

There Is No Knowledge Without Terminology. How Terminological Methods and Tools Can Help to Manage Monolingual and Multilingual Knowledge and Communication

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ABSTRACT

The paper presents “10 good reasons for terminology” in any expert field and any language(s) by discussing the areas of application in the public and the private sector as well as in science and education. After a short introduction on the history of terminology, the term “ontology” will be discussed, as one of the key terms in current knowledge engineering and terminology. The paper gives an overview on means and methods of assuring and improving the quality of knowledge generation, communication and management through terminology. Also, it introduces the main standards, players and experts in the terminology community, such as the International Network for Terminology (www.termnet.org).

Keywords: Terminology, Knowledge Engineering and Communication Management, International Network for Terminology

In a standard published by the International Organization for Standardization (ISO), “terminology” is defined as “A set of designations belonging to one special language.” (1st meaning) and as “Terminology science. Science studying the structure, formation, development, usage and management of terminologies in various subject fields” (2nd meaning), in: ISO 1087-1:2000 Terminology work – Vocabulary – Part 1: Theory and application.

In knowledge generation, communication and management, we, the experts, use and create our own terminology, i.e. our own specialized language. It is a language for the special purpose of scientific or business communication.

Thus, we all do terminology work, but mostly not paying much attention to that work, i.e. of the “structure, formation, development, usage and management” of the terms we use or create in our particular subject field.

Probably we are not even aware of the existence of such a science called “terminology”.

This paper intends to introduce terminology as a science and helpful tool to be applied in all subject fields, presenting also the main players and experts in the international terminology community.

Both the practical and the international approach to terminology are characteristics of this science from the very beginning: The ‘father’ of terminology studies, Eugen Wüster (1898-1977), was an Austrian industrialist, producing and exporting saw blades.

As a business man he recognized very early on that multilingualism can present a key issue and success factor when developing and marketing new products, in particular at international level. He saw the solution in internationally standardized terminology.

In his occupation with interlinguistics, Eugen Wüster initially bet on Esperanto, yet later turned to Occidental-Interlingua and

Interlingua. He therefore began building up an international terminology information centre even before World War II at the site of his saw blade company. After the war it became a meeting place for people interested in terminology and scientists from around the world.

Additionally, Eugen Wüster was appointed manager of the secretariat of the Technical Committee Number 37 of ISO, which dealt and deals with Terminology (ISO/TC 37), and which he chaired from 1952 until 1971 on behalf of the Austrian Standards Institute. ISO/TC 37 is a standards committee that establishes methodology standards for the entire world of standards. ISO/TC 37’s standards contribute materially to quality assurance, for example through standardized processes in terminology management.

The Eugen Wüster Archive comprises many valuable books, handwritten notes and correspondence, including first draft of writings remained unpublished and microfilms. [1] The Wüster archive is located at the Institute for Philosophy and Science Studies of the University of Vienna and is used by students and researchers from around the world.

Wüster was convinced and convincingly demonstrated that efficient communication with regard to technical language or standardization of specialist concepts is not possible without an exact definition of the specialist vocabulary.

It is important to stress here that terminology work is about researching specialist vocabulary as opposed to everyday language. The goal of terminology work is to gather, study and make available the terminology /specialist vocabulary of individual specialist fields in one or several languages.

Terminology and the professional management of concepts and terms in any specialized language increasingly become key success factors of modern societies where the information, knowledge and content industries are the most dynamic sectors of economic growth and scientific development.

Professional Knowledge Generation, Communication and Management are challenging enough in monolingual environments – and the challenges multiply in multilingual environments.

Before introducing “10 good reasons for terminology” to face these challenges, let me clarify first a key term which might cause – and usually does cause – confusion between the knowledge engineering communities: Ontology (as discipline without an article and with capital O) and ontology/ontologies (with article and used also in plural).

