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EXECUTIVE SUMMARY

The multilingual wordnet initiative embarked in the META-NORD project is concerned with the validation and pilot linking between Nordic and Baltic wordnets. The aim of the multilingual action is to test the perspective of a *multilingual linking* of the Nordic and Baltic wordnets and via this (pilot) linking to perform a tentative comparison and validation of the wordnets along the measures of taxonomical structure, coverage, and granularity.

Four pilot bilingual wordnets have been produced semi-automatically via established links to Princeton Core Wordnet: Danish-Swedish, Danish-Finnish, Estonian-Finnish, and Finnish-Swedish. A detailed validation of these linked resources is included in this report. The linked wordnets are judged to be of a rather good quality even if translations are not always 100% precise. In the validations, partners report on an average of 2,2 % errors and 7,0 % slight mismatches, the latter mainly due to different approaches to the definition of a synset where some partners include many word senses in a synset and others much less.

Furthermore, all the involved wordnets have undergone extensions and upgrades in META-NORD, including also Icelandic wordnet and Norwegian wordnet of which the latter has been developed from scratch during the project period (based on the Danish wordnet, DanNet). All six monolingual wordnets and the four bilingual ones have been made available via META-SHARE: www.meta-share.org.

Last but not least, a common web interface (<http://wordties.cst.dk>) which visualizes the links and enables the user to browse the particular wordnets has been developed and is also documented in this report. The interface is licensed under the MIT license, meaning it is fully available for use, distribution and modification.

Table of Contents

Abbreviations	4
1 Background.....	5
2 The multilingual wordnet interface “WordTies”	6
2.1 What is viewed in WordTies	6
2.2 Development of WordTies.....	8
2.3 Wordnet format challenges and import.....	9
2.4 Customisations.....	9
2.5 Licence and further information	10
3 Validation of linked wordnets	10
3.1 Introduction	10
3.2 Validation of linked wordnets from a Finnish perspective (Finnish-Swedish, Finnish-Danish).....	10
3.3 Validation of linked wordnets from a Danish perspective (Danish-Swedish)	11
3.4 Validation of linked wordnets from a Swedish perspective (Swedish-Finnish)	12
3.5 Validation of linked wordnets from an Estonian perspective (Estonian-Finnish)	13
3.6 Summing up validation results	14
4 Estonian and Icelandic wordnets converted to agreed standards	16
4.1 Progress on Estonian Wordnet.....	16
4.2 Progress on Icelandic Wordnet	18
5 Progress on Norwegian Wordnet	18
6 Dissemination, sustainability and collaboration with other META projects.....	19
7 References.....	20
Appendices.....	21
Appendix 1. Finnish to English	21
Appendix 2. Swedish to English.....	25
Appendix 3. Danish to English.....	26
Appendix 4. Danish to Swedish	27
Appendix 5. Swedish to Finnish.....	29
Appendix 6. Estonian to Finnish	33

Abbreviations

Abbreviation	Term/definition
DoW	The META-NORD Description of Work document
TILDE	TILDE SIA (Latvia)
UCPH	Københavns Universitet (Danmark)
UT	Tartu Ülikool (Estonia)
UIB	Universitetet i Bergen Organisasjonsedd (Norway)
UHEL	Helsingin Yliopisto (Finland)
HI	Haskoli Islands (Iceland)
LKI	Lietuviu Kalbos Institutas (Lithuania)
UGOT	Göteborgs Universitet (Sweden)
DA	Danish
SV	Swedish
FI	Finnish
ET	Estonian
VM	Virtual Machine
LMF	Lexical Mark-up Framework
PWN	Princeton WordNet
TSV	Tab separated values
CSV	Comma separated values
RAM	Random access memory
NPM	Node .JS Package Manager
WN	WordNet

Table 1. Abbreviations.

1 Background

The multilingual wordnet initiative embarked in the META-NORD project is concerned with the validation and pilot linking between Nordic and Baltic wordnets. The builders of these wordnets have applied very different compilation strategies: the Danish (DA), Icelandic (IS) and Swedish (SV) wordnets are being developed via monolingual dictionaries and corpora and subsequently linked to Princeton WordNet (cf. Fellbaum (ed.) 1998). In contrast, the Finnish (FI) and Norwegian (NO) wordnets are applying the expand method by translating from Princeton WordNet and the Danish wordnet DanNet, respectively. The Estonian (ET) wordnet was built as part of the [EuroWordNet](#) project (cf. Vossen et al. 1998) and by translating the base concepts from English as a first basis for monolingual extension.

The aim of the multilingual action is to test the perspective of a *multilingual linking* of the Nordic and Baltic wordnets and via this(pilot) linking to perform a tentative comparison and validation of the wordnets along the measures of taxonomical structure, coverage, and granularity.

Four pilot bilingual wordnets have been produced semi-automatically via their links to Princeton Core Wordnet: DA-SV, DA-FI, ET-FI, FI-SV and delivered in batch 2 (July 2012). A validation of these linked resources is included in the following sections. Finally, a common web interface (<http://wordties.cst.dk>) which visualizes the links and enables the user to browse the particular wordnets has been developed and is also documented in the following chapters. Regarding IPR issues on these bilingual wordnets, no joint agreements for the linked wordnets have been necessary, since all the individual wordnets involved in the bilingual linking are aligned with Princeton Core Wordnet on the basis of which the bilingual wordnets have been compiled. The web interface developed in the project is currently licensed under the MIT license, meaning it is available for use, distribution and modification.

The motivation for having wordnets as a horizontal action is given by the fact that wordnets have emerged as one of the basic standard lexical resources in the language technology(LT) field. They encode fundamental semantic relations among words, relations that further in many cases have counterparts in relations among concepts in formal ontologies. According to the BLARK (Basic Language Resource Kit) scheme, wordnets along with treebanks, are central resources when building language enabled applications. The semantic proximity metrics among words and concepts defined by a wordnet are very useful in applications such as information access systems and authoring tools because in addition to identical words, the occurrence of words with similar (more general or more specific) meanings contribute to measuring of the similarity of content or context or recognizing the meaning. Another central motivation for selecting wordnets as a horizontal action, is that wordnets have been or are being built for several languages in the Nordic and Baltic countries including Finnish, Danish, Estonian, Icelandic and Swedish. Furthermore, there is the general need for validation schemes for semantic resources, also across languages and with this work we believe to have contributed to the wordnet community with valuable cross-lingual experience.

2 The multilingual wordnet interface “WordTies”

2.1 What is viewed in WordTies

WordTies (<http://wordties.cst.dk>) is a web interface developed in META-NORD which visualizes the META-NORD multilingual wordnet initiative concerned with the validation and pilot linking between Nordic and Baltic wordnets, cf. Figure 1.

WordTies: A Nordic/Baltic Multi-lingual Wordnet Initiative

WordTies describes a multilingual wordnet initiative embarked in the [META-NORD/META-NET](#) projects and concerned with the validation and pilot linking between Nordic and Baltic wordnets.

Wordnets in Nordic/Baltic countries

The builders of these wordnets have applied very different compilation strategies: The Danish, Icelandic and Swedish wordnets are being developed via monolingual dictionaries and corpora and subsequently linked to Princeton WordNet. In contrast, the Finnish and Norwegian wordnets are applying the expand method by translating from [Princeton WordNet](#) and the Danish wordnet, DanNet, respectively. The Estonian wordnet was built as part of the [EuroWordNet](#) project and by translating the base concepts from English as a first basis for monolingual extension.

Aim of multilingual wordnets

The aim of the multilingual action is to test the perspective of a multilingual linking of the Nordic and Baltic wordnets and via this (pilot) linking to perform a tentative comparison and validation of the wordnets along the measures of taxonomical structure, coverage, granularity and completeness. WordTies currently includes [Danish](#), [Finnish](#), [Swedish](#) and [Estonian](#) wordnets which have been linked to [Princeton Core WordNet](#), thereby providing a common, linked coverage of all in all 5,000 core synsets. In the current web interface, 20% of these have been manually validated and are made visible through multilingual links.

Select an available Nordic/Baltic source wordnet to browse below:

- [DanNet](#) (Danish Wordnet)
- [FinnWordNet](#) (Finnish Wordnet)
- [TEKsaurus](#) (Estonian Wordnet)
- [Swesaurus*](#) (Swedish Wordnet)

**Alignments or relational links via Princeton WordNet are presented in the other available sources above*




This work has been performed within the META-NORD project which has received funding from the European Commission through the ICT PSP Programme, grant agreement no 270899.

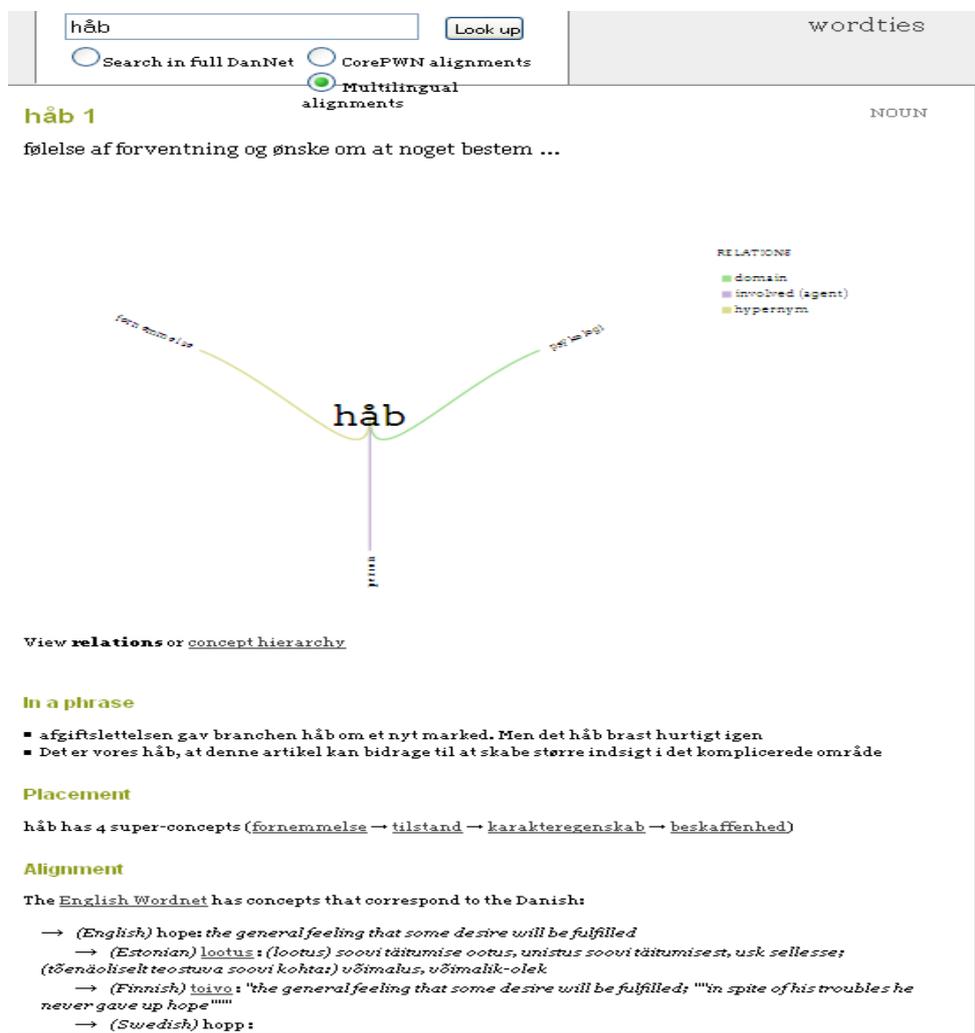
[Contacts](#) | [Publications](#)

Figure 1 Introductory screen of WordTies.

