Data Modeling and Data Categories for Terminology Management

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Terminology Management

■There is unfortunately no cure for terminology; you can only hope to manage it.

(Kelly Washbourne)





Overview

- Data modelling principles
 - 1) Concept orientation
 - 2) Data categories (datcat)
 - 3) Term autonomy & datcat repeatability
 - 4) Elementarity
 - 5) Dependencies (combinability)
 - 6) Data modelling variance
 - 7) Granularity
 - 8) Shared resources



2) Data Categories

- **♯** Prior to computerization, data categories were not discussed in detail in terminology theory.
- Initial approaches to data categories involved describing "fields" in paper forms for recording terminological data offline.

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2) Data Categories

Fachgebiet(e)			Sprache
Teilbestand	Projektcode	Notation	Klassifikations schlüssel
Benennung		, ,	Quelle
(Kurzformen, A	bkürzungen, ortho	graphische Varian	ten) Grammatische Angaben
Definition(en)			Quelle(n)
Kontext(c)			Quelle(n)
Bemerkungen			
Synonyme (falls Angabe der Que	nicht als separater	Eintrag, dann mit	Quelle(n)
Erfacear Datu	n Bearbeiter - Dat	um	Eintragsklasse

TEAM-Datenbank / TermPC

- Eintragsadresse • 00
- 01
- 02
- 03 Qualitätskennung
- Zeitpunkt der Eingabe • 05 Bestandskennung
- Fachgebietskennung
- **→** 07 frei
- e 08 frei
- 09 frei
- **Deutscher Terminus**
- Wortart
- Quellenangaben
- 13 frei
- Definition
- Kontextbeispiele
- - Quasisynonyme, Schlagwörter
- Sachgebietsangabe
- 20 29 Sprachblock Englisch
- Sprachblock Französisch
- Sprachblock Spanisch
- 50 59 Sprachblock Katalanisch / Russisch
- 60 69 Sprachblock Italienisch
- 70 79 Sprachblock Portugisisch
- · 80 89 Sprachblock Niederländisch

Paper Fiche

Fachgebiet(e) S			Compacha
Subject field			Sprache Language
Teilbestand	Projektcode	Notation	Klassifikations-
Suboot			schlüssel
Subset	Project code	Notation	Classification code
Benennung Term			Quelle Source
(Kurzformen, Abk	ürzungen, orthogra	phische Varianten)	Grammatische
Short forms, abbreviations, orthographic variants			Angaben Grammar
Definition(en)			Quelle(n)
Definition			Source
Kontext(e)		Quelle(n)	
Contexts		Source	
Bemerkungen			
Comments (note)			
Synonyme (falls nicht als separater Eintrag, dann mit			Quelle(n)
Angabe der Quelle) Synonyms		Source	
Erfasser – Datum Creator/Date	Bearbeiter - Datum	Editor/Date	Eintragsklasse Entry Class

Packaging Data

■ Model for visualizing information

- An amorphous flow of undifferentiated "stuff"
- An aggregate of individual elements (little packages, components) that can be identified, delimited, organized (modeled), stored, retrieved, manipulated, and reused
- Stuff people can figure out if they think about it
- Stuff a computer program can automatically recognize and process



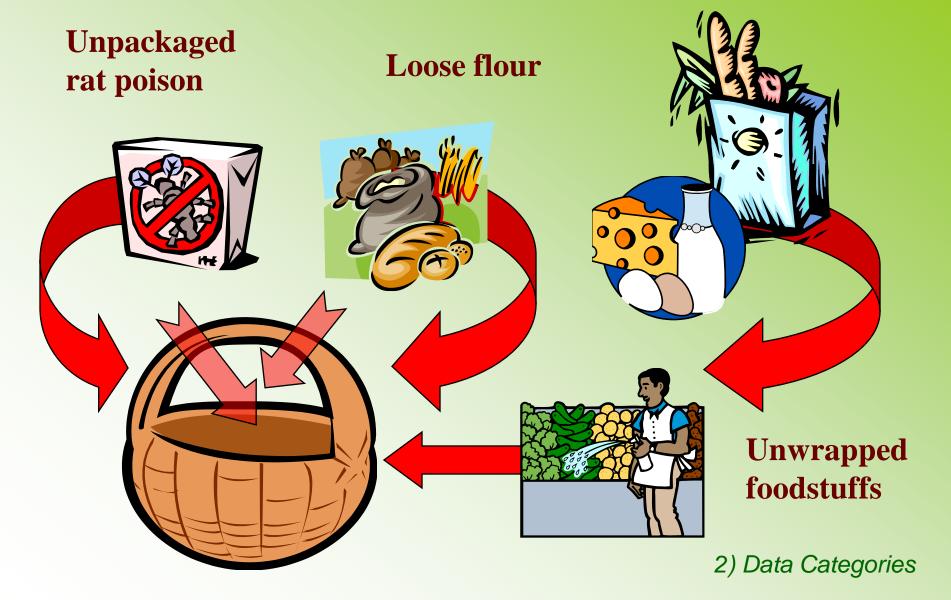
The Shopping Basket Model

- #A shopping basket is a container to put stuff in.
- The stuff in the basket can be tossed in loose without packaging.
- **■** Stuff gets lost.
- #Stuff gets mixed up.