In the Handbook of Terminology Management, Vol. II [2], Infobox 32 gives a first overview with cross-references on how the theoretical and methodological principles of these two disciplines - Terminology and Ontology - and the corresponding terminologies and ontologies – overlap and interrelate. Gerhard Budin, one of the key experts in ontology and terminology research, uses the definition “Ontologies are formal and explicit

specifications of shared conceptualizations of a domain” in his research on Ontology-driven translation management [3]. Since many years, the conference “Terminology and Knowledge Engineering (TKE)” is dedicated to discuss relevant interdisciplinary questions and research topics, such as the relationship between Terminology and Ontology, conceptualization and representation, natural and formal languages.

This year, the TKE will take place in Dublin, Ireland, from 11th to 14th August 2010, with a full-day pre-conference workshop “Establishing and using ontologies as a basis for terminological and knowledge engineering resources”. The description of this workshop summarizes the reason for getting confused with ontology and terminology – and could be interesting for KGCM 2010 participants:

For knowledge engineers with a background in artificial intelligence, knowledge domain concepts and the relations established between them can only be represented by using a formal language. For terminologists with a background in linguistics, concepts and their relationships are represented in discourse by means of natural language terms, these occupying a place in concept systems relevant to the ontology-building stage.

With a view to knowledge communication, representation and sharing purposes, this workshop will take into account the linguistic and conceptual dimensions which take place in the different stages of ontology development with special emphasis on the contribution of terminology.

<http://www.dcu.ie/fiontar/conference/workshops.shtml>

Let us come back to the “10 good reasons for terminology” in any expert field and any language(s).

1. IMPROVE YOUR TECHNICAL AND CORPORATE COMMUNICATION AND DOCUMENTATION

Increasing specialization in all fields of knowledge as well as high innovation rates in many technical fields are leading to a need for ever more differentiated technical vocabularies (terminologies). Communication is becoming more and more difficult, not only between specialists and laypeople, but even between experts in one and the same discipline. This is especially true when communicating across and beyond language and cultural borders. Today, technical communication comprises around 80% of all information exchanged across the new communication paths of a borderless and multilingual information society.

In the area of technical communication, the need for technical information and documentation is growing. The quantity and difficulty of specialist texts has increased, along with the demands placed on the technical documentation (laws, norms, customer and corporate language). This is why experts in technical documentation must become familiar with the terminology of their field.

Frequently, parts and components have different names in one and the same company. From everyday language we know that many common words have several meanings (homonyms). But technical words (terms) are by no means always clear.

For example, in German the term ‘Lager’ as a technical term has a whole series of different meanings and is used differently in many different fields such as mechanical engineering, construction, mining, geology, logistics and business administration. Another reason for misunderstandings and

faulty communication is the use of synonymous terms. Thus, for someone not familiar with fibre optics, it is by no means clear that fiberoptics, optical fibre and glass fibre all refer to the same concept. Synonyms are often created because research and development is done on similar topics in different places.

This is where having standard setting committees set standards for communication comes to the rescue. Nevertheless, often much time goes by before the clear terms established there find their way into the linguistic usage of technical languages, not to mention the fact that there is no way by any measure that all technical words could be standardized.

Thus, for the good of specialist communication, it is very important that the meaning of technical words be defined as early as possible, the results be documented and made available to potential communication partners.

Terminology serves here to a certain extent as a language regulating hub for the multitude of corporate communication processes. It eliminates and prevents communication distortions that result from terminological ambiguities. It creates the precondition for clear communication between

- research and development, production and marketing
- the company, its cooperating partners, and suppliers
- the company, its markets, and its customers.

2. ORGANIZE FLEXIBILITY AND CHANGES WELL

One small modification, such as, for example, changing one part of a technical component, will affect all models in which this part can be found. This means in plain English that all language versions of all model descriptions must be revised. At this time, these modifications are implemented more or less manually by companies or fed into a multitude of parallel-existing, but non-uniform, IT systems. This approach is not only very expensive, it also conceals the risk of errors and confusion among all stakeholders.