In this browser the user can chose either of the relevant wordnets as her source language and see how a concept is linked to its sister wordnets. For illustration, see Figure 2 below where Danish has been chosen as the source and the Danish concept *håb* (‘hope’) has been looked up and aligned with Estonian, Swedish and Finnish wordnets. A click on either of these links will bring the users into these particular wordnets and enable them to browse the wordnet and view the established relations as well as its taxonomical structure. In this way, the web

interface eases comparison and validation of wordnets. The web interface can be extended to include more wordnets.

WordTies builds on a monolingual browser, AndreOrd, which was built to browse DanNet (Danish wordnet). Following a meeting among META-NORD partners it was agreed that this browser application represented a good, and potential solution also for visualising multilingual links between wordnets. Already, the FinnWordNet had been successfully imported into an PostgreSQL database based on the AndreOrd schema, which allowed for its use in the same browser application. The new development for this project is named and deployed as 'WordTies'. In this section henceforth we will refer to wordties as the 'application', and the UCPH developer, Mitchell Seaton as the 'developer'. At a meeting in Copenhagen February 2012, an agreed format for sharing each respective wordnet's relations to Princeton Core WordNet was formed.



The screenshot shows the WordTies web interface. At the top, there is a search bar containing the word "håb" and a "Look up" button. Below the search bar are three radio buttons: "Search in full DanNet", "CorePWN alignments", and "Multilingual alignments", with the latter being selected. The main content area displays the word "håb" in a large font, with the part of speech "NOUN" to its right. Below the word is a definition: "følelse af forventning og ønske om at noget bestem ...". A diagram shows the word "håb" at the center, with three lines extending from it: a green line to "følelse", a purple line to "følelse", and a yellow line to "følelse". A legend on the right indicates the colors for relations: green for domain, purple for involved (agent), and yellow for hypernym. Below the diagram, there are sections for "View relations or concept hierarchy", "In a phrase" (with two bullet points), "Placement" (with a list of super-concepts), "Alignment" (with a list of corresponding concepts in other languages).

Figure 2 A synset look-up in WordTies.

2.2 Development of WordTies

Development of the browser application began in 2012 with the upgrading of the source-code base to be Rails 3.2.x compatible, see also Figure 3.¹ The application was originally written for Rails 2.x and required modifications for the upgrade. The updated DanNet Wordnet version 2.1 was imported and tested locally, as well as a FinnWordNet instance. Major changes to the application's source-code base were Model changes including the addition of Instance, Source model classes and modification to Alignment and it's relations. These three Model classes handle the relational structure and data used to enable the mulilingual relations (connections), facilitating a link between application instances via a wordnet's imported Princeton Core WordNet relations. Valid relations to Princeton Core WordNet include 'eq_has_synonym', 'eq_has_hyponym', 'eq_has_hyponym', and 'eq_near_synonym' (newly added support in AndreOrd's import script). Another noted development is the migration of the original Protovis graphing to D3.js (Internet Explorer not-supported, flash substitute currently exists).

To formulate the general Princeton Core WordNet intersection list, the Ruby programming language was used with analogous functions as in the wordnet importer, and relations input-files. However, for the transformation of CSV files and generation of validation spreadsheets and data between Wordnet pairs, a new program was required to be written. It was decided by the developer to use Node.js, for its flexibility and power with rapid prototyping, ease and speed of programming in javascript, and availability of useful (NPM) modules, particularly a CSV parser module with which suited the handling of the common input/output data format. Python was maintained as the programming language used for Alignments import and hyponym tree (branch count) functions, the existing scripts were cleaned, and built upon for this project.

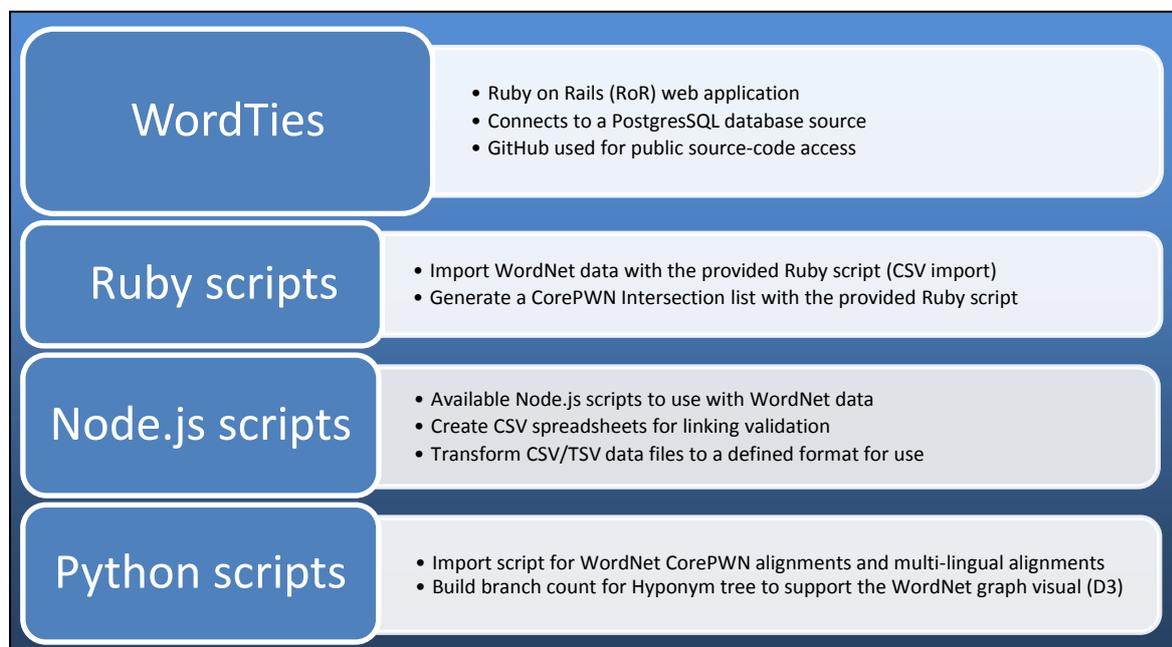


Figure 3 Overview and scripts used in WordTies.

¹ See the [rails-upgrade branch](#) on Github.

Execution and testing of the build and import scripts was done locally on a Fedora 15 Linux VM running in Oracle VM VirtualBox during development. The prerequisites are installed on this VM machine, provided with adequate disk volume and memory (RAM) from the host-machine. Software development was done with Eclipse IDE and SCM with Git (hosted on Github) as on the same VM. The application, a Ruby on Rails program was tested locally with its own internal web server running on a local port, which could run in a web browser on the VM.

2.3 Wordnet format challenges and import

Wordnets are formed in a variety of formats, CSV, LMF, and ASCII text (EuroWordNet Polaris format). The core import format requirements are unchanged, the existing and updated Ruby script reads the set of wordnet CSV files before updating the PostgreSQL database with the data. FinnWordNet had previously done the work of importing for the application and produced a PostgreSQL database SQL dump that can re-import the wordnet elsewhere. For the Estonian Wordnet, CSV files were obtained from the team and a small migration (javascript) script was produced in Node.js, to migrate the CSV to the DanNet format for import. Once migrated, the import of Estonian Wordnet was successfully tested locally on the developers VM machine.

The import mentioned, is performed using Ruby on Rails local console. The class file is accessed, and executed, this requires the correct settings on the database configuration file for successful import. There are two further compulsory steps for import, firstly to calculate and update the hyponym count for each synset record, and secondly to import alignments to Princeton Core WordNet. Both of these secondary scripts are written in and executed with Python. The file's should be edited to set the appropriate database configuration. Optionally, the import alignments script can be used to import multi-lingual alignments, alignments to other Wordnet synsets via Princeton Core WordNet. The data used for this import is obtained via the Node.js build script for validation spreadsheets and CSV/TSV transformation helper scripts.

2.4 Customisations

One of the customised features for the WordTies project was to add two additional search field options, as search filters. The filters scoped the returned words suggestions in the search field, to those having relation with a synset, that has Princeton Core WordNet alignments, and multi-lingual alignments, respectively.

The application is able to have a customised locale, and language files. This is made possible through Ruby on Rails internationalisation (I18N). For the WordTies project, the application paths were converted to English representations. Currently, Danish and English are supported languages with the application. An index page is customisable based on the locale, and new language support can be easily added with valid translation of labels. Currently multi-locale support is not included with the application, a single locale is set for the application instance to operate in.

Other customisations that are available, include filter values and path names, and colour mappings for the relations graph. Those with knowledge of Ruby on Rails can edit the application's Routes file to change available paths/urls, however this is strongly advised against, without consulting the developer. The application can be deployed and run locally in a Virtual Machine, for testing. For production deployment it is recommended to deploy with Apache and Phusion Passenger (mod_rails). The WordTies project required a few extra web pages to act the portal (front-page) to application instance's, contact and publication details.

Static HTML page's were generated from compiled CoffeeScript files, with a Node.js module called Coffeekup². This makes writing and editing the static project page's easiest, without HTML tagging.

2.5 Licence and further information

The application is currently licensed under the MIT license, meaning it is available for use, distribution and modification. The project is able to be forked or modified on Github, currently the WordTies project follows from the 'META-NORD_validate' branch, with some code changes that will be merged to the master ('public') branch.

For further information, see the README.md in the Github repository for technical documentation on requirements, installation and deployment methods. For related links, see:

- [Github repository \(META-NORD_validate branch\)](#)
- [README documentation](#)

3 Validation of linked wordnets

3.1 Introduction

After having received relations data from the relevant META-NORD partners, UCPH computed a common intersection of four Baltic and Nordic wordnets (Danish, Finnish, Estonian, and Swedish), and generated a top 1000 set of this intersection with a POS ratio of 6:2:2 for Verbs, Nouns, Adjectives, respectively. The result was also based on provided frequency data (Swe, Finn). The 1000 intersection list formed the basis for validation of links to Princeton Core WordNet³, which is a set of 5,000 English base concepts Princeton Core WordNet. Through the validation of the relational links, and commonality of them, connections could be made and validated between corresponding key wordnet synsets. Even if all partners have not registered mismatches in exactly the same way, all have used the same rating system:

- 2 for correct links (only a few of these are included in the tables below);
- 1 for slight mismatches (only selections of these are included in the tables below);
- 0 for outright errors.

In addition, a one-letter language code was added to the rates in order to indicate in which of the relevant languages a problem is considered to originate: D= Danish, S= Swedish, E= Estonian, F= Finnish, B= both languages.

3.2 Validation of linked wordnets from a Finnish perspective (Finnish-Swedish, Finnish-Danish)

The evaluation task was to rate 1000 synonym sets linked to Finnish from Swedish, Danish and Estonian via Princeton Core WordNet. The task was not only to evaluate the Finnish linking to Core WordNet, but more importantly to evaluate whether the translations using Core WordNet as a pivot language had been understood in the same way in the four languages. For the current report, data was available on the quality of the linking between Finnish and Swedish as well as between Finnish and Danish.

² CoffeeKup, *CoffeeKup is markup as CoffeeScript*

³ <http://wordnetcode.princeton.edu/standoff-files/core-wordnet.txt>

The general finding is that from a Finnish perspective the links to Danish and Swedish via Core WordNet are almost all, i.e. 993/1000, of good quality (rated as 2 on a scale from 0 to 2), i.e. 99.3 % for both the Finnish-Danish and Finnish-Swedish translations.

Many of the synonym sets where the concept linking as a whole was considered good, still got suggestions on how to further improve the synonym sets adding or removing individual words. For the remaining 7/1000 words, there was a rating of 1, since the only word mentioned would need to be exchanged. In the Appendix 1-3, we have listed the comments and suggestions.

As the Finnish synonym sets were represented in full, they made it easier to find improvement suggestions that were related to the internal consistency of the synsets themselves and not only to the quality of the concepts linked between languages.

In contrast to Finnish, the Danish synsets were characterised by often only containing one word representing a synset, but on the other hand there was a Danish explanation or gloss to assist in interpreting what particular meaning of the Danish word was intended which therefore kept the validation focused on the concept linking. Swedish was somewhere between Finnish and Danish in synonym set explicitness lacking however a Swedish gloss. For further details we refer to the appendix.