Bulk Product Loading



Packaging Stuff

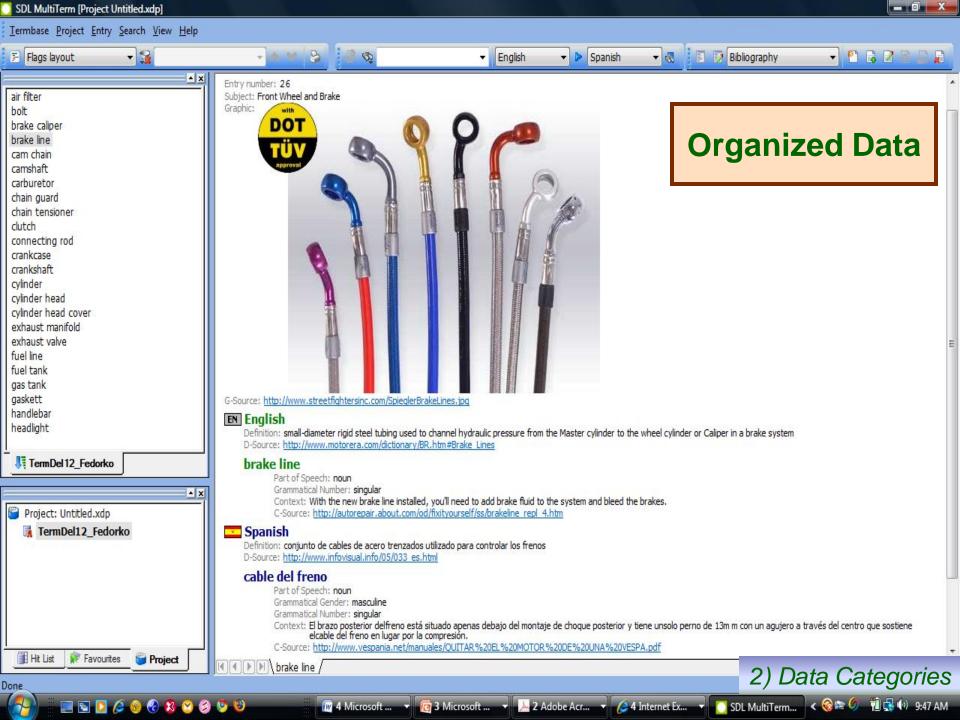
- ★ Keeps products clean and uncontaminated
- Makes them easy to identify
- Makes them easy to store







03.02.1997 - 18:16:50 Walther 25.01.2000 - 18:56:54 Wright 34 Network management alias 97/02/10 -10:29:28 Walther 97/02/10 - 10:29:28 Walther noun Main Entry Term shorter form of a long name, such as an email address, a directory, or a command Fahey: 7 Actually, all text-type addresses, long or short, are aliases of the IP address which is numerical only. Fahey: 7 Aliases in real-time chat are usually referred to as nicknames and handles nickname noun Synonym When you start an IRC session, you specify a nickname, up to nine characters, which you can also change at any time. Osborne94: 413 handle noun The nickname you assign yourself when conversing in discussion groups. Falcón: 94 Use only in colloquial situations. alias noun m un nombre corto o apodo que se utiliza para enviar mensajes a aquellas direcciones de uso más frecuente. alias representa a un grupo de pe: Unpackaged Data que se envía un correo a un alias todo el grupo de personas que lo rorman. Carpallary4:



TC 37 Definitions

- **♯** Data elements and categories are strictly defined.
- #data element
 - unit of data that in a certain context is considered indivisible
 - one unit of information in a data entry
- #data category / data element type result of the specification of a given data field



Specifying the Data Category

- # /term/ is a data category
- // xml:lang/ (xml language representation) is a data category
- We specify what /term/ is with a definition: verbal designation of a general concept in a specific subject field
- ■ We can also constrain the /term/ category: terms are reported as plain text and not as graphics or numbers (although a number can be used as a term).
- We use the word *constrain* to mean that we limit what the something can do.