This problem can be considerably reduced through a uniform terminology in which the ‘language’ of the company, and its foreign language equivalent, is defined and documented and then linked to other in-house information systems. Whether external or stand-alone, there are already numerous software solutions available for this purpose, such as terminology databases and terminology management systems on small, medium, and large IT systems.

The terminologies stored in terminology databases help us saving and retrieving the information together with links and further notes. Terminology management software has been available on the market for a long time. It is structured in such a way that it is simple to use and produces good results, making possible a synchronization of terminology data between various IT systems within a company (e.g. CRM/ERP/inventory-management-systems etc.). Systems such as Multiterm by SDL/Trados and Termstar by their competitors Transit offer the possibility to save images and charts in addition to blocks of text.

3. ASSURE THE QUALITY AND LIABILITY OF YOUR PRODUCTS AND SERVICES

At International, European and national levels, lawmakers place special requirements on the development of terminology, especially in the area of technical documentation.

Well know in the US and Canada since long, product liability and its impacts has become a hot topic also in Europe and the rest of the world.

In Europe, EU standards, product liability, and CE certification require companies to deliver, as an integral part of their

products, documentation that meets safety requirements. Defective documentation is deemed a product defect that leads to complaints or even claims for damages.

As described in the 1998 EU Product Liability Act, a product's manufacturer must compensate for damages that arise through defects in construction, fabrication, and even instructions. Such instruction defects are, among other things, derived from incorrect or unclear terminology. For this reason, documentation should be based on a predefined terminology in which the meaning of the terms is clearly established.

The demands placed on the terminological quality of information and documentation have grown and have made terminology into a production and marketing factor and also a business factor in terms of quality, safety, liability and profitability.

4. BE PART OF THE INTERNATIONAL COMMUNITY: BENEFIT FROM STANDARDS

In your day-to-day life as knowledge workers, you might need practical guidelines and common standards on how to implement existing terminological methods and tools, which are relevant to a broader and international community.

The core standard on terminology work, ISO 704 Terminology work — Principles and methods, is being used by a growing number of diverse user groups. In the abstract published at the ISO website, it says:

“ISO 704:2009 establishes the basic principles and methods for preparing and compiling terminologies both inside and outside the framework of standardization, and describes the links between objects, concepts, and their terminological representations. It also establishes general principles governing the formation of designations and the formulation of definitions. Full and complete understanding of these principles requires some background knowledge of terminology work. The principles are general in nature and this document is applicable to terminology work in scientific, technological, industrial, administrative and other fields of knowledge.”

http://www.iso.org/iso/catalogue_detail.htm?csnumber=38109

For beginners, there is a British Standard “Terminology work — Fundamentals made simple” (BS 8430:2005), providing “guidance for efficient and effective preparation, development, documenting and storing of terminology for use when communication of common understanding of meaning within a subject field is required. This British Standard is intended for use by anyone needing to produce terminology.” (BS 8430:2005, Introduction).

For those who are interested in mechanisms for creating, selecting and maintaining data categories, as well as an interchange format for representing them, the following ISO standard is relevant: ISO 12620:2009 - Terminology and other language and content resources – Specification of data categories and management of a Data Category Registry for language resources:

“ISO 12620:2009 provides guidelines concerning constraints related to the implementation of a Data Category Registry (DCR) applicable to all types of language resources, for example, terminological, lexicographical, corpus-based, machine translation, etc.”

Source:

http://www.iso.org/iso/catalogue_detail?csnumber=37243

Many international, national, and domain-specific standardization bodies make monolingual and multilingual terminologies available. ISO publishes hundreds of terminologies for a wide range of fields.