3.3 Validation of linked wordnets from a Danish perspective (Danish-Swedish)

Most Danish-Swedish entries were checked with Kjeld Kristensen's (ed.) Svensk-dansk ordbog (Swedish-Danish Dictionary) (published by The Danish Society for Language and Literature). The linking results are generally good:

- 1037 out of 1084 entries were marked with a 2. In these cases, the Danish entry was judged to be a good translation of the Swedish entry for most contexts. For example, the Danish synset {bange_1} was linked to the Swedish synset rädd..1;
- 23 entries were marked with a 1. In these cases, the Danish and Swedish words were related but not deemed a fully suitable translation of one another. E.g. the Danish synset {basis_1_1; grundlag_1_1} was linked to the Swedish synset bevis..1 grund..3;
- 24 entries were marked with a 0, as outright errors. These are treated individually in the Appendix 4.

However, since the source of the error was sometimes quite clear, some entries are marked as either 0S and 0D, where the PWN gloss suggests that the mistake is in the Danish, respectively Swedish, linking to PWN. Some Swedish synsets were linked to PWN synsets of a different POS. These are marked as errors (0s), since in the Danish linking it was decided that this was not allowed.

There does not appear to be a systematic bias to the errors; a few cases are false friends between PWN and the linked language (PWN: 'spring' -> DA: 'springvand'), a few are inexplicable, genuine mistakes (PWN: 'panel' -> DA: 'element'). Most are differences in shades of meanings that are probably open for discussion, and a different validator may have arrived at different results. In one case, Danish: gentage_1 -> Swedish: dubbla..1 upprepa..1 duplicera..1 fördubbla.. 1 ('repeat') the Swedish synset seems odd. The first, third, and fourth words are (more) synonymous, but the second doesn't match. The second word is a good translation of the Danish, though. Two Swedish synsets were linked across POS boundaries in violation of the policy applied to the Danish linking. This is obviously not a mistake in the strict sense, but something that could be clarified.

In general, most errors seem to be due to linking errors, i.e. the interlingua approach via Princeton Core WordNet does provoke a limited number of errors. While the results are generally encouraging, they must be taken with a grain of salt. The close genetic and historical relationship between the three languages shine through in a test like this: in some cases, the words in question are little more than orthographical variations of one another.

Further it has been noted that Danish has more restricted attitude towards the synonymy concept of the synsets; i.e. Danish synsets generally contain less synonyms.

3.4 Validation of linked wordnets from a Swedish perspective (Swedish-Finnish)

When checking the links between Swedish and Finnish, we used various lexical on-line resources, the three-volume *Stora svensk-finska ordboken / Suuri ruotsalais-suomalainen sanakirja* compiled by Göran Karlsson et al. (Helsinki: SKS, 1982), and *Suomalais-ruotsalainen suursanakirja / Finsk-svensk storordbok* by Cannelin – Hirvensalo – Hedlund (Porvoo: WSOY, 1979).

In the Finnish data, the 1,000 synsets amount to 2 497 word senses, many of which are however multi-word expressions. For instance, the English gloss: “judge or regard; look upon; judge; ex. ‘I think he is very smart’” is semantically equivalent to *olla jotakin mieltä*, lit. ‘be of some mind’. In comparison, there are a total of 1,815 Swedish word senses. These entries were provided with the SALDO indicators, which helped in checking their senses.

Generally, the Finnish wordnet editors have provided more synonyms to the corresponding English glosses than the Swedish wordnet compilers. The Finnish translator has included words from different language varieties, among them Helsinki slang (e.g. *delata* ‘die’) although s/he has not been very consistent in this (e.g., general spoken language or slang words for ‘daddy’ such as *iskä*, *faija*, and *fade* are lacking, instead ‘male parent’ is rendered as *isä* ‘father’ and *siittäjä* ‘begetter’).

11 entries were marked as outright errors, one of them was due to an error on both sides (marked as OB), 5 of them were due to errors on the Finnish side (marked as OF) and 5 on the Swedish side (marked as OS). E.g., the concept glossed in English as “place into the hands or custody of” is rendered correctly in Swedish with the verbs *ge..1*; *överlämna..1*; *lämna..1*; *överräcka..1*, but among the Finnish entries, we find the verb *kurkottaa* ‘reach’, which does not fit in this case. On the other hand the Swedish word *mjuk* is not an appropriate equivalent of “yielding readily to pressure or weight”, while the Finnish *heikko*, *peräänantava* ‘weak, yielding’ is a correct translation of this concept.

We found slight errors in translations of 26 English glosses. Out of these, in 6 glosses both the Finnish and Swedish entries were slightly incorrect or deficient (marked as 1B). For instance, the notion of “profession of a teacher” is rendered, among other entries, as *pedagogiikka* in Finnish and *pedagogik* in Swedish, which is not correct, since pedagogy is not a profession but a field of study or a skill. Then, on the Finnish side, translations of 11 glosses were slightly incorrect or deficient, and these cases are marked as 1F. On the Swedish side, there were slight errors in translations of 9 glosses, and they are marked as 1S.

There does not appear to be a systematic bias to the errors. The discrepancies have been dealt with in more detail in the appendix. The results are generally encouraging, but of course, they must be taken with a grain of salt. It seems that the close cultural, historical and social relationships between Swedes and Finns are reflected in the semantic features of their respective languages. In semantic terms, the languages seem to be closer to one another than one might think if one only took the grammatical aspects into consideration.

3.5 Validation of linked wordnets from an Estonian perspective (Estonian-Finnish)

Estonian wordnet (EstWN) is based on the wordnet theory and we have closely followed the principles adopted in the Princeton WN⁴ and EuroWordNet projects⁵.

The words included in EstWN synsets originate from existing traditional dictionaries - mainly Explanatory Dictionary of Estonian ("Eesti Kirjakeele Seletussõnaraamat") and Estonian text corpora (providing usage information of word senses).

Unlike Finnish wordnet, the synsets of Estonian wordnet are created according to the meaning boundaries of Estonian language, and the synonyms that express them. Secondly, in case of EstWN we use several types of relations for semantic equality to link from Estonian synset to Princeton WN⁶. For validation we filtered Estonian wordnet ver.65 synsets linked with eq_synonym and eq_near_synonym relations to PWN ver 3.0 CoreWordNet set of synsets.

Validation is performed from Estonian synset to Finnish synset, in principle without reference to PWN. If there were odd matches in translation equivalents, validator also checked PWN gloss to find out original meaning. Entries were checked by native Estonian speaker who have nearly native speaker's ability in Finnish and long experience in creating Estonian wordnet.

1162 EstWN synsets have 938 eq_synonym links and 224 eq_near_synonym links into PWN entries, thus checking ET-FI translations synset by synset needs to take into account that some translations (with eq_near_synonym relation) fits only partly.

Distribution of validation marks per equality links per number of synsets is represented in table 2 below:

Table 2 Findings in Estonian-Finnish data.

	Eq_synonym	Eq_near_synonym	Total
Correct translation = 2	840	43	883
Slight mismatches = 1	93	133	226
Outright errors = 0	5	48	53
Total of Estonian synsets	938	224	1162

From this table we can conclude:

- 1) Not all Princeton Core WordNet entries have direct equivalents in Estonian synsets - 938 of 1000 synsets have eq_synonym links into Core WordNet synsets, but all together 224 Estonian synsets have eq_near_synonym relation with CoreWordNet synsets too;
- 2) Estonian-Finnish translation equivalents are correct (validation mark = 2) in 883 cases. It is comprehensible in 840 cases, where Estonian synset have eq_synonym relation with PWN synset. In most the 43 cases with eq_near_synonym links into PWN it rise a question whether eq_near_synonym relation for this EstWN synset is adequate or does Finnish WN synset members cover the PWN meaning exactly;

⁴ <http://www.cl.ut.ee/ressursid/teksaurus/index.php?lang=en>

⁵ <http://www.illc.uva.nl/EuroWordNet/>

⁶ see EuroWordNet-2 reports in <http://www.illc.uva.nl/EuroWordNet/>

- 3) There are slight mismatches (validation mark = 1) between 266 translation synsets, but more than half (59%) of them are not exact equivalents (EstWN synsets having eq_near_synonym relation) and in such cases it is not unusual to have slight mismatches with Finnish WN translations equivalents. More interesting is a set of 93 Estonian synsets with eq_synonym relation. Variety of mismatch reasons in this set is wide, but more common reasons are:
- Estonian or Finnish synset members are too specific (the meaning is too narrow) or too general (the meaning is too wide);
 - there are missing or inadequate members in Estonian or Finnish synsets;
 - Estonian WN synset eq_synonym relation is inadequate and eq_near_synonym relation would be more appropriate in most cases.
- In 21 cases (23%) the reason of mismatching is in Finnish WN synsets, some 2-3 translations have mismatches on both sides, and in rest of cases the source is the Estonian WN;
- 4) All together 53 Finnish-Estonian translations got validation assessment as ‘outright errors’ with validation mark 0. In Appendix 6 there are represented only 5 such cases, where Estonian WN synset has eq_synonym relation with PWN synset.

Although Estonian and Finnish languages are closely related to each other, only 840 (72%) Estonian synsets of 1162 in total had correct translation into Finnish. A main source of incompatibility, however, seems to derive from the fact that the wordnets were created using different approaches, such as different approaches regarding how to distribute word senses in synonym sets. In general, Finnish translation equivalents together in one Finnish WN synset represented wider meanings than Estonian equivalents or covered 2-3 synsets (different meanings) in EstWN.

3.6 Summing up validation results

In general, the semi-automatically linked wordnets are judged to be of a rather good quality even if translations are not always 100% precise. In the sections above, partners report on an average of 2,2 % errors and 7,0 % slight mismatches. It should be noted however, that there are large divergences among the different evaluations, thus UT reports on 53 errors and 226 slight mismatches whereas UHEL reports on no errors and only 7 mismatches. Since the validations are made by different partners, part of the divergences are due to somewhat different interpretations of the concepts ‘slight mismatches’. For instance, the Estonian partner has registered differences in synonyms or differences in specificity as slight mismatches, as seen in the following commented links in table 3.

Table 3 Estonian-Finnish translations that are considered to be slight mismatches.

WN_synset	ET_synset	FI_synset	WN gloss	Com.
album%1:06:00::	album_2	albumi; valokuva-albumi	a book of blank pages with pockets or envelopes; for organizing photographs or stamp collections etc	FinnWN synset member 'valokuva-albumi' is more specific (eq_has_hyponym)
apparatus%1:06:00::	aparaat_1, seadis_1	aparaatti; koneisto; laite; laitteisto; väline	equipment designed to serve a specific function	EstWN synset members are in singular, as one particular piece of equipment

Generally, differences in sense per synset are reported on as one of the main factors of translations that are not considered fully precise. Not surprisingly, wordnets that have been

compiled via translations from Princeton WordNet have many senses per synsets (just as Princeton WordNet), whereas wordnets that are monolingually compiled and rather based on synonymy registrations in conventional dictionaries, have less.

With regards to the actual alignment errors, there does not appear to be a systematic bias, some are of course due to false friends, others however, seem to be just random errors introduced during the linking to Princeton Core WordNet, as in the following, where the English synset has been linked to a too specific sense of 'waste' in the Danish wordnet than what was indicated by the English gloss, cf. Table 4.

Table 4 Example of Danish-Swedish link which is considered an error.

WN_synset	DA_synset	SV_synset	WN gloss	Com.
waste% 1:27:00::	{spildprodukt_0}	avfall..1	any materials unused and rejected as worthless or unwanted	DA refers to byproducts of production; should be the more general 'affald'.

Via the validations presented above and by browsing the wordnets in WordTies, further insights have been achieved wrt. the very diverse characteristics of the selected wordnets in terms of taxonomical differences, different understandings of the synset, and differences in compiling semantic relations.

First of all, we can observe some differences in average hyponym depth, number of senses per synset and average number of relations connected to a synset as shown in Table 5.

