Introduction to Terminology
Part 1
What is Terminology?

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Voltage (denoted $\Delta V$ and measured in volts, or joules per coulomb) is the potential difference between two points — or the difference in electric potential energy per unit charge between two points. Voltage is equal to the work which would have to be done, per unit charge, against a static electric field to move the charge between two points. A voltage may represent either a source of energy (electromotive force), or it may represent lost or stored energy (potential drop). Voltage can be caused by static electric fields, by electric current through a magnetic field, by time-varying magnetic fields, or a combination of all three.
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result

□ charge
□ electric current
□ electric potential
□ electromotive force
□ magnetic field
□ potential difference
□ potential drop
□ source of energy
□ static electric field
□ volt
□ voltage
□ work

**terminology**

= set of designations belonging to one special language

(ISO 1087-1/2000:10)
Terminology (ISO 1087-1/2000:10)

- set of designations belonging to one special language
■ science studying the structure, formation, development, usage and management of terminologies in various subject fields
■ Synonym: Terminology
Terminology Work (ISO 1087-1/2000:10)

- work concerned with the systematic collection, description, processing and presentation of concepts and their designations
Terminology Science vs. Work

- science studying the structure, formation, development, usage and management of terminologies in various subject fields
- synonym: terminology
- work concerned with the systematic collection, description, processing and presentation of concepts and their designations
Terminology Management – Pain Curve

Triangle of Reference / Semantic Triangle

Referent/Object  Thought/Concept  Symbol/Designation

According to: Odgen, C.K. / Richards, I.A. (1923): The meaning of meaning, New York
Object (ISO 1087-1/2000:2)

☐ anything perceivable or conceivable

☐ NOTE: Objects may be
  ■ material (e.g. an engine, a sheet of paper, a diamond)
  ■ immaterial (e.g. conversion ratio, a project plan)
  ■ imagined (e.g. a unicorn)
Concept (ISO 1087-1/2000:2)

- unit of knowledge created by a unique combination of characteristics

- NOTE: Concepts are not necessarily bound to particular languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.
Individual Concept (ISO 1087-1/2000:2)

- concept which corresponds to only one object

- NOTE 1: Examples of individual concepts are 'Saturn', 'the Eiffel Tower'.
- NOTE 2: Individual concepts are usually represented by appellations.
General Concept (ISO 1087-1/2000:3)

- concept which corresponds to two or more objects which form a group by reason of common properties

- NOTE: Examples of general concepts are 'planet', 'tower'.
Individual vs. General Concept (ISO 704/2000:3)

- When the concept depicts a single object, it is called an **individual** concept.

- When the concept depicts a set of two or more objects, it is called a **general** concept.

- Form of the designation in special languages:
  - **appellation** (e.g., United Nations, Internet, Worldwide Web)
  - **symbol** (e.g., Möbius Loop and Statue of Liberty)

- Form of the designation in special languages:
  - **term** (e.g., floppy disk, liquidity, money market fund, etc.)
  - **symbol** (©, ≥, $)

- representation of a concept by a sign which denotes it

- The designation acts as a synthesis of the definition.

- NOTE: In terminology work three types of designations are distinguished:
  - Symbols
  - appellations
  - terms

- **Appelation (Name)**
  - verbal designation of an individual concept

- **Term**
  - verbal designation of a general concept in a specific subject field
  - NOTE: A term may contain symbols and can have variants, e.g. different forms of spelling.
Imbalances between Designations and Concepts

- synonymy
- ambiguity
  - homonymy
  - polysemy

**Exercise:**
Explain the phenomena of „synonymy“ and „ambiguity“ using the Semantic Triangle
Relational between or among terms in a given language representing the same concept.

- **NOTE 1**
  The relation of synonymy exists, for example, between *deuterium* and *heavy hydrogen*.

- **NOTE 2**
  Terms which are **interchangeable in all contexts** are called synonyms; if they are interchangeable only in some contexts, they are called quasi-synonyms.
## Types of Ambiguities (ISO 1087-1/2000:9-10)

<table>
<thead>
<tr>
<th>Polysemy</th>
<th>Homonymy</th>
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What is a „bridge“?
Homonymy (ISO 1087-1/2000:9-10)

☐ What is a „bark“?
# Types of Ambiguities

(ISO 1087-1/2000:9-10)

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Terminological Consistency

- only 1 designation per concept
  - = no synonyms!