Kinds of Data Categories

- **#** complex data category (MultiTerm: index, text, picklist)
 - data category that has content of some sort
- open data category (MultiTerm: index, text)
 - complex data category whose conceptual domain is not restricted to a set of values (non-enumerated CD)
- - complex data category whose conceptual domain is restricted to a set of identified simple data categories making up its value domain (enumerated conceptual domain)
- **■** simple data category (MultiTerm: picklist value)
 - data category with no conceptual domain; a member of a value domain



Data Categories

#open data category

- complex data category whose content (conceptual domain) is not restricted to a set of values (non-enumerated conceptual domain)
- Sexample: /term/, /definition/, /note/
- Open data categories are still constrained by their specifications and definitions.
 - Only a term should go in a term field.
 - Only a definition should go in a definition field
 - But no one can say precisely what terms or definitions there are



Sample Open Data Category

- **■** Data categories can be combined:
 - term = a term in English
 - An instance of a data category is a data element.
- **#en:term=external collateral ligament** is an individual data element.
- **#en:term=fibular collateral ligament** is an another individual data element.



Picklists: Closed Data Categories

- #/grammatical gender/ is a data category
- #/grammatical gender/ has defined values:
 - **masculine**
 - **\$feminine**
 - ⇔neuter
 - **⇔other**
- m/f/n/o are also called *picklist values*, permissible values or permissible instances.



Permissible Values

- **■** Together, permissible values comprise a value domain.
- No other values are allowed unless a change is made in the system.
- ☐ Terminologists sometimes call these values simple data categories. They are values, but they do not themselves have dependent values.
- **■** Each has its own *value meaning*.



Data-Element Related Features

- Data Element Autonomy (repeatability)
 - Elementarity of data elements
 - Dependency (combinability)
- Data Modeling Variance
 - **Elementarity**
 - **Granularity**
- **Shared Resources**
- - **Standards**





Constrained Data Categories

- **♯** Some data categories can hold only certain kinds of data.
 - Example: We can create a data category called *Graphic* and set the data type of that datcat to *Media*
 - Example: We can create a data category called *Date* and set the data type of the datcat to *Date*