Table 5 Hyponym depth, word sense per synset and relations per synset for three.

	DanNet 2.2	FinnWordNet 2.0	EstWN kb65
Hyponym depth/ SynSet	4,38	7,49	5,93
Word Senses/SynSet	1,09	1,74	1,65
Relations/SynSet	4,97	2,21	2,91

FinnWordNet has the highest average of hyponymy depth, relating well to our intuition of this wordnet being more expert oriented at least in the fields of botany and zoology. In contrast, EstWN and DanNet which rely more on monolingual dictionaries and the genus proximums given in the definitions of these, have less depth. This fact can also be illustrated by extracting the path to the top from a botanical concept like *tree* in Danish and Finnish, respectively:

træ (tree) has 2 super-concepts (plante → organisme)
puu (tree) has 9 super-concepts (puumainen kasvi → putkilokasvi → kasvi → eliö → elävä olio → kokonaisuus → esine → fyysinen entiteetti → entiteetti)
For more abstract concepts, this tendency, however, seems to be less dominant, as can be seen for the concept <i>hope</i> in Danish and Finnish, respectively:
håb (hope) has 4 super-concepts (fornemmelse → tilstand → karakteregenskab → beskaffenhed)
toivo (hope) has 5 super-concepts (tunne → tila → attribuutti → abstrahointi → entiteetti)

These taxonomical differences can also be viewed graphically via WordTies, as seen in Figure 5.

semantic database contains nouns, verbs, adjectives and adverbs; there are multiword units as well. EstWN has been compiled manually from Estonian monolingual dictionaries and other monolingual resources, but there are some endeavours for automatic additives. For example, a number of words have been derived via suffixes.

For EstWN Polaris EuroWordNet import-export format is used. This limits some possibilities to the semantic relations listed in Polaris files and ILI records to Princeton WN version 1.5. Some tools to convert the Polaris export files to and from various formats have developed. The tools are based on Python Eurowordnet module developed earlier. They include tools to convert Princeton WN into EuroWordNet (Polaris export), EuroWordNet into MySQL, EuroWordNet into various XML formats (DebVis-Dic and Kyoto are included) in Python Eurown module. There exists a conversion of EstWN to MySQL, but this one is closely entwined with Princeton WN. EstWN can be queried online at <http://www.cl.ut.ee/teksaurus> and www.keeleeveeb.ee.

EstWN was initially created as part of EuroWordNet project, with these tools and principles that were applicable to the whole project. The Polaris tool intended to create EuroWordNet is used to create EstWN up to today.

Polaris uses a special database format internally, the only way to get data out is to use the export-import facility. Polaris is a rather old-fashioned tool, the last support of the program has ended with the last century. One of the outdated features of the program is that no UTF encoding is used, user should set encoding for the export and import file. It may be a bug in the program itself, or it may be some kind of interference of the program and underlying operating system, but we have found a lot of encoding errors, some of them date back to the very first version of Estonian WN. From version to version, the errors tend to have a cumulative effect, and as time passes and version number grows, it would be more difficult to find the error and have the right encoding marked.

We have checked the encodings of the previous versions of Estonian WN, and especially the current one, and converted all of them into UTF-8 encoding. In order to have a better overview and compatibility with other META-NORD wordnets, we have created a MySQL database and converted the Estonian WN export files into MySQL tables.

There are several formats used in different projects that deal with wordnets. One of the most widespread file format is the one in which the original Princeton WN is disseminated. The Finnish WN uses this format as well.

There are some known differences between the original Princeton wordnet and EuroWordNet. The Princeton Wordnet semantic relation set is a bit different from the EuroWordNet, and there are some deviations of usage: e.g. in Princeton WN, for verbs there is not used hyperonymy relations, but troponymy. In EuroWordNet there are some additional relations, the most unspecified one is called 'fuzzynym', it denotes 'somehow-connected-to' relation. There are differences in definitions (called 'glosses' in EuroWordNet jargon) as well: in Princeton WN, gloss is connected to only first member of the synset; in EuroWordNet, there may be many glosses (that are semantically compatible, but may differ in selection of words). For Princeton WN, there is no special field for examples, the usage examples are included into definition fields.

For EuroWordNet, there are semantic relations that connect a national wordnet with the Princeton WN as well, this is called interlingua (abbr. ILI), and these relations are known as eq-relations.

We have developed a converter that can convert wordnet from Princeton format into EuroWordNet export file. The differences in semantic relations are translated via translation

table, if Princeton WN relation is more specific, then 'fuzzynym' is assumed. ILI links (interlingual relations) are marked as 'eq_synonym' only, with the original Princeton WN offset.

We have converted the Finnish WN into EuroWordNet format with our tool, and it works with our WN online browser TEKSaurus (<http://www.cl.ut.ee/ressursid/teksaurus/>).

4.2 Progress on Icelandic Wordnet

Within META-NORD, the Princeton Core WordNet (5,000 word senses) has been translated into Icelandic. Furthermore, the semantic database MerkOr, which constitutes the Icelandic wordnet and which was built as a part of Anna Björk Nikulásdóttir's doctoral project, is available through META-SHARE. It has been developed using a monolingual approach with automatic methods for the extraction of semantic information from texts. Both pattern-based and statistical methods are used, as well as a hybrid methodology.

The structure of the database is not based on hierarchies, like the Princeton WordNet, but rather on clusters of strongly related words and semantic relations often describing common sense knowledge and associations. The database contains about 110,000 words, primarily nouns, but also a number of verbs and adjectives. About 2.93 million relations between these words are listed in the database which also contains 305 semantic clusters - lists of words that belong to the same semantic field.

The basic elements of the database are:

- *lexical item*. Contains an id, a 'lemma' (=word string), sense number and a wordclass;
- *relation*. A relation connects two lexical items with a relation type (see next). Each relation has a confidence score associated to it, the higher this score, the better / more representative the relation;
- *relation type*. Specifies the type of relationship between two lexical items;
- *cluster*. A cluster is an ordered list of lexical items belonging to the same semantic domain. Each item in a cluster has a score associated to it, indicating how well the item fits the corresponding cluster. Less than 10,000 items belong to a cluster.

The MerkOrCore API and command line interface can be used to query this data, among other:

- Does a word belong to more than one lexical item?
- Which relations exist for a certain word?
- What are the relations with the highest confidence score for a certain word?
- What are the relations with the highest confidence score for a certain relation type?
- To which cluster(s) does a word belong?
- Are there clusters representing some certain semantic domain?
- Which lexical items are connected to a certain domain?

The database is distributed under the GNU Lesser General Public License and is available from <https://github.com/bnika/MerkOrCore>. The database can also be queried online at <http://merkor.skerpa.com>.

5 Progress on Norwegian Wordnet

Since a Norwegian wordnet had not been initiated when this project started, it is not described in the DoW. However, a Norwegian Wordnet (NWN) is now being developed as a

part of The Norwegian Language Bank (*Språkbanken*). It consists of around 50,000 synsets, for both Norwegian Nynorsk and Norwegian Bokmål and covers more than 90 per cent of the senses of open word classes in running newspaper text. Both wordnets are available via META-SHARE (<http://www.nb.no/clarin/repository/search/?q=ordnett>). The compilation is based on the Danish wordnet (DanNet), and thus NWN contains the same lexical relations and much of the same semantic analysis as DanNet. The data format and licence are also identical.

Semantically, Danish and Norwegian are very closely related, and word senses are mostly equivalent (though the frequency with which the senses are used often varies). Some synsets are dropped: some are only relevant for Danish society, and do not have natural equivalent in Norwegian. These synsets are almost exclusively infrequent and «peripheral» in the DanNet (i.e. they are leaf nodes in the synset graph). A partial semantic annotation of a Norwegian corpus has been developed to ensure that the most frequent senses for Norwegian text are covered. Using this method, it has been possible to create a very extensive wordnet for a fraction of the cost for development from scratch, and without the quality problems associated with translation from for example English.

6 Dissemination, sustainability and collaboration with other META projects

The multilingual wordnet initiative has dealt with the validation and pilot linking of wordnets between the Nordic and Baltic languages. One central aim has been to perform a tentative comparison and validation of the wordnets, a related aim being to make the linked wordnets visible via a common web interface. To this end, four pilot bilingual wordnets were compiled and validated: Danish-Swedish, Danish-Finnish, Estonian-Finnish, Finnish-Swedish, and the interface WordTies (wordties.cst.dk) was developed. Furthermore, all the involved wordnets have undergone extensions and upgrades in META-NORD, including also Icelandic wordnet and Norwegian Wordnet of which the latter has been developed from scratch during the project period (based on the Danish wordnet, DanNet). All six monolingual wordnets and the four bilingual ones have been made available via META-SHARE⁸. The work has been documented in a conference publication from 2012 (Pedersen et al. 2012), and ongoing work will present the final results of the examinations and developments performed (Pedersen et al. submitted). Furthermore, WordTies has been announced on relevant mailing lists.

Further ‘horisontal’ work on wordnets includes i) an extension of the web interface to include more wordnets and ii) a broader comparison and validation of the wordnets included than the ones provided via the 1,000 common links. UCPH plans to maintain wordties.ku.dk at least until the end of 2014 and to include multilingual links for the full Core Wordnet (5,000 synsets) for browsing and validation.

An eventual extension of the multilingual task to include more wordnets requires that such potential extra wordnets are upgraded to agreed xml standards and linked to Princeton Core, which constitutes the interlingua in the META-NORD initiative. Furthermore, the extension should take previous, similar European initiatives into account, such as the MultiWordNet initiative (<http://multiwordnet.itc.it>) taken by Trento, Italy, and study to which extent already linked data can be included in a flexible way not having to redo bilingual links.

First contact was taken to the other sibling projects regarding the multilingual wordnets in June 2012 and brief meetings were held at METAFORUM 2012. After this first exploratory

⁸ Note, however, that Norwegian WordNet actually includes two wordnets, one for Bokmål and one for Nynorsk.

phase there seems to be an interest among a few of the other wordnet groups to validate and merge their wordnets along the same lines as in META-NORD and in the common web interface WordTies, cf. project report, Pedersen (2012). After the multilingual web interface ('Wordties' – see above) was completed, contact was taken again to sibling projects in December 2012 in order to have them view the browser and consider if they wanted to add their own wordnets to the interface.

A broader comparison and validation of the wordnets than the ones provided by the 1,000 links would furthermore be fruitful and should be made feasible when the web interface is extended to include multilingual links for the full Core Wordnet. We have already reported on a discrepancy in the synset approach where some wordnets include more senses in a synset than others. Other discrepancies have been registered during the linking, namely discrepancies in taxonomical structure: Some have used an expert perspective on i.e. animals and thereby compiled a relatively deep taxonomy (i.e. the Finnish wordnet) whereas others have used a layman perspective adapted from a dictionary which is more flat (i.e. the Danish wordnet). The number and selection of relations in the wordnets also differ; some have included only Princeton relations, others include EuroWordNet relations (i.e. Estonian, Danish) and others again have adapted relations also from the SIMPLE project, such as used_for and made_by relations (Danish and Norwegian wordnets).

7 References

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Appendices

The following schemas and tables have been generated by the different partners in order to comment in detail on the particular mismatches/errors in the bilingual links between synsets. Even if all partners have not registered mismatches in exactly the same way, all have used the same rating system:

- 2 for correct links (only a few of these are included in the tables below)
- 1 for slight mismatches (only selections of these are included in the tables below)
- 0 for outright errors

Furthermore, some partners have added a letter to the rates in order to indicate in which of the two languages a problem is considered to originate: D= Danish, S= Swedish, E= Estonian, F= Finnish, B= both languages.