If you are interested in contributing to standardization within the terminology community, please refer to the ISO website for TC 37 Terminology and other language and content resources:

http://www.iso.org/iso/standards_development/technical_committees/other_bodies/iso_technical_committee.htm?commid=48104

5. SHOW, SHARE AND SELL YOUR KNOWLEDGE AND PRODUCTS IN COMMON CLASSIFICATIONS

In industry, classification systems have been used for quite a long time now, with various concepts; today they are usually connected with product planning systems. Well-conceived parts information systems are based – exactly like the term systems common in systematic terminology work – on a classification system that classifies the individual parts in a (mostly) hierarchic system according to their characteristics and definitions.

A close connection exists between classification systems and terminology systems, because each of the individual parts are provided, on the one hand, with identification numbers that reflect this classification, yet on the other hand also bear nomenclatures which as a rule are used for searching. The technical words that denote the individual parts usually exist in several languages in multinational and strongly export-oriented companies.

Because expense analyses are impossible in companies due to material source data that are not cleaned, the lack of business data transparency restricts a company's profitability and performance capability. Thus, for example, given poor or missing classification, synergy potentials in purchasing are simply left unrecognized. Likewise, because high capital commitments arise at the warehouse due to missing classifications, the lever of working capital reduction cannot be employed.

Classification systems created through reliable terminology work, together with the correct (multilingual) terminology, offer a company the advantage that the same and similar parts can be found quickly, that multiple designs can be avoided when developing new systems, that inventory management and procurement can be optimized, and that the documentation process – which also includes the translation – runs more efficiently and delivers high-quality results. In this manner, opportunities for synergies and optimization and the lever of working capital reduction can be better applied to increase a company's liquidity and credit rating.

A uniform classification is also required for doing business online (B2B and B2C). Electronic trade is successful when buyers are able to easily and quickly find products and services they are looking for, place their orders, and receive the deliveries in their native language. At the same time, salespeople should be able to offer their products and services around the world in standardized online catalogues. Harmonized terminological methods and the terminologies themselves are indispensable conditions for achieving this goal.

6. THINK GLOBAL, ACT LOCAL: USE TRANSLATION AND LOCALIZATION

The importance of translating technical literature and documentation, the international interlacing of companies and associations, as well as the growing need on the part of

customers to receive access to information in their native tongue place high demands on translation and localization. Terminology is the key success factor in these areas.

The software industry assumes a cutting-edge role in the area of localization. The need for terminology for the IT sector has fundamentally changed over the course of the last decade. It used to be that software was used almost exclusively by specialists; they accepted that the user interface and the documentation were only available in English, while frequently the handbooks were poorly written and extremely terse.

Today, personal computers can be found in almost all areas of our daily lives. They are used both professionally and privately, and not only by data processing experts. Thus, software handling must be user friendly and the handbooks must be precise, consistent, and understandable. A precondition for this is that the meaning of the technical terms has been explained to the users and that technical words are used uniformly throughout the interface, the help function, and in the documentation. In addition, it goes without saying that the software interface and manuals must be available in the user's native tongue.

Nearly all large software companies around the world invest immense amounts in localizing software and have their own specialized terminology departments. New software products or versions must appear almost simultaneously on many different markets, and the interface and documentation must be translated into each local language. This can only be achieved when the multilingual terminology is already precisely established during software development and used uniformly during localization. This type of terminology can't be found in corresponding technical dictionaries because it is innovative, company-, and often even product-specific.

Different country versions can be quickly and almost simultaneously brought to market, when terminology methods are used during software localization. The localization costs shrink to such an extent that it even pays off to develop versions for "small" markets such as Slovakia, the Czech Republic, or Estonia. The product's quality (and documentation) is thus considerably increased, which also affects product liability, user satisfaction, and support costs (hotline).

7. BENEFIT FROM TERMINOLOGY APPLICATIONS IN THE PUBLIC AND SOCIAL SECTOR

The need for an exact terminology in the area of politics and public affairs is especially obvious. Ordinances and laws must be based on clearly defined concepts and the correct nomenclature for these concepts must be used in their wording. Because otherwise diplomatic complications can easily arise, policy statements, particularly in the international context, must also be clear in terms of the terminology used.