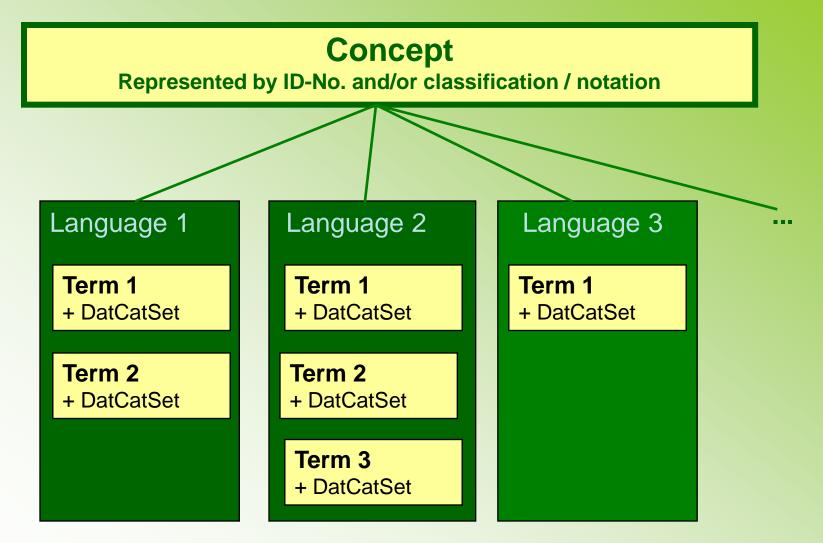


Term Autonomy & Repeatability

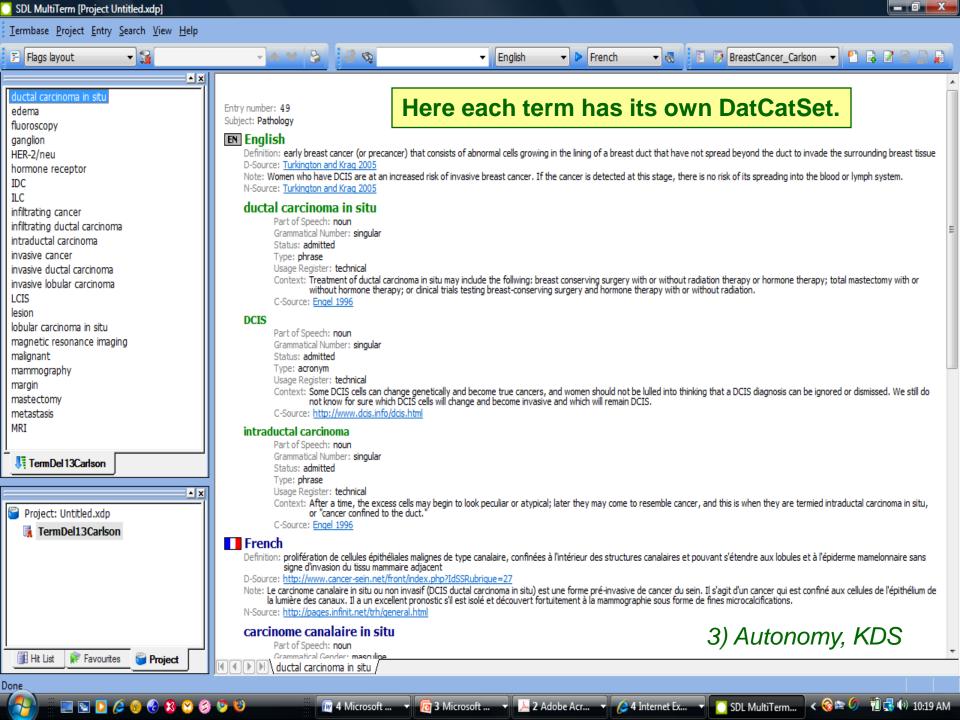
- #All terms should be managed as autonomous (repeatable) blocks of data categories without any preference for a specific term
 - Each term documented with the relevant term-related data categories
 - Term autonomy applicable for preferred term, synonyms, variants, & short forms
 - Term autonomy not explicitly discussed in other theoretical literature