Appendix 1. Finnish to English

In the following schema, the Princeton Core synsets is first given together with its gloss. This is followed by the Finnish translation, a rating and a comment.

give%2:40:06::

place into the hands or custody of; “hand me the spoon, please”; “Turn the files over to me, please”; “He turned over the prisoner to his lawyers”

antaa; kurkottaa; ojentaa; siirtää<approximate/>; välittää

rated as 1, “kurkottaa” is slightly odd and “luovuttaa” seems to be missing

deprive%2:40:00::

keep from having, keeping, or obtaining

jättää ilman

rated as 1, should also be “viedä mahdollisuus hankkia” or “viedä mahdollisuus pitää”

update%2:32:00::

bring up to date; supply with recent information

kertoa uutiset

rated as 1, should be “päivittää”

remember%2:31:09::

call to remembrance; keep alive the memory of someone or something, as in a ceremony; “We remembered the 50th anniversary of the liberation of Auschwitz”; “Remember the dead of the First World War”

kunnioittaa; kunnioittaa muistoa; muistaa

rated as 1, “kunnioittaa” should removed

arrange%2:31:00::

arrange thoughts, ideas, temporal events; “arrange my schedule”; “set up one's life”; “I put these memories with those of bygone times”

järjestää; laittaa; organisoida; pystyttää
 rated as 2 but “laittaa” should be “laittaa kuntoon” or “laittaa järjestykseen”

ensure%2:32:00::

make certain of; “This nest egg will ensure a nice retirement for us”; “Preparation will guarantee success!”

luvata; suojata; taata; turvata; vakuuttaa; varmistaa
 rated as 1, should remove “luvata”, “suojata”, “vakuuttaa”

include%2:42:00::

have as a part, be made up out of; “The list includes the names of many famous writers”

kattaa; sisältää
 rated as 2 could add “pitää sisällään”

prove%2:31:00::

establish the validity of something, as by an example, explanation or experiment; “The experiment demonstrated the instability of the compound”; “The mathematician showed the validity of the conjecture”

havainnollistaa; näyttää; osoittaa; todistaa; vahvistaa; vakiinnuttaa
 rated as 2, remove “vakiinnuttaa”

suffer%2:39:00::

feel physical pain; “Were you hurting after the accident?”

jomottaa; kivistää; koskea; kärsiä; pakottaa; sattua; särkeä; tehdä kipeätä
 rated as 2, but should perhaps remove “jomottaa, kivistää” as too specific

grow%2:30:04::

develop and reach maturity; undergo maturation; “He matured fast”; “The child grew fast”

aikuistua; kasvaa; kehittyä; kypsyä; kysyä
 rated as 2 if removing the typo “kysyä”

retirement%1:04:00::

withdrawal from your position or occupation

eläkkeelle jääminen
 rated as 2 but should also have “tehtävänsä jättäminen”

spring%1:28:00::

the season of growth; “the emerging buds were a sure sign of spring”; “he will hold office until the spring of next year”

kevään; kevät
 rated as 2, if “kevään” is removed

flat%1:06:00::

a suite of rooms usually on one floor of an apartment house

asuinhuoneisto; asunto; huoneisto

rated as 2, suggestion that the older term “huoneusto” is added

sun%1:28:00::

first day of the week; observed as a day of rest and worship by most Christians

Dominicus; pyhäpäivä; su; sunnuntai

rated as 2, if the word “Dominicus” is removed

family%1:14:01::

people descended from a common ancestor; “his family has lived in Massachusetts since the Mayflower”

fratria; klaani; suku; sukulaiset

rated as 2, if “fratria” is removed

worker%1:18:00::

a person who works at a specific occupation; “he is a good worker”

työntekijä

rated as 2, but “työläinen, duunari” could be added

picture%1:06:01::

graphic art consisting of an artistic composition made by applying paints to a surface; “a small painting by Picasso”; “he bought the painting as an investment”; “his pictures hang in the Louvre”

kuva; maalaus

rated as 2, also “taulu” could be added

circumstance%1:26:02::

the set of facts or circumstances that surround a situation or event; “the historical context”

asiayhteys; olosuhde; puitteet; tausta

rated as 2, but “konteksti” could be added

west%1:24:00::

the cardinal compass point that is a 270 degrees

L; länsi; läntinen<idiomatic_pos/>

rated as 2, but perhaps “W” could be added

fish%1:13:00::

the flesh of fish used as food; “in Japan most fish is eaten raw”; “after the scare about foot-and-mouth disease a lot of people started eating fish instead of meat”; “they have a chef who specializes in fish”

kala

rated as 2 for content, but the form should really be “kalaa” to emphasize the meat of the fish

south%1:24:00::

the cardinal compass point that is at 180 degrees

S; etelä; etelään<idiomatic_pos/>; suoraan etelään

rated as 2, but in addition “E” could perhaps be added

sport%1:04:00::

an active diversion requiring physical exertion and competition

urheilu; yleisurheilu

rated as 2, but the term “yleisurheilu” is too specific and rather a hyponym

east%1:24:00::

the cardinal compass point that is at 90 degrees

I; itä

rated as 2, but in addition “E” could perhaps be added

meeting%1:04:00::

the social act of assembling for some common purpose; “his meeting with the salesmen was the high point of his day”

kokoontuminen; kokous

rated as 2, but in addition one might add “tapaaminen”

error%1:04:02::

a wrong action attributable to bad judgment or ignorance or inattention; “he made a bad mistake”; “she was quick to point out my errors”; “I could understand his English in spite of his grammatical faults”

erehdys; kämmi; moka; virhe

rated as 2, but perhaps “kömmähdyt” could be added

dream%1:09:01::

a series of mental images and emotions occurring during sleep; “I had a dream about you last night”

unennäkö; uni

rated as 2, but “unennäkö” should be removed as it is too ad-hoc

detail%1:24:00::

a small part that can be considered separately from the whole; "it was perfect in all details"

erä; yksityiskohta

rated as 2, but one could add "detalji"

glory%1:26:00::

a state of high honor; "he valued glory above life itself"

glooria; kunnia; kunniaan nostaminen

rated as 2, but "kunniaan nostaminen" should be removed

gun%1:06:00::

a weapon that discharges a missile at high velocity (especially from a metal tube or barrel)

kivääri; pistooli; pyssy; tykki

rated as 2, but "ampuma-ase" should be added

Appendix 2. Swedish to English

Below are the comments with regard to the Swedish synonym sets for Core WordNet.

In the following schema, the Princeton Core synsets is first given together with its gloss. This is followed by the Swedish translation, a rating and a comment.

cold%3:00:02:: *extended meanings; especially of psychological coldness; without human warmth or emotion; "a cold unfriendly nod"; "a cold and unaffectionate person"; "a cold impersonal manner"; "cold logic"; "the concert left me cold"*

kyla..3

rated as 1, wrong word-class in Swedish, should be adjective

ensure%2:32:00::

make certain of; "This nest egg will ensure a nice retirement for us"; "Preparation will guarantee success!"

övertyga sig..1; förvissa sig..1; trygga..1; garantera..1; försäkra sig..1

rated as 1, the translations "övertyga sig", "förvissa sig" och "försäkra sig" should be removed and possibly "försäkra ngn om ngt" added

improve%2:30:01::

to make better; "The editor improved the manuscript with his changes"

bättra på..1; förbättra..1; förkovra..1; bättra..1

rated as 2, the synonym "förkovra" is dubious

way%1:04:01::

how a result is obtained or an end is achieved; "a means of control"; "an example is the best agency of instruction"; "the true way to success"

förmedling..1; sätt..1; medel..1

rated as 1, the synonym “förmedling” should probably be removed

date%1:14:00::

a meeting arranged in advance; “she asked how to avoid kissing at the end of a date”

träff..2; möte..1; förlovning..1

rated as 2, but we think “förlovning” is rather too ambitious for modern standards

retirement%1:04:00::

withdrawal from your position or occupation

avgång..2

rated as 2, but “pensionering” is perhaps also be covered by this core net concept

professor%1:18:00::

someone who is a member of the faculty at a college or university

professor..1

rated as 2, but knowing that this is Core Wordnet also “universitetslärare, univeristetslektor” should be considered

Appendix 3. Danish to English

Below are the comments with regard to the Danish synonym sets for Core WordNet. In general the synonym sets were very brief compared with the Swedish or Finnish synonyms sets containing only one word which we took to represent a broader set of synonyms.

get%2:40:00::

come into the possession of something concrete or abstract; “She got a lot of paintings from her uncle”; “They acquired a new pet”; “Get your results the next day”; “Get permission to take a few days off from work”

få

rated as 2, should this Core WordNet concept perhaps also have a link from “skaffe”

prove%2:31:00::

establish the validity of something, as by an example, explanation or experiment; “The experiment demonstrated the instability of the compound”; “The mathematician showed the validity of the conjecture”

bevise

rated as 2, should this meaning also cover “vise; demonstrere” or is that already included in “bevise”

professor%1:18:00::

someone who is a member of the faculty at a college or university

professor

rated as 2, but since this is Core WordNet we may also consider “universitetslektor”

center%1:06:00::

a building dedicated to a particular activity; “they were raising money to build a new center for research”

butikscener; center; indkøbscenter; shoppingcenter; handelscenter

rated as 1, since “butik-, inkøbs-, shopping-, handels-” are too specific and perhaps rather hyponyms to “center”

rule%1:09:02::

a rule or law concerning a natural phenomenon or the function of a complex system; “the principle of the conservation of mass”; “the principle of jet propulsion”; “the right-hand rule for inductive fields”

naturlov

rated as 2, should perhaps also be “regel; lov”

Appendix 4. Danish to Swedish

	PWN	DA	SE	PWN gloss	Comment
0D	center%1:06:00::	{butikscener_1; center_2; indkøbscenter_1; shoppingcenter_1; handelscenter_2}	centrum..2	a building dedicated to a particular activity	The wrong Danish synset was chosen, probably based on the two meanings of the word 'center'.
0S	board%1:14:00::	{bestyrelse_1}	nämnd..1	a committee having supervisory powers	SE doesn't denote “supervisory powers”
0S	cancel%2:41:03::	{aflyse_1}	avbeställa..1 ställa_in..1	postpone indefinitely or annul something that was scheduled	Avbeställa refers to cancelling an order of an item; SE should be changed to a synset containing avlysa
0S	repeat%2:36:00::	{gentage_1}	dubbla..1 upprepa..1 duplicera..1 fördubbla..1	make or do or perform again	3 out of 4 words in SE synset refer to 'doubling' (of a quantity); upprepa refers to repetition and alone would be a 1; bad synset? Or bad dictionary!
0S	obscure%2:39:00::	{skjule_1_1}	molnig..1 disig..1 dunkel..1 dimmig..1	make less visible or unclear	Crossing POS boundaries (DA/PWN: V; SE: Adj)
0S	established%3:00:00::	{etableret_1}	inrättad..1 upprättad..1	brought about or set up or accepted; especially long established	Should maybe be 0; DA has an aspect of duration and acceptance that SE lacks
0D	panel%1:06:00::	{element_1}	panel..1	sheet that forms a distinct (usually flat and rectangular) section or component of something	Not sure what's happened here.
0D	spring%1:17:00::	{springvand_1}	källa..2	a natural flow of ground water	DA means 'fountain'; should be 'kilde'