- only 1 concept per designation
  - = no ambiguities!

Mononymy

Monosemy
Terminological Consistency

Negative example „synonymy“:

In deep penetration welding the welded joints are less durable than in heat conduction welding. Apart from that keyhole welding is much less expensive.
Terminological Consistency

Negative example „synonymy“:

- What is a 4-bit byte good for? Quadbits are used to describe the amount of memory used to store a digit of a number stored in packed decimal format within an IBM mainframe. This technique is used to make computations faster and debugging easier. An 8-bit byte is split in half and each half byte is used to store one digit.

- Ease of debugging resulted from the numbers being readable in a hex dump where two hex numbers are used to represent the value of a byte, as $16 \times 16 = 2^8$. That is why nibbles are sometimes called hex digits oder hexits.
Without Terminology Management

marketing

training

documentation

half bytes

hex digits

nibbles
Without Terminology Management

In diesem Fall verarbeitet MySQL Server den
Kommentars wie normale
SQL-Anweisungen; andere SQL-Server hingegen
ignorieren die Erweiterungen. So erkennt MySQL
Server beispielsweise anders als andere Server
das Schlüsselwort STRAIGHT_JOIN in der folgen-
den Anweisung. Wenn Sie nach dem Zeichen ‘i’
die Versionsnummer angeben, wird die Syntax
nur ausgeführt, wenn die neue MySQL-Version
verwendet wird. Das
Schlüsselwort TEMPORARY im folgenden Kom-
mentar wird nur von Servern ausgeführt, auf
denen MySQL 3.23.02 oder höher läuft. Die be-
schriebene Kommentsyntax wirkt sich darauf
aus, wie der Server mysql SQL-Anweisungen
verarbeitet. Auch das Clientprogramm mysql
ver-
arbeitet die Anweisungen teilweise, bevor es sie
an den Server sendet. (Dies tut es, um die Anwei-
sungen einer Eingabezeile mit mehre-
ren
aufzuwerten und zu ermitteln.)
With Terminology Management

marketing

training

documentation

terminological database

half bytes

half bytes

half bytes

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SQL-Text so, als ob er normalen SQL-Kommentars wie normale
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Anweisungen zu ermitteln.)
In computing, a half byte is a four-bit aggregation or half an octet (byte).
"Unfortunately I got stuck on the Earth for rather longer than I intended," said Ford. "I came for a week and got stuck for fifteen years."

"But how did you get there in the first place then?"

"Easy, I got a lift with a teaser."

"Er, what is ..."

"A teaser? Teasers are usually rich kids with nothing to do. They cruise around looking for planets which haven't made interstellar contact yet and buzz them."

"Buzz them?" Arthur began to feel that Ford was enjoying making life difficult for him.

"Yeah", said Ford, "they buzz them. They find some isolated spot with very few people around, then land right by some poor soul whom no one's ever going to believe and then strut up and down in front of him wearing silly antennae on their heads and making beep beep noises. Rather childish really."

Definitions so far:

- terminology
- terminology science
- terminology work and management
- Semantic Triangle
  - concept
  - designation
  - object
- terminological consistency
Equivalence (ISO 1087-1/2000:9)

- relation between designations in different languages representing the same concept

- Example:
  - electric current
  - courant électrique
  - corriente eléctrica
  - elektrischer Strom
Equivalence – Typical Problems

- Hammer (DE) vs. hammer (EN)

- Startbahn/Landebahn (DE) vs. runway (EN)

- False friends
  - Kontrolle (DE) vs. control (EN)
Concept (ISO 1087-1/2000:2)

- unit of knowledge created by a unique combination of characteristics

- NOTE: Concepts are not necessarily bound to particular languages. They are, however, influenced by the social or cultural background which often leads to different categorizations.