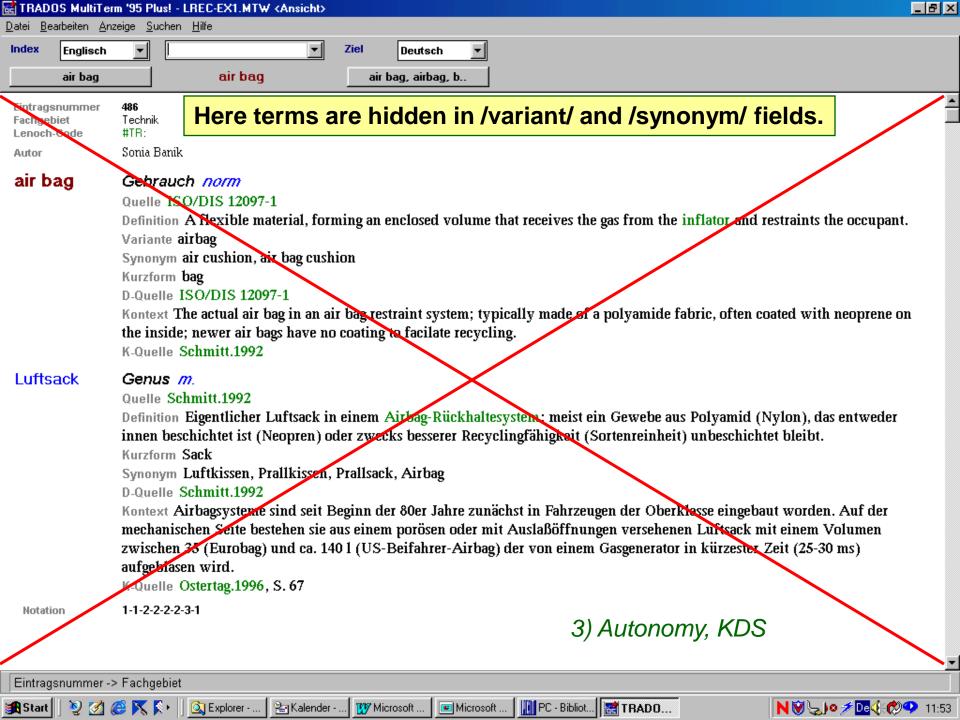


Term Autonomy





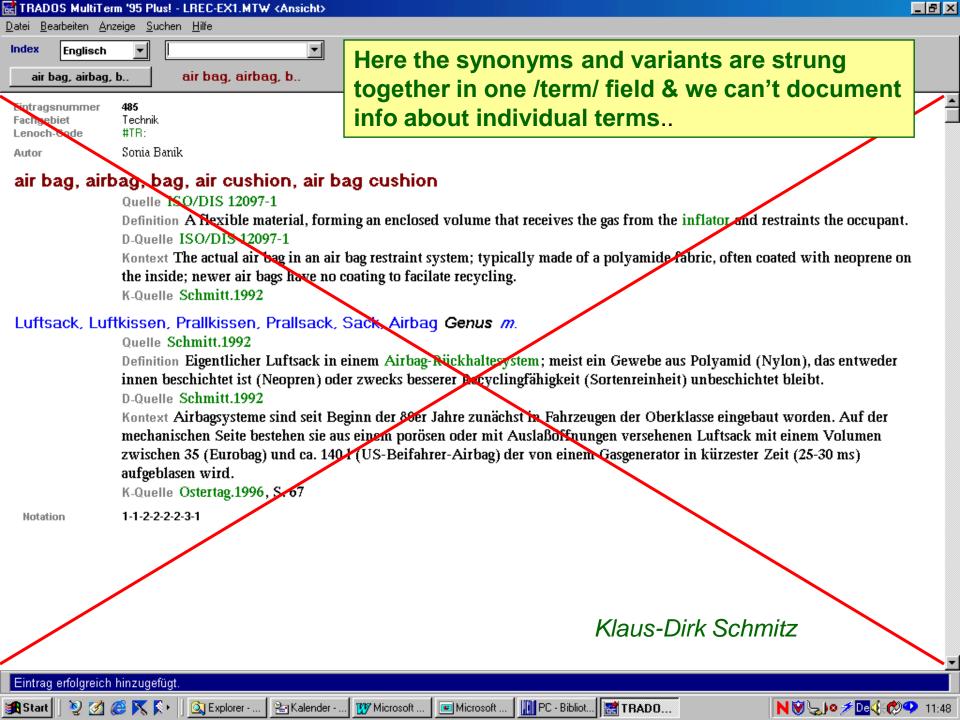




Embedded or Hidden Terms

- #en:term=external collateral ligament
- #definition=ligament that bla bla bla ...
- **#note**=bla,bla, bla, also sometimes called the "fibular collateral ligament".
- **♯** Problem:
 - You can't look up the buried term.
 - Use It doesn't become part of any concept system.
 - ♦ It ends up in a /note/ element instead of a /term/ element.





Data Element Elementarity

♯Only one of a *thing* can occupy a data element

e.g., only one term in a term field

■Only one *kind of thing* can occupy a data element

be.g., no terms or synonyms listed as such in definition fields



Common Elementarity Errors (1)

Error:

term = United Nations (UN)

Correct:

term = United Nations
term type = full form
en:term = UN
term type = acronym

■ Combinability enables us to identify individual units of content: /term/ combines here with /term type/.



Common Elementarity Errors (2)

Error:

♦ definition = international organization that ... (Merriam Webster, 10th. Edition 2004, p. 256)

Correct:

- ⇔ definition = international organization that ... source = Webster2005, p. 256
- Webster2005 points to a shared resource (bibliographical entry)



Modelling Dependencies (Combinability)

- Dependencies between data categories
- ISO 12620:1999 provides a "simple hierarchy" of data categories
 - ⇔ grammar = term-related:
 grammar is dependent upon term

■ Other dependencies

- source is dependent upon definition
- \$ for additional definitions, additional sources are needed
- Individual source indicated for different items (term, definition, context, etc.)



Granularity

- The degree of detail that can be achieved by using the available data fields (data categories) to document terminological information
- **♯** Low granularity:

\$\textit{Ex: /grammar/ m,n,s (masculine noun singular)}

High granularity

\$\part of speech\ = noun

\$\grammatical gender\ = masculine

⇔/number/ = singular





Granularity

- **♯** Disadvantage: more work
- **♯**Best practices:
 - General agreements on what constitutes an acceptable level of effort in order to achieve a desired level of granularity makes it easier to share data.
 - How can you automatically convert low granularity to high granularity?



Minimum Granularity

Data Element	Content
Name	John Doe
Address	267 Prospect Street Kent, Ohio 44240



Increased Granularity

Data Element	Content
Last name	Doe
First name	John
Street address	345 North Prospect St.
City	Kent
State	Ohio
Zip Code	44240



Power of Granularity

- #/zip code/ (postal code) can be searched and manipulated
- Sorting by postal code makes mail delivery more efficient & saves money.
- ★ Know ahead of time what you want to do with your data when deciding on granularity.



Elemental Nature of Data Elements (Violation)

Data Element	Content
Last name	Doe
First name	John and Jane
Street address	345 North Prospect St.
City	Kent
State	Ohio
Zip Code	44240



Shared Resources

Index	Oxford1990
Editor1	Fowler, H.W.
Editor2	Fowler, F.G.
Editor3	Allen, R.E.
Location	Oxford
Press	Clarendon
Year	1990