	PWN	DA	SE	PWN gloss	Comment
OD	development%1:22:01::	{udvikling_1}	mognad..1 växande..1 utveckling..1 ontogeni..1 växt..2	(biology) the process of an individual organism growing organically; a purely biological unfolding of events involved in an organism changing gradually from a simple to a more complex level	DA refers to a more abstract meaning of the word.
OD	president%1:18:03::	{direktor_1}	ordförande..1	the officer who presides at the meetings of an organization	DA should be 'formand'.
OD	waste%1:27:00::	{spildprodukt_0}	avfall..1	any materials unused and rejected as worthless or unwanted	DA refers to byproducts of production; should be the more general 'affald'.
OD	undertake%2:41:01::	{foretage_1; gore_5}	tackla..3 påta_sig..1 åta_sig..1	accept as a challenge	DA refers to doing, SE and PWN refers to doing with intent to finish(?)
OD	successful%3:00:00::	{succesrig_1}	lyckad..1	having succeeded or being marked by a favorable outcome	DA should be successfuld; succesrig refers to a person who is habitually successful
OD	relative%3:00:00::	{relativ,2_1}	relativ..1 komparativ..1	estimated by comparison; not absolute or complete	?
OD	regular%3:00:00::	{regelmæssig_1}	ordinarie..1	in accordance with fixed order or procedure or principle	DA refers to regular in the sense of regular intervals
OD	soft%3:00:04::	{blød,2_2}	tyst..2	(of sound) relatively low in volume	DA refers to a pleasing, soft quality; should be stille, lav
OD	drop%1:17:00::	{skråning_1}	stup..1 klippa..2	a steep high face of rock	DA refers to a milder slope in terrain; SE/PWN to a steep drop or cliff
OS	suffer%2:39:00::	{lide,1_1}	ont..2 smärta..1 värk..1	feel physical pain	SE crosses POS boundaries (DA/PWN: V; SE: Adj)
OS	adequate%3:00:00::	{tilstrækkelig_1; sufficient_1}	fullvärdig..1 jämlik..1	having the requisite qualities or resources to meet a task	The dictionary defines the first SE as ~'complete'; second SE as ~'equal'
OS	definite%3:00:00::	{præcis_2}	bestämd..1	precise; explicit and clearly defined	The dictionary defines SE as ~'determined, firm' (of a person)
OD	busy%3:00:00::	{travl_1}	upptagen..1	actively or fully engaged or occupied	DA and PWN refer to a more general state whereas SE refers to something more transient

Appendix 5. Swedish to Finnish

Marking	CoreWN sense key	Finnish synonyms	Swedish synonyms	FiWN/PWN gloss (English)	Comments
0B	offender%1:18:00::	pahantekijä; rikollinen	gärningsman..1; missdådare..1	a person who transgresses moral or civil law	"pahantekijä" and "missdådare" 'felon, malfactor' are equivalents but not correct in this case. "Rikollinen" or "rikosantekijä" 'perpetrator' is the correct translation.
0F	give%2:40:06::	antaa; kurkottaa; ojentaa; siirtää<approximate/ >; välittää	ge..1; överlämna..1; lämna..1; överräcka..1	place into the hands or custody of	"kurkottaa" 'reach'. Does not fit in this case.
0F	update%2:32:00::	kertoa uutiset	aktualisera..1	bring up to date; supply with recent information	"kertoa uutiset" 'tell the news' which is not what is asked. "päivittää", "ajantasaistaa" or even "aktualistaa" would have been correct.
0F	take%2:38:10::	nostaa; siirtää; viedä	medföra..1; ta med..1; ta..1	take something or somebody with oneself somewhere	"nostaa" 'raise, lift' is incorrect.
0F	retirement%1:04:00::	eläkkeelle jääminen	avgång..2	withdrawal from your position or occupation	(Finnish) "eläkkeelle jääminen" 'retiring pension' is semantically narrower than (Swedish) "avgång" 'departure, withdrawal'.
0F	novel%1:10:00::	kertomus	roman..1	an extended fictional work in prose; usually in the form of a story	"kertomus" 'story' is not what is meant here but "romaani", "roman" in Swedish.
0S	soft%3:00:01::	heikko; peräänantava	mjuk..1	yielding readily to pressure or weight	(Swedish) "mjuk" is 'soft' but not the same as 'yielding readily' of the FiWN/PWN gloss.
0S	adequate%3:00:00::	asianmukainen; pätevä; riittävä; vastaava	fullvärdig..1; jämlik..1	having the requisite qualities or resources to meet a task	"jämlik" 'equal' is not an appropriate translation of the concept meant.
0S	take%2:38:10::	siirtää; viedä	röra sig..1	move so as to change position, perform a nontranslational motion	"röra sig" 'move oneself' does not correspond to the concept meant. An alternative might be "flytta" or "skjuta", an equivalent of "siirtää" in Finnish
0S	character%1:26:00::	hyvä maine	karaktär..1	good repute	'good repute' is "hyvä maine" in Finnish, while "karaktär" does not mean 'good repute' but simply 'character'.

Marking	CoreWN sense key	Finnish synonyms	Swedish synonyms	FiWN/PWN gloss (English)	Comments
0S	fiction%1:10:00::	kaunokirjallinen teos	skönlitteratur..1	a literary work based on the imagination and not necessarily on fact	"skönlitteratur" 'fictitious literature' is a hyponym of the concept meant.
1B	labour%1:14:00::	proletaarit; proletariaatti; työläiset; työväenluokka	proletariat..1; arbetarklass..1	a social class comprising those who do manual labor or work for wages	Finnish "proletariaatti" and Swedish "proletariat" are not synonyms of "working class" that is meant here. "Proletariaatti"/ "proletariat" refer to people oppressed by capitalists.
1B	commerce%1:04:00::	kaupallisuus; kaupankäynti; kauppa	merkantilism..1; kommers..1; handel..1	transactions (sales and purchases) having the objective of supplying commodities (goods and services)	"kaupallisuus" and "merkantilism" 'mercantilism' are not 'transactions' meant in the FiWN/PWN gloss.
1B	game%1:04:01::	pele, LEIKKI	Lek..1, SPEL	an amusement or pastime	an amusement or pastime' is both "pele" 'game' and LEIKKI 'play' (suppl.) in Finnish. Respectively, Swedish "lek" means 'play' and "SPEL" 'game' (suppl.).
1B	instruction%1:04:00::	opettajanura; opettaminen; opetusala; pedagogiikka	pedagogik..1; undervisning..1	the profession of a teacher	"opettajanura" 'teacher career' is not 'profession' proper; "pedagogik" / "pedagogiikka" means 'branch of science' or 'skill of teaching', not the profession of a teacher as such. Moreover, note the discrepancy between CoreWN sense key and FiWN/PWN gloss (English), since 'instruction' of the sense key is not the same as 'the profession of a teacher' of the gloss.
1B	region%1:15:01::	vyöhyke, ALUE	Område..1, ZON	a large indefinite location on the surface of the Earth	"vyöhyke" 'zone' and "ALUE" 'indefinite location, area'. "område" 'indefinite location, area', "ZON" 'zone'
1S	universal%5:00:00:comprehensive:00	maailmalaajuinen; maailmanlaajuinen; universaali; yleismaailmallinen	allmän..1; kosmopolitisk..1; världsomfattande..1; global..1; ekumenisk..1	of worldwide scope or applicability	"allmän" 'general' does not cover what is meant with 'of worldwide scope'.
1F	aggressive%3:00:00::	aktiivinen; yritteliäs; AGGRESSIIVINEN	aggressiv..1	having or showing determination and energetic pursuit of your ends	The Finnish words mean 'active' and 'industrious', respectively. They are supplemented with AGGRESSIIVINEN 'aggressive'

Marking	CoreWN sense key	Finnish synonyms	Swedish synonyms	FiWN/PWN gloss (English)	Comments
1F	blind%3:00:00::	kritiikitön; sokea; varaukseton	synskadad..1; blind..1	unable to see	"kritiikitön" 'uncritical' and "varaukseton" 'unreserved' are wrong translations of the English gloss.
1F	think%2:31:01::	olla mielipiteenä; pitää, OLLA MIELTÄ; TYKÄTÄ; JNK MIELESTÄ	tro..1; tycka..1; tänka..1; anse..1	judge or regard; look upon; judge	"olla mielipiteenä" 'to have as an opinion' should rather be "olla (jtk) mieltä", lit. 'be of some mind'
1F	utter%2:32:02::	päästää; päästää ilmoille; päästää ulos; päästää valloilleen; tuottaa; äännellä	yttra..1; utstöta..1	express audibly; utter sounds (not necessarily words)	"päästää" is an extremely polysemous verb. Obviously, the meaning 'emit (a sound)' is meant here. The Sw. entries are semantically much narrower.
	happen%2:30:00::	käydä; mennä; pitää<note>tilaisuus tai tapahtuma</note>; sattua; sujua; tapahtua	äga rum..1; avlöpa..1; pågå..1; inträffa..1; falla sig..1; ske..1; hända sig..1; tillstöta..1; hända..1	come to pass	"käydä" and "mennä" are general motion verbs that are used in some idiomatic constructions, e.g. "miten menee?" 'how is it going'
1F	confine%2:41:00::	pidättää; pitää suljettuna, VANGITA	spärria in..1; häkta..1	deprive of freedom; take into confinement	VANGITA 'jail' corresponds to what is meant in the English gloss.
1F	country%1:14:00::	kansalaiset; poliittinen elin<unconfirmed/>; res publica; yhteiskunta; KANSAKUNTA, MAA	land..1; stat..1; nation..1; samhälle..1	a politically organized body of people under a single government	"kansalaiset" 'citizens' do not make an organized political body. "KANSAKUNTA" 'nation' and "MAA" 'land, country' supplement.
1F	fluid%1:27:00::	juokseva aine; NESTE	vätska..1	continuous amorphous matter that tends to flow and to conform to the outline of its container: a liquid or a gas	"neste" 'liquid, fluid' is an appropriate supplementary entry corresponding to "vätska" in Swedish.
1F	father%1:18:00::	isä; siittäjä, FAIJA, FATSI, ISKÄ	far..1	a male parent (also used as a term of address to your father)	"siittäjä" 'inseminator' is semantically much wider than "isä" 'father'. FAIJA, FATSI, ISKÄ are spoken language words for 'father, daddy'.
1F	citizen%1:18:00::	kansalainen; kaupunkilainen	medborgare..1	a native or naturalized member of a state or other political community	"kaupunkilainen" 'inhabitant of town, townsman' is too vague to correspond to the concept intended.

Marking	CoreWN sense key	Finnish synonyms	Swedish synonyms	FiWN/PWN gloss (English)	Comments
1S	industry%1:04:00::	teollisuus; tuotanto	industri..1; manufaktur..2, PRODUKTION	the organized action of making of goods and services for sale	(Swedish) "produktion" 'production' is an appropriate supplement
1B	rule%1:09:02::	laki; periaate; toimintaperiaate, SÄÄNTÖ	princip..1; regelmässighet..1	a rule or law concerning a natural phenomenon or the function of a complex system	(Finnish) "SÄÄNTÖ" 'rule' is an appropriate supplement. (Swedish) "regelmässighet" 'regularity' is not semantically correct, in this case.
1S	squad%1:14:01::	ryhmä	pluton..1, GRUPP	a smallest army unit	The smallest army unit in the Swedish army is "grupp", which corresponds to "ryhmä" in the Finnish army.
1S	professor%1:18:00::	opettaja; professori; yliopistonopettaja	Professor..1. LÄRARE, UNIVERSITETS- LÄRARE	someone who is a member of the faculty at a college or university	Pertaining to the English gloss, "lärare" 'teacher' and "universitetslärare" 'university teacher' supplement "professor" 'professor' on the Swedish side.
1S	worker%1:18:00::	työntekijä	Arbetare..1, ANSTÄLLD	a person who works at a specific occupation; "he is a good worker"	(Swedish) "anställd" 'employee' is a more neutral term than "arbetare" 'worker' and corresponds well to the Finnish "työntekijä" 'employee'.
1S	definite%3:00:00::	täsmällinen	bestämd..1, PRECIS, EXAKT	precise; explicit and clearly defined	"bestämd" 'firm, definite' does not cover what is meant in this case. "PRECIS" and "EXAKT" supplement.
1S	original%3:00:00::	omaperäinen; omintakeinen; originelli; tuore	ursprunglig..1, ORIGINELL	being or productive of something fresh and unusual; or being as first made or thought of	"Ursprunglig" 'original, primordial' corresponds less well to the meaning intended.
1F	deprive%2:40:00::	jättää ilman, RIISTÄÄ	beröva..1	keep from having, keeping, or obtaining	(Finnish) "jättää ilman" means 'leave without', and it is supplemented with "RIISTÄÄ" (= "beröva") 'deprive', in this case.
1S	way%1:04:01::	keinot; konsti; tapa	förmedling..1; sätt..1; medel..1	how a result is obtained or an end is achieved	"förmedling" 'mediation, conveying' does not correspond to the concept intended.