Terminology also proved its worth within the WTO frame: Thus, for example, China uses terminological methods and processes to translate WTO contracts and documents into Chinese in a very short time – with the result that it now commands the WTO mechanisms almost better than other countries. Hundreds of thousands of concepts were found in the WTO documents that were unknown in China and often did not exist in Chinese.

Many ministries and public offices recognized terminology as an essential working field and deployed terminologists and terminology representatives in their language services to manage the terminology specific to the technical fields by using terminology databases. In the 80s Finland was the first country on a national and operational level to recognize the significance of terminology methods and of terminologies for innovation.

For this reason, a terminology office was established in the prime minister's office.

8. THERE IS NO EDUCATION AND SCIENCE WITHOUT TERMINOLOGY

Without the appropriate terminologies, students cannot be properly educated nor can scientists work with precision. Groups of specialists would not have the communicative means to express themselves in technical languages or to disseminate technical information and access it through information networks.

It is no coincidence that UNESCO, the United Nations Educational, Scientific and Cultural Organization, with its mission and its own variety of member states, languages and cultures, was one of the first international organizations to confront the topic of terminology. Differences in terminology often arise especially in international communication and can lead to very sensitive political situations. UNESCO is also concerned with the conservation and further development of rare languages – and terminology is indispensable in this area as well.

There especially is a need for terminology clarification in many innovative areas of medicine. A variety of synonyms develop for the same phenomena because often the same research is conducted at different locations. But because research, clinical medicine, the pharmaceutical industry, legislators, and insurance providers must work closely together, clear communication based on precisely defined terminology is especially required in the medical environment. Flawed terminology can cause misunderstandings that can lead to deaths, damage to health, and enormous costs.

9. MAKE BETTER USE OF WHAT IS THERE ALREADY

Usually the chances are good that some units or individuals within your organization already have established terminology collections for their own domain and purpose. Scientists, writers and translators, engineers and software developers, marketing and legal experts – they all could keep lists of their, products, services, functions or classifications. This existing material represents a sound basis for a consolidated, updated and expanded common terminology database, which in the future serves as a knowledge base for the entire organization or community.

Uwe Muegge, Corporate Terminologist at Medtronic, emphasizes the importance of awareness of and share with all stakeholders:

“Once a terminology management program is in place, it is essential that managers and communicators alike are made aware of the existence of such a program, and provided with easy access to the organization's terminology resources. (...) However, just having a website on the intranet that either provides an interface for searching the corporate terminology database, or simply lists all terminological entries in alphabetical order, can significantly improve the adherence of communicators to the established corporate terminology standard” [3]

10. YOU ARE NOT ALONE: JOIN THE TERMINOLOGY COMMUNITY TO GET HELP AND ADVICE.

To get a first overview on “Who is who in terminology” have a look at the international terminology community at the website of TermNet, the International Network for Terminology:

www.termnet.org, with a list of TermNet members at: http://www.termnet.org/english/about_us/members_list.php.

TermNet members are companies, universities, institutions and associations from all over the world who engage in the further development of the global terminology market. The products and services of this market are considered and promoted by TermNet and its members as integral and quality assuring parts of any product and service in the areas of a) information & communication, b) classification & categorization and c) translation & localization.

The members of TermNet and their experts are connected with the key players and the respective terminology associations at national and regional level.

For basic readings in terminology as well as scientific series, monographs, proceedings, bibliographies and guidelines, please refer to the TermNet publisher at: http://www.termnet.org/english/products_service/publisher_products.php

If you need an expert or any kind of advice – please contact us: termnet@termnet.org

And here comes the good news at the end: TermNet Goes America(s)! TermNet is proud to announce the establishment of a TermNet Chapter in Canada in mid 2010, within the framework of the project “International Center of Excellence for Terminology: Research, Technologies and Services”. The main goal of this “Center of Excellence for Terminology” is to do and organize applied research in order to provide North and Latin America with terminology products and services.

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