Entry 1

Source ID: Oxford1990

Entry 2

Source ID: Oxford1990

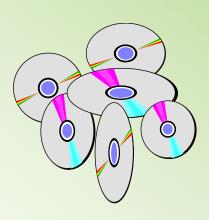


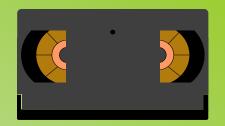


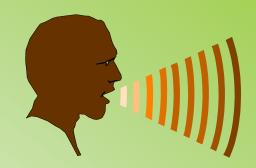
Shared Resources

- **#** Graphics
- **#** Charts
- # Audio
- **#** Video
- **♯** Drawings
- **■** Disk Archives
- Responsibility Records









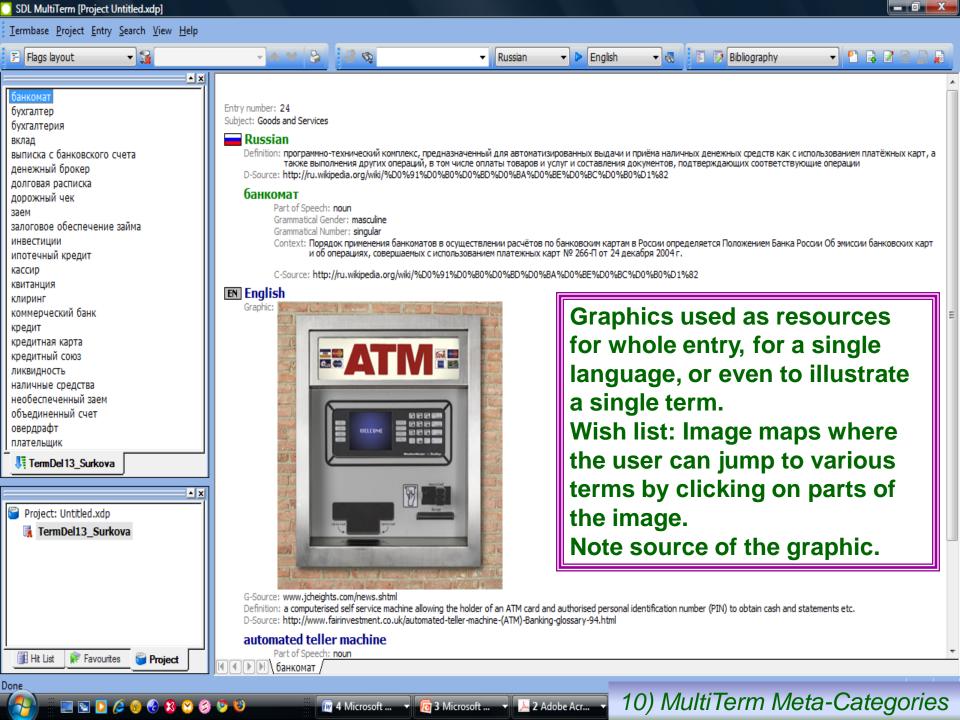




Advantages of Shared Resources

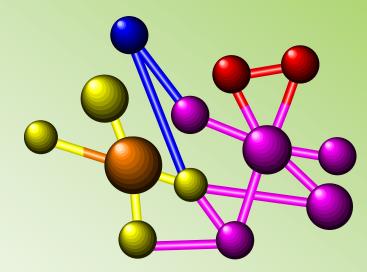
- Data category configured as a link or with a link
- **Shared items stored only once**
- **Multiple references linked to same resource**
- **Change or update only one file or entry**
- **♯** File formats (images, audio, etc.) preserved externally and objects linked
- **Terminology files of manageable in size**





Term Type

- **Main entry term**
- #Synonym
- **Abbreviation**
- #Full form
- **■** Variant
- # Phrase
- **#**Collocation

