datcat 'TW' http://www.isocat.org/datacat/DC-1334
# @datcat 'VG' http://www.isocat.org/datacat/DC-1226
# @datcat 'TSW' http://www.isocat.org/datacat/DC-2717
pos = 'N' | ' ADJ' | 'WW' | 'TW' | 'VNW' | 'LID' | 'VZ' | 'VG' | 'BW' | 'TSW'
feat = 'NTYPE' | 'GETAL' | 'GRAAD | 'GENUS | 'NAAMVAL' | 'POSITIE' | 'BUIGING | 'GETAL-N' | 'WVORM | 'PVTIJD | 'PVAGR' | 'NUMTYPE' | 'VWTYPE' | 'PDTYPE' |
      'PERSOON' | 'STATUS' | 'NPAGR' | 'LWTYPE' | 'VZTYPE' | 'CONJTYPE' | 'SPECTYPE'
NTYPE = 'soortnaam' | 'eigennaam'
GETAL = 'enkelvoud' | 'meervoud' | 'getal'
GRAAD = 'basis' | 'comparatief' | 'superlatief' | 'diminutief'
GENUS = 'genus' | 'zijdig' | 'masculien' | 'feminien' | 'onzijdig'
NAAMVAL = 'standaard' | 'nominatief' | 'oblique' | 'bijzonder' | 'genitief' | 'datief'
POSITIE = 'prenominaal' | 'nominaal' | 'postnominaal 'vrij'
BUIGING = 'zonder' | 'met-e' | 'met-s'
GETAL-N = 'zonder-n' | 'meervoud-n'
WVORM = 'persoonsvorm' | 'buigbaar' | 'innitief' | 'onvdw' | 'voltdw'
# @datcat PVTIJD http://www.isocat.org/datacat/DC-1286
# @datcat 'verleden' http://www.isocat.ord/datacat/DC-1347
# @datcat 'conjunctie' http://www.isocat.ord/datacat/DC-1843
PVTIJD = 'tegenwoordig' | 'verleden' | 'conjunctief'
PVAGR = 'enkelvoud' | 'meervoud' | 'met-t'
NUMTUPE = 'hoofdtelwoord' | 'rangtelwoord'
VWTYPE = 'pr' | 'persoonlijk' | 'reexief' | 'reciprook' | 'bezittelijk' | 'vb' | 'vragend' | 'betrekkelijk' | 'exclamatief' | 'aanwijzend' | 'onbepaald'
PDTYPE = 'pronomen' | 'adv-pronimen' | 'determiner' | 'gradeerbaar'
PERSOON = 'persoon' | '1' | '2' | '2v' | '2b' | '3' | '3p' | '3' | '3v' | '3o'
STATUS = 'vol' | 'gereduceerd' | 'nadruk'
NPAGR = 'agr' | 'evon' | 'rest' | 'evz' | 'mv' | 'agr3' | 'evmo' | 'rest3' | 'evf' | 'mv'
LWTYPE = 'bepaald' | 'onbepaald'
VZTYPE = 'initieel' | 'versmolten' | 'naal'
CONJTYPE = 'nevenschikkend' | 'onderschikkend'
SPECTYPE = 'afgebroken' | 'onverstaanbaar' | 'vreemd' | 'deeleigen' | 'meta' | 'commentaar' | 'achtergrond' | 'afkorting' | 'symbool' | 'dialect'
```

Or use:

- an XML representation for the schema
- an XML schema for an XML representation of the content

Vision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Multiple DCRs?

- Actually we don't need multiple DCRs to have overlapping subsets
  - Overlaps are created due to
    - Data categories are typed, and might not have the type you need
    - External sets are imported just as they are
      - NKJP, GOLD, STTS, MDF, …
      - Only some take the effort to also provide mappings
    - There might be very fine differences between your data category and an existing one, and the owner doesn't want to adapt
- Still we would like to know that these data categories are the same or almost the same

Which data category types?

- TDGs give DC types based on some reference model:
  - Metadata: CMDI
  - Morphosyntax: LMF
  - Terminology: TBX
  - *POS field (closed DC) of the lexical entry "walk" gets the value 'verb' (simple DC)*
    - *PoS = 'verb'*
- If the DC type doesn't fit your needs:
  - *Verb (open DC) feature of a feature structure gets the value "walk"*
    - *Verb = 'walk'*
  - Unfortunately the DCR data model hasn't facilities yet to share a semantic core between various types
  - Create your own and add a sameAs relationship to RELcat

Relation Registry - RELcat

- The Relation Registry is basically a triple store:
  - Subject: resource 1
  - Predicate: relationship
  - Object: resource 2
- Example:

  # */first plural exclusive vernacular/* is-a */vernacular/*

  isocat:DC-1234 rel:subClassOf isocat:DC-4 .