Marking	CoreWN sense key	Finnish synonyms	Swedish synonyms	FiWN/PWN gloss (English)	Comments
1S	number% 1:07:00::	numero	siffr..1; tal..1	a symbol used to represent a number	"tal" 'number' is represented by "siffr" 'digit', which is the intended meaning in this case.

Appendix 6. Estonian to Finnish

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
1	access% 1:07:00::	ligipääs_1, juurdepääs_1	kulkuoikeus; pääsy; pääsyoikeus; sisäänpääsy; sisäänpääsyoikeus	the right to enter	EstWN gloss gives an idea about access as right to use as well
1	accident% 1:11:01::	avarii_1, õnnetus_2, õnnetusjuhtum_1	haveri; onnetomuus; tapaturma; vahinko	an unfortunate mishap; especially one causing damage or injury	EstWN focus on traffic accident only
1	account% 1:21:02::	aruanne_1	selonteko; selvitys; tilinteko; tiliote; tilitys	a statement of recent transactions and the resulting balance	EstWN focus on statement, not specifically in bookkeeping terms
1	account% 1:21:02::	konto_1, arve_4	selonteko; selvitys; tilinteko; tiliote; tilitys	a statement of recent transactions and the resulting balance	EstWN focus on bookkeeping tables as statement, FinnWN on bookkeeping process and/or statement, WN gloss on bookkeeping statement
1	act% 1:03:00::	inimtegevus_1	inhimillinen toiminta; tekeminen; teko; toimenpide; toimi; työ	something that people do or cause to happen	EstWN synset member fits more with glosses, but not with all FinnWN synset members
1	addicted% 3:00:00::	sõltuv_1, sõltlane_1	riippuvainen	compulsively or physiologically dependent on something habit-forming	EstWN 1 synset member is not adjective!!!
1	adequate% 3:00:00::	adekvaatne_1, vastav_2, kattuv_1	asianmukainen; pätevä; riittävä; vastaava	having the requisite qualities or resources to meet a task	EstWN relation should be eq_near_synonym
1	album% 1:06:00::	album_2	albumi; valokuva-albumi	a book of blank pages with pockets or envelopes; for organizing photographs or stamp collections etc	FinnWN synset member 'valokuva-albumi' is more specific (eq_has_hyponym)
1	apparatus% 1:06:00::	aparatuur_1	aparaatti; koneisto; laite; laitteisto;	equipment designed to serve a specific	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			väline	function	
1	apparatus%1:06:00::	aparaat_1, seadis_1	aparaatti; koneisto; laite; laitteisto; väline	equipment designed to serve a specific function	EstWN synset members are in singular, as one particular piece of equipment
0	approach%2:38:00::	vastu_astuma_1, vastu_minema_1	lähestyä; läheta; tulla lähelle	move towards	EstWN relation should be eq_has_hyperonym
1	approve%2:32:00::	kinnitama_2, heaks_kiitma_1, sanktsioneerima_1	antaa hyväksymys; antaa hyväksyntä; antaa suostumus; hyväksyä; ok-kuitata	give sanction to	EstWN synset is too narrow
1	army%1:14:00::	maakaitsevägi_1	armeija; maavoimat; puolustusvoimat<b roader/>	a permanent organization of the military land forces of a nation or state	
1	army%1:14:00::	regulaarvägi_1, kaadriarmee_1	armeija; maavoimat; puolustusvoimat<b roader/>	a permanent organization of the military land forces of a nation or state	
1	army%1:14:00::	kaitsejõud_1, kaitsevägi_1	armeija; maavoimat; puolustusvoimat<b roader/>	a permanent organization of the military land forces of a nation or state	
1	arrange%2:31:00::	korraldama_7, korda_seadma_3	järjestää; laittaa; organisoida; pystyttää	arrange thoughts, ideas, temporal events	EstWN synset is too narrow
0	art%1:04:00::	taidlus_1, isetegevus_1, amatöörkunst_1	taide; taideteos; taiteellinen luomus	the creation of beautiful or significant things	
0	artist%1:18:00::	taidleja_1, isetegevuslane_1	artisti; kuvataiteilija<narrower/>; taiteilija	a person whose creative work shows sensitivity and imagination	
1	association%1:14:00::	liit_3	järjestö; liitto; seura; yhdistys	a formal organization of people or groups of people	
1	attitude%1:09:00::	hoiak_1, suhtumine_1, suhtumislaad_1, meelsus_1	asenne; kanta; käsitys; mielipide; näkökanta<approximate/>	a complex mental state involving beliefs and feelings and values and dispositions to act in certain ways	
1	authority%1:18:01::	autoriteet_2, mõjumees_1	viranomainen	(usually plural) persons who exercise (administrative) control over others	
1	avoid%2:32:00::	vältima_2, hoiduma_4, hoidma_4, kõrvale_hoidma	karttaa; vältellä; välttää	stay clear from; keep away from; keep out of the way of someone or something	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
		_1, tōrjuma_4			
0	award%1:21:00::	peaauhind_1, peapreemia_1, põhiahind_1, põhipreemia_1	palkinto; voitto	something given for victory or superiority in a contest or competition or for winning a lottery	
1	back%2:41:01::	sekundeerima_2	hyväksyä; kannattaa; olla jkn puolella; tukea	give support or one's approval to	EstWN synset is too narrow
1	background%1:09:00::	tagaplaan_1	pohja; taka-ala; tausta	the part of a scene (or picture) that lies behind objects in the foreground	
1	balance%2:42:00: :	tasakaalustama_1, stabiliseerima_1, balansseerima_1	pitää tasapainossa	bring into balance or equilibrium	FinnWN synset does not fit with PWN meaning 'bring into balance'
0	bank%1:14:00::	depositoorium_3	pankki; pankkikonserni; talletuslaitos	a financial institution that accepts deposits and channels the money into lending activities	
1	beach%1:17:00::	rand_1	hiekkaranta; ranta; uimaranta	an area of sand sloping down to the water of a sea or lake	EstWN do not focus on sand or swimming possibilities
0	beat%2:35:00::	plaanima_3	hakata; jyskyttää; takoa	hit repeatedly	
1	beat%2:35:00::	lööma_2, keerutama_5	hakata; jyskyttää; takoa	hit repeatedly	EstWN synset have missing and wrong members
0	belly%1:08:00::	tagakeha_1	maha; vatsa	the region of the body of a vertebrate between the thorax and the pelvis	
1	bitter%5:00:00:re sentful:00	vimmakandev_1, vihakandev_1	katkera; katkeransävyinen; katkeroitunut; kärkevä	marked by strong resentment or cynicism	
1	blind%3:00:00::	pime_2	kritiikitön; sokea; varaukseton	unable to see	FinnWN have wrong synset member 'kritiikitön'
1	body%1:08:00::	inimkeha_1	elimistö; keho; rakenne	the entire structure of an organism (an animal, plant, or human being)	
1	bold%3:00:00::	julge_2, kartmatu_2, mehine_2, vapper_2, uljas_2	arastelematon; arkailematon; rohkea; urhoollinen; uskalias	fearless and daring	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
0	bone%1:08:00::	kehaliikmed_1, ihuliikmed_1, luud-kondid_1, luud-liikmed_1	luu; os	rigid connective tissue that makes up the skeleton of vertebrates	
1	brain%1:18:00::	geenius_1, suurvaim_2	aivot; lahjakkuus; mestari; nero; älykkö	someone who has exceptional intellectual ability and originality	EstWN synset have missing members
0	bridge%1:06:00::	jääsild_1	silta	a structure that allows people or vehicles to cross an obstacle such as a river or canal or railway etc.	
0	camera%1:06:00: :	kaamera_1, filmikaamera_1	kamera; valokuvakamera	equipment for taking photographs (usually consisting of a lightproof box with a lens at one end and light-sensitive film at the other)	
1	campaign%1:11:00::	valmiskampaania_1	kampanja; poliittinen kampanja; vaalikampanja	a race between candidates for elective office	EstWN synset is too narrow
1	cancel%2:41:03::	üles_ütlema_1	hylätä; keskeyttää; perua; peruuttaa	postpone indefinitely or annul something that was scheduled	EstWN have missing members
1	card%1:06:00::	mängukaardid_1, kaardid_1, tondipiibel_1, lehed_1, klibakas_1	kortti; pelikortti	one of a set of small pieces of stiff paper marked in various ways and used for playing games or for telling fortunes	
1	careful%3:00:00::	ettevaatlik_2, alalhoidlik_2	huolellinen; tarkka; varovainen	exercising caution or showing care or attention	EstWN have some odd members like 'alalhoidlik' (conservative)
1	carriage%1:06:03::	vanker_1	lastenrattaat; lastenvaunut; rattaat; vaunut	a small vehicle with four wheels in which a baby or child is pushed around	EstWN synset talks about carriage as transportation vehicle riding by horse
1	cat%1:05:00::	kass_1	kissa; kissaeläin	feline mammal usually having thick soft fur and no ability to roar: domestic cats; wildcats	EstWN synset is narrower
1	ceiling%1:06:00::	lagi_2, laekonstruksio on_1	katto	the overhead upper surface of a covered space	
0	center%1:06:00::	tarbijakeskus_1	keskus	a building dedicated to a particular activity	
1	center%1:06:00::	keskus_2	keskus	a building dedicated to a particular activity	EstWN talks about central organisation only, not about

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
					building
0	character%1:26:00::	iseloom_2, visadus_2, püsivus_4	hyvä maine	good repute	EstWN synset is totally wrong!
1	chase%2:38:00::	jälitama_1, taga_ajama_2, püüdma_1, jälgi_ajama_2	ajaa; ajaa takaa; jahdata; jäljittää; olla kintereillä; seurata; seurata jälkiä; varjostaa	go after with the intent to catch	
1	choice%1:09:02::	valikuvõimalus _1	vaihtoehto; valinta	one of a number of things from which only one can be chosen	
1	choice%1:09:02::	võimalus_2, variant_1, alternatiiv_1, valik_2, alternatiivvaria nt_1	vaihtoehto; valinta	one of a number of things from which only one can be chosen	
1	church%1:06:00::	kogudusekirik_1, maakirik_1, kihelkonnakirik_1	kirkko; kirkkorakennus	a place for public (especially Christian) worship	
1	close%2:35:00::	kinni_keerama_1	sulkea	move so that an opening or passage is obstructed; make shut	
1	club%1:14:00::	ring_4, huviring_1, huvialaring_1	kerho; kilta; klubi; loosi; veljeskunta; yhdistys	a formal association of people with similar interests	
0	collection%1:14:00::	kogunõudlus_1, üldnõudlus_1	asemblaasi; kasauma; kokoelma; kokouma; yhdistelmä	several things grouped together or considered as a whole	
1	commerce%1:04:00::	kaubandus_1	kaupallisuus; kaupankäynti; kauppa	transactions (sales and purchases) having the objective of supplying commodities (goods and services)	EstWN is too large and more focus on economic field than process
1	commission%1:14:01::	esindus_2	delegaatio; valtuuskunta; valtuusto	a group of representatives or delegates	
1	common%3:00:01::	keskpärane_1, tavaline_2, lihtne_1	tavallinen	having no special distinction or quality; widely known or commonly encountered; average or ordinary or usual	EstWN synset have too detailed members
1	computer%1:06:00::	infotöötlussüste em_1	tietojenkäsittelyjärj estelmä; tietokone	a machine for performing calculations automatically	
1	conference%1:14	konverents_1	neuvottelu	a prearranged meeting	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
	:00::			for consultation or exchange of information or discussion (especially one with a formal agenda)	
0	confine%2:41:00:	vangistama_1, vang_i_võtma_1, vang_i_panema_1, kinni_panema_5	pidättää; pitää suljettuna	deprive of freedom; take into confinement	
1	convenient%3:00:00::	sobiv_3, mugav_5, vastuvõetav_4	kätevä; sopiva	suited to your comfort or purpose or needs	
1	copyright%1:10:00::	autorikaitse_1	kirjallinen omistusoikeus; kustannusoikeus; tekijänoikeus	a document granting exclusive right to publish and sell literary or musical or artistic work	
1	council%1:14:01:	volikogu_1	neuvosto; valtuusto	a body serving in an administrative capacity	
1	country%1:14:00:	maa_4, riik_2	kansalaiset; poliittinen elin<unconfirmed/>; res publica; yhteiskunta	a politically organized body of people under a single government	FinnWN synset is odd
1	crown%1:06:01::	diadeem_1	diadeemi; kruunu	an ornamental jeweled headdress signifying sovereignty	EstWN is too narrow and link should be eq_near_synonym
1	current%3:00:00:	tänavune_1, tänavuaastane_1	ajankohtainen; nykyinen; tämänhetkinen	occurring in or belonging to the present time	
1	curtain%1:06:00::	draperii_1	verhot	hanging cloth used as a blind (especially for a window)	EstWN link should be eq_near_synonym
1	danger%1:26:00::	oht_1, hädaoht_1, ohtlikkus_1	vaara	the condition of being susceptible to harm or injury	
1	deprive%2:40:00:	ilma_jätma_1, ära_võtma_3	jättää ilman	keep from having, keeping, or obtaining	
1	detail%1:24:00::	jublakas_1, nublakas_1, jupp_2	erä; yksityiskohta	a small part that can be considered separately from the whole	
1	develop%2:42:00::	lähtuma_3, tulenema_2, väljuma_3, algust_saama_2, välja_kasvama_2	ilmaantua; ilmetä; kasvaa; kehittyä; muodostua; saada alkunsa; syntyä; tulla	come into existence; take on form or shape	
1	develop%2:42:00	tekkima_1	ilmaantua; ilmetä;	come into existence;	EstWN synset