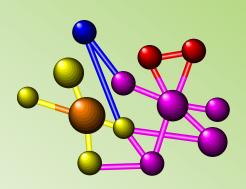




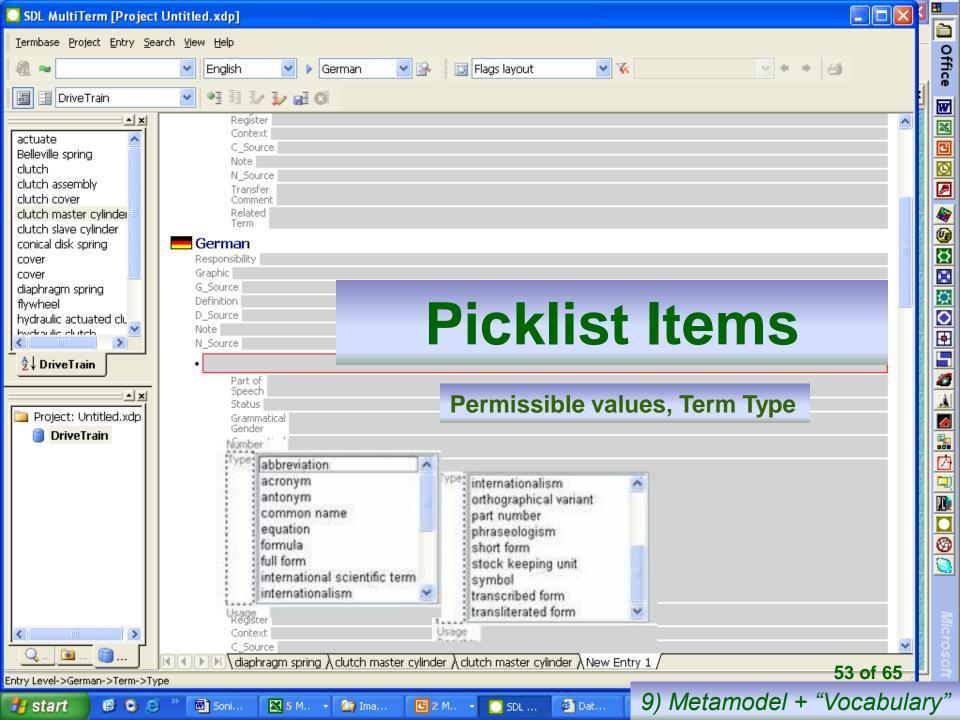
Term-Related DatCats

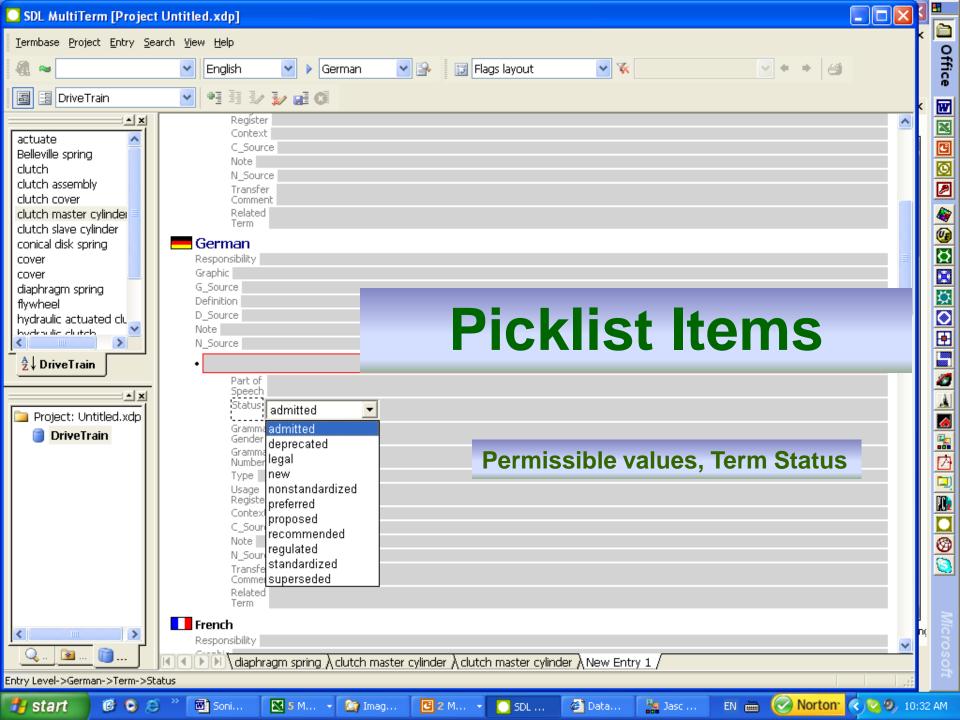
Term

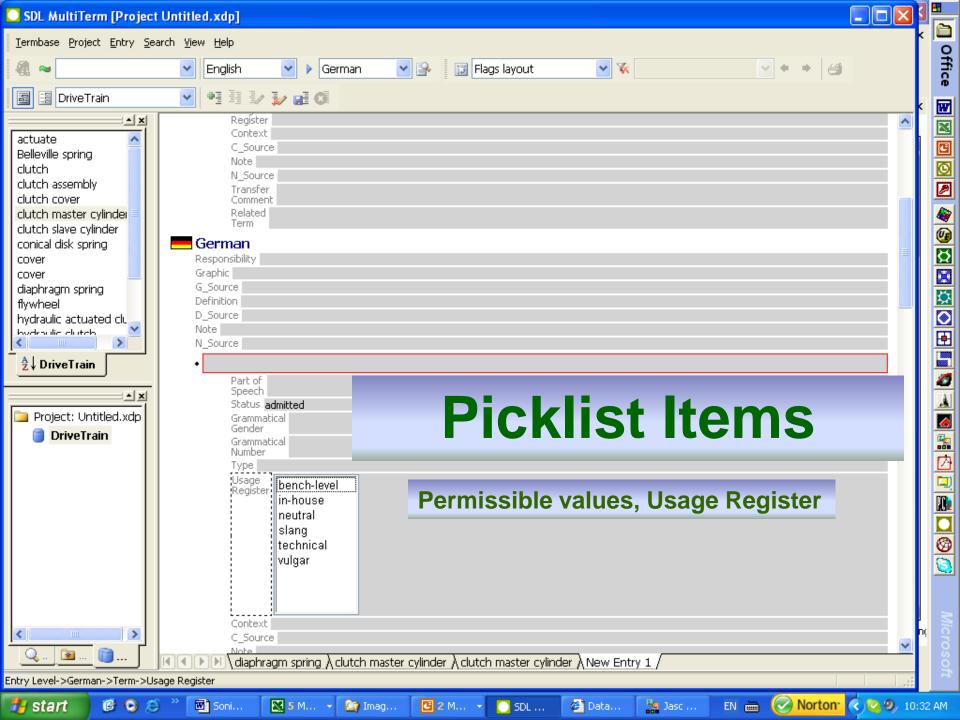
- ♦ Part of speech
- Grammatical number (use when necessary)
 - Plural form
- Term type (Type) (see next slide)
- **♥** Status
- ♦ Regional label
- **Pronunciation**
- Register (usage register)











Definition-Related Info

Definition

Source ID

(Points to shared resources)

♦ Definition type

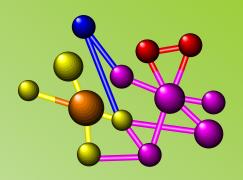
Translation?



Concept (one def for all languages)

\$Language (one def for each language)

Term (one def for each term in descriptive work)



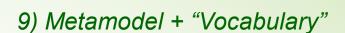


Context-Related Info

Context

- Source ID
 - (Points to shared resources)
- ⇔Context type
 - Translation?
- ⇔ Both term and concept-related
- Always associated at the term-level, never at lang or concept level





Administrative Information

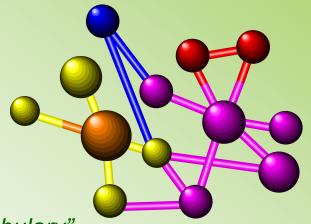
Administrative info

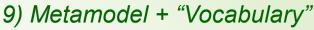
- Responsibility
- Date
- Authorization
- Role
- Various sorting subsets
 - Business unit
 - Customer
 - Computing environment
 - Product class, etc.
- Applicable at multiple levels



Other Data Categories

- **♯** Concept relations
- **♯** Notes
- **#** Other administrative information
- **#**Bibliographical information
- **■** Special categories, e.g.:
 - **♥** For standardization





MultiTerm Levels & Types

- **■** Index
 - **Terms**
 - ♦ Term-like elements
 - (collocations, boilerplate)
- Text (definitions, contexts, notes, etc.)
 - \$Free-form data entry
- **♯** Picklist
- **■** Multimedia file
- **Number**
- **■** Date





Language Identifiers

- # xml:lang options (ISO 639 + IETF BPC 47)