  # */first person/* part-of */first plural exclusive vernacular/*

  isocat:DC-1 rel:partOf isocat:DC-1234 .

  # */plural/* part-of */first plural exclusive vernacular/*

  isocat:DC-2 rel:partOf isocat:DC-1234 .

  # */exclusive/* part-of */first plural exclusive vernacular/*

  isocat:DC-3 rel:partOf isocat:DC-1234 .

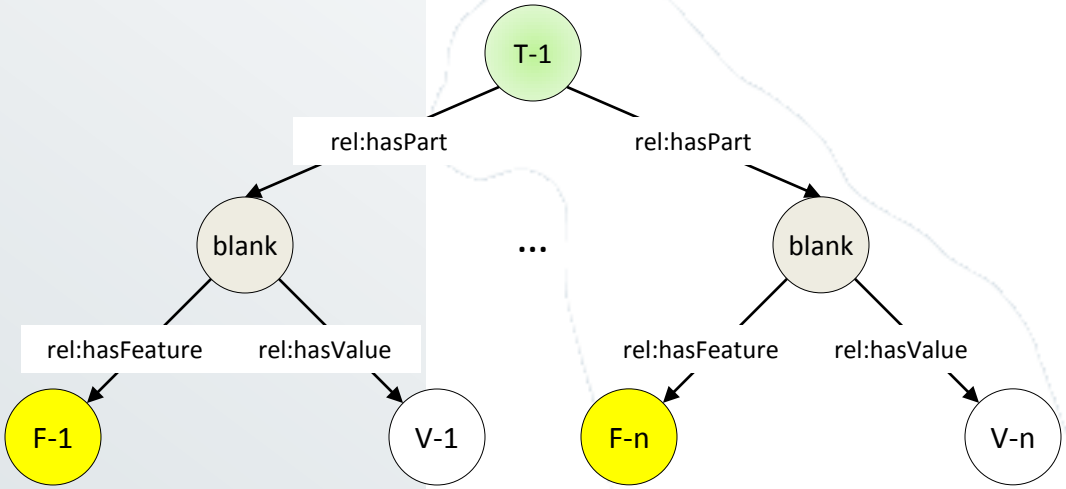
Relation type taxonomy

- rel:related
  - rel:sameAs (symmetric)
  - rel:almostSameAs (symmetric)
  - rel:narrower (inverse of rel:broader)
    - rel:superClassOf (inverse of rel:subClassOf)
  - rel:broader (inverse of rel:narrower)
    - rel:subClassOf (inverse of rel:superClassOf)
    - rel:partOf
      - rel:directPartOf
      - rel:indirectPartOf

Extensible taxonomy inspired by OWL and SKOS, which other relation types might be needed or other standard sets should be included?

! To cover *n*-ary relationships more advanced RDF constructs are probably needed.

n-ary relationships



RELcat status

- A first alpha version is running on the ISOcat test server
  - Only a web services interface, i.e., no user interface yet
  - Import of sets relations done by the system administrator
  - Initial sets are imported to support the CMDI semantic search
    - http://lux13.mpi.nl/relcat/rest/set/dc
    - http://lux13.mpi.nl/relcat/rest/set/cmdi
      - http://lux13.mpi.nl/relcat/rest/set/cmdi/relations?relation=sameAs&resource=dc:language
- For now your relations can be send to the system administrator in a simple spreadsheet with three columns