- Are there a lot of “international concepts” like electric current?
Culture-bound Concepts

Technology can be culture-specific…
Culture-bound Concepts

Technology can be culture-specific…
Definition (ISO 1087-1/2000:6)

- representation of a concept by a descriptive statement which serves to differentiate it from related concepts

- set of concepts structured according to the relations among them
- a concept system
  - models concept structures based on specialized knowledge of a field
  - clarifies the relations between concepts
  - forms the basis for a uniform and standardized terminology
  - facilitates the comparative analysis of concepts and designations across languages
  - facilitates the writing of definitions
- The graphic representation of concept systems is (partly) standardized >> concept diagrams
Types of Concept Relations/Systems

- **Hierarchical relations**
  - generic relation
  - partitive relation

- **Associative (pragmatic) relations**

ISO 1087-1/2000:22
Hierarchical relations

- organized into levels where the superordinate concept is subdivided into at least one subordinate concept.
- Coordinate concepts = subordinate concepts at the same level and having the same criterion of subdivision.
- Concepts are superordinate, subordinate or coordinate, not on their own, but always in relation to each other in a hierarchy.
- Types of hierarchical relations:
  - Generic relations (genus-species relation)
  - Partitive relations (part-whole relation)
Generic Relation

- Transistor
  - Field effect transistor
    - Junction FET
    - Insulated gate FET
  - Bipolar transistor
    - PNP transistor
    - NPN transistor
Generic Relation

transistor

physical principle

field effect transistor

bipolar transistor

gate construction

sequence of layers

junction FET

insulated gate FET

pnp transistor

npn transistor
transistor
1
physical principle

field effect transistor
1.1
gate construction
1.1.1
junction FET
1.1.2
insulated gate FET

bipolar transistor
1.2
sequence of layers
1.2.1
pnp transistor
1.2.2
npn transistor
Notations

- 1 transistor
  - 1.1 field effect transistor
    - 1.1.1 junction FET
    - 1.1.2 insulated gate FET
  - 1.2 bipolar transistor
    - 1.2.1 pnp transistor
    - 1.2.2 npn transistor
Partitive Relation

car

- engine
- transmission
- chassis

- cylinder
- piston
- piston rod
- crank shaft

...
Partitive Relation

```
wind turbine
  └── foundation
      └── casing
          └── shaft
      └── tower
          └── power train
              └── gearbox
      └── nacelle
          └── aenemometer
              └── yaw motor
              └── brakes
          └── generator
      └── rotor
          └── rotor blade
          └── pitch motor
          └── rotor hub
```
### Terminology for Concept Systems

<table>
<thead>
<tr>
<th></th>
<th>Superordinate concept</th>
<th>Subordinate concept</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Generic relation</strong></td>
<td>Generic concept</td>
<td>Specific concept</td>
</tr>
<tr>
<td><strong>Partitive relation</strong></td>
<td>Comprehensive concept</td>
<td>Partitive concept</td>
</tr>
</tbody>
</table>
Mixed Concept System

1 mouse

1.1 ball mouse

1.1.1 button
1.1.2 casing
1.1.3 ball
1.1.4 ...
1.1.5 ...

1.2 optical mouse

according to principle
Associative relations

- Associative relations are non-hierarchical. An associative relation exists when a thematic connection can be established between concepts by virtue of experience.

- Some associative relations exist when dependence is established between concepts with respect to their proximity in space or time.

- Common types:
  - causal relation
  - sequential relation
## Associative Relations

<table>
<thead>
<tr>
<th>Concepts</th>
<th>Associative relation</th>
</tr>
</thead>
<tbody>
<tr>
<td>pencil case</td>
<td>container – contained</td>
</tr>
<tr>
<td>writing</td>
<td>activity – tool</td>
</tr>
<tr>
<td>gametes</td>
<td>steps of a cycle</td>
</tr>
<tr>
<td>zygote ≒ zygospore</td>
<td></td>
</tr>
<tr>
<td>humidity</td>
<td>cause – effect</td>
</tr>
<tr>
<td>corrosion</td>
<td></td>
</tr>
<tr>
<td>baker</td>
<td>producer – product</td>
</tr>
<tr>
<td>bread</td>
<td></td>
</tr>
<tr>
<td>time</td>
<td>duration – measuring device</td>
</tr>
<tr>
<td>clock</td>
<td></td>
</tr>
<tr>
<td>painter</td>
<td>profession – typical tool</td>
</tr>
<tr>
<td>brush</td>
<td></td>
</tr>
<tr>
<td>screw</td>
<td>object – associated tool</td>
</tr>
<tr>
<td>screwdriver</td>
<td></td>
</tr>
<tr>
<td>Islam</td>
<td>organization – associated building</td>
</tr>
<tr>
<td>mosque</td>
<td></td>
</tr>
</tbody>
</table>
Thank you for your attention!

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