- ★ Level 2: lang + country code
 ∜ fr-FR, fr-CA; eng-ENG, eng-USA
- Level 3: lang + script + country code

 \$\times \text{zh-Hans-ZH}; \text{ zh-Hant-TW}\$

 Other options: see IETF 4646, IETF 4646bis



ISOcat.org

- **TC** 37 Data Category Registry (DCR)
- ☐ Create data category specifications (DC)
- **■** Select Data Category Selections (DCS)
- **■** Basis for TMS design
- **■** Share DCs and DCSs with colleagues
- **■** Standardize DCs & DCSs
- ➡ http://www.isocat.org





Data Category Registry

Defining widely accepted linguistic concepts

ISO 12620 provides a framework for defining data categories compliant with the ISO/IEC 11179 family of standards. According to this model, each data category is assigned a unique administrative identifier, together with information on the status or decision-making process associated with the data category. In addition, data category specifications in the DCR contain linguistic descriptions, such as data category definitions, statements of associated value domains, and examples. Data category specifications can be associated with a variety of data element names and with language-specific versions of definitions, names, value domains and other attributes.

The Registration Authority of the TC 37 DCR is the Max Planck Institute for Psycholinguistic, Nijmegen, The Netherlands.

This new DCR implementation is currently under development by the MPI in collaboration with TC 37. However, the core services should now be stable enough for day to day DCR usage. We welcome any feedback (bug reports, feature requests, etc.). You can use the following methods to contact us:

- file a <u>bug report or feature request</u>
- send an email

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