  - Subject Data Category
  - Relationship (see previous slide or suggest a new one)
  - Object Data Category

A new kitten: SCHEMAcat

- Resource schema's should be stored somewhere persistently
  - Get a PID, i.e., a handle
- These schema's can/should be annotated with data categories
  - SCHEMAcat → ISOcat
- These data categories will have (typed) relationships among eachother
  - SCHEMAcat → RELcat

Schema types

- SCHEMAcat should support any schema format
  - XML:
    - XML Schema
    - Relax NG
    - DTD
    - …
  - Text (how?):
    - EBNF
    - …
  - …

XML Relax NG schema

```
<rng:attribute name="alphabet"
    dcr:datcat="http://www.isocat.org/datcat/…">
  <rng:value
  dcr:datcat="http://www.isocat.org/datcat/…">
    ipa
  </…>
  …
</…>
```

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www.isocat.org

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```

SCHEMAcat status

- In preparation …

ISOcat
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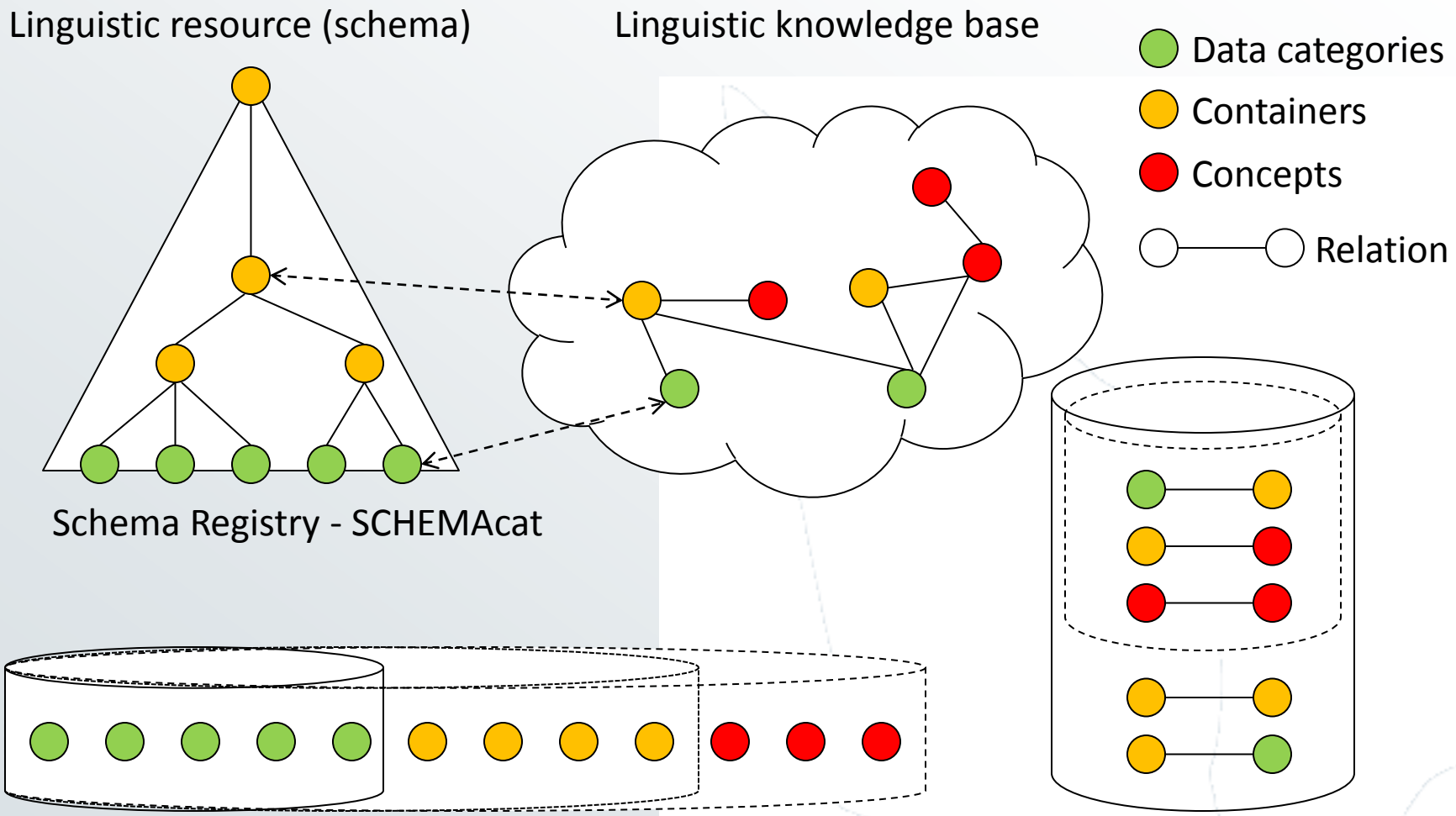
A whole litter!



ISOcat status

- Standardization is slowly taking off
  - The Metadata TDG is starting next week
  - Terminology is planning the same
  - Their workflow and progress will be reported on the TC37 plenary and will hopefully spark some action of the other TDGs
- ISOcat keeps improving in general, although development effort should be moving more towards RELcat and SCHEMAcat …