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
	::		kasvaa; kehittyä; muodostua; saada alkunsa; syntyä; tulla	take on form or shape	should be richer in members
0	development%1: 22:01::	seemnekasvatus _1	aikuistuminen; kasvaminen; kasvu; kehittyminen; kehitys; kypsyminen; ontogeneesi; ontogenia; yksilönkehitys	(biology) the process of an individual organism growing organically; a purely biological unfolding of events involved in an organism changing gradually from a simple to a more complex level	
0	development%1: 22:01::	rohumaaviljelu _1	aikuistuminen; kasvaminen; kasvu; kehittyminen; kehitys; kypsyminen; ontogeneesi; ontogenia; yksilönkehitys	(biology) the process of an individual organism growing organically; a purely biological unfolding of events involved in an organism changing gradually from a simple to a more complex level	
0	development%1: 22:01::	kartulikasvatus _1	aikuistuminen; kasvaminen; kasvu; kehittyminen; kehitys; kypsyminen; ontogeneesi; ontogenia; yksilönkehitys	(biology) the process of an individual organism growing organically; a purely biological unfolding of events involved in an organism changing gradually from a simple to a more complex level	
1	development%1: 22:01::	ontogeneesi_1, isendiareng_1	aikuistuminen; kasvaminen; kasvu; kehittyminen; kehitys; kypsyminen; ontogeneesi; ontogenia; yksilönkehitys	(biology) the process of an individual organism growing organically; a purely biological unfolding of events involved in an organism changing gradually from a simple to a more complex level	EstWN is too narrow and link should be eq_near_synonym
1	dialogue%1:10:0 1::	polüloog_1	kaksipuhelu; keskustelu	a conversation between two persons	
1	district%1:15:00::	ringkond_1	alue; kaupunginosa; piirikunta	a region marked off for administrative or other purposes	
1	district%1:15:00::	jaoskond_2	alue; kaupunginosa; piirikunta	a region marked off for administrative or other purposes	
1	district%1:15:00::	piirkond_3, territorium_1, rajoon_3	alue; kaupunginosa; piirikunta	a region marked off for administrative or other purposes	FinnWN synset member 'kaupunginosa' focus

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
					on city, town
1	document%1:10:00::	dokumentatsioon_1, dokumendid_1	asiakirja; paperit	writing that provides information (especially information of an official nature)	
1	economy%1:14:00::	majandamismetod_1	talous; talousjärjestelmä	the system of production and distribution and consumption	
1	education%1:09:00::	koolitarkus_1, aabitsatarkus_1, kooliharidus_1	koulutus	knowledge acquired by learning and instruction	
1	elbow%1:08:00::	küünarnukk_1, küünarpea_1	kulmasarana; kyynär-; kyynärnivel; kyynärpää; polviliitos	hinge joint between the forearm and upper arm and the corresponding joint in the forelimb of a quadruped	
1	elbow%1:08:00::	küünarliiges_1	kulmasarana; kyynär-; kyynärnivel; kyynärpää; polviliitos	hinge joint between the forearm and upper arm and the corresponding joint in the forelimb of a quadruped	
1	employment%1:26:00::	tööhõive_1	palvelus; toimi; työ; työsuhde	the state of being employed or having a job	EstWN synset member is odd
1	established%3:00:00::	kinnistunud_1, juurdunud_3	vakiintunut; vallitseva; valtion-	brought about or set up or accepted; especially long established	
1	established%3:00:00::	kindlaskujunenud_1, traditsiooniline_1	vakiintunut; vallitseva; valtion-	brought about or set up or accepted; especially long established	
1	estimate%1:09:00::	hindamine_1	aprosimointi; arvio; käsitys	an approximate calculation of quantity or degree or worth	
1	eye%1:08:00::	silmad_1, silmapaar_1	näkö; näkö-; silmät	the organ of sight	
1	factory%1:06:00:	manufaktuur_1	tehdas; tehdaslaitos; tehdasrakennus; teollisuuslaitos; tuotantolaitos	a plant consisting of one or more buildings with facilities for manufacturing	
1	factory%1:06:00:	tootmishall_1	tehdas; tehdaslaitos; tehdasrakennus; teollisuuslaitos; tuotantolaitos	a plant consisting of one or more buildings with facilities for manufacturing	
1	faith%1:09:00::	kultus_1	usko; uskonnollinen vakaumus	a strong belief in a supernatural power or powers that control	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
				human destiny	
1	faith%1:09:00::	usk_1, religioon_1, usund_1	usko; uskonnollinen vakaumus	a strong belief in a supernatural power or powers that control human destiny	EstWN focus on religion, not attitude or feeling
1	fall%1:11:00::	varisemine_1, varing_1	pudotus	a free and rapid descent by the force of gravity	
1	family%1:14:01::	liin_3	fratria; klaani; suku; sukulaiset	people descended from a common ancestor	
1	favourite%1:18:00::	pesamuna_1, kaapekakk_1	kullanmuru; kullannuppu; kulta; lemmikki; muru; rakas; rakastettu; suosikki	a special loved one	
1	favourite%1:18:00::	lemmikloom_2	kullanmuru; kullannuppu; kulta; lemmikki; muru; rakas; rakastettu; suosikki	a special loved one	
1	fear%1:12:00::	argus_1, kartlikkus_1, arglikkus_1, pelglikkus_1, araveresus_1, arg_1	kauhu; pelko; pelokkuus	an emotion experienced in anticipation of some specific pain or danger (usually accompanied by a desire to flee or fight)	
1	fear%1:12:00::	ehmatus_1, ehmatamine_1, kohkumus_2	kauhu; pelko; pelokkuus	an emotion experienced in anticipation of some specific pain or danger (usually accompanied by a desire to flee or fight)	
1	feature%1:09:00::	loomupärasus_1, loomuomasus_1	ominaisuus; piirre	a prominent attribute or aspect of something	
1	federation%1:14:00::	föderatsioon_1	liitto	a union of political organizations	
1	federation%1:14:00::	konföderatsioon_1, riikideliit_1	liitto	a union of political organizations	EstWN focus on states or countries only
1	fee%1:21:00::	riigilõiv_1	maksu; palkkio	a fixed charge for a privilege or for professional services	
1	fee%1:21:00::	teenustasu_1	maksu; palkkio	a fixed charge for a privilege or for professional services	
1	fee%1:21:00::	tasu_1	maksu; palkkio	a fixed charge for a privilege or for professional services	
1	fiction%1:10:00::	proosateos_1	kaunokirjallinen	a literary work based	EstWN consider

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			teos	on the imagination and not necessarily on fact	only prose
1	field%1:15:00::	väli_2	pelto	a piece of land cleared of trees and usually enclosed	
1	field%1:15:00::	esplanaad_2	pelto	a piece of land cleared of trees and usually enclosed	
1	finished%3:00:01::	lõppenud_1, möödas_1, otsas_1, läbi_1, möödunud_2, seljataga_1	valmis	ended or brought to an end	FinnWN have missing members?
0	fish%1:13:00::	kalasööt_1	kala	the flesh of fish used as food	
1	flat%1:06:00::	apartement_1	asuinhuoneisto; asunto; huoneisto	a suite of rooms usually on one floor of an apartment house	
1	flavour%1:09:00:	maitsevarjund_1, kõrvalmaik_1, maik_2, kõrvalmaitse_1	makoisuus; maku; sivumaku; vahva maku	the taste experience when a savoury condiment is taken into the mouth	
1	force%2:41:00::	pressima_4	painostaa; pakottaa	to cause to do through pressure or necessity, by physical, moral or intellectual means :She forced him to take a job in the city	
1	frequent%3:00:00::	sage_1, sagedane_1, alatasane_1, korduv_1, frekventne_1, pidev_1	toistuva; yleinen	coming at short intervals or habitually	FinnWN member 'yleinen' is odd
1	fresh%3:00:01::	värsk_1, äsjane_3, äsjavalminud_1	tuore; uunituore<narrower>; vasta tehty; veres	recently made, produced, or harvested	FinnWN synset have too narrow members
1	game%1:04:00::	võistlusmäng_1	pele	a contest with rules to determine a winner	EstWN equal link should be eq_near_synonym
1	good%1:06:00::	tarbeese_1	hyödyke; kauppatavara; massahyödyke; tavara	articles of commerce	
1	grounds%1:09:00::	lähtealus_1	näyttö; osoitus; todiste; todisteet	your basis for belief or disbelief; knowledge on which to base belief	
1	grow%2:30:04::	küpsema_1, valmima_3	aikuistua; kasvaa; kehittyä; kypsyä; kysyä	develop and reach maturity; undergo maturation	
1	gun%1:06:00::	tulirelv_1	kivääri; pistooli;	a weapon that	FinnWN synset have

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			pyssy; tykki	discharges a missile at high velocity (especially from a metal tube or barrel)	more specific members
1	hall%1:06:02::	hall_2	sali	a large room for gatherings or entertainment	EstWN equal link should be eq_near_synonym
1	harbour%1:15:00::	sadamalinn_1	merisatama; satama; satamakaupunki oader/>; suojasatama; turvasatama<narrower/>	a sheltered port where ships can take on or discharge cargo	
1	head%1:08:00::	gorgoneion_1	kallo; pää	the upper part of the human body or the front part of the body in animals; contains the face and brains	
1	head%1:08:00::	peaosa_2	kallo; pää	the upper part of the human body or the front part of the body in animals; contains the face and brains	
0	history%1:09:00::	agraarajalugu_1	historia	the discipline that records and interprets past events involving human beings	
1	hospital%1:06:00::	polikliinik_1	sairaala; sairasosasto	a health facility where patients receive treatment	
1	hospital%1:06:00::	ambulaatorium_1, ambulants_1	sairaala; sairasosasto	a health facility where patients receive treatment	
1	hospital%1:06:00::	haigla_2, haiglahoone_1, haigemaja_1	sairaala; sairasosasto	a health facility where patients receive treatment	EstWN synset focus on hospital building only
1	hotel%1:06:00::	hotellikompleks_1	hotelli	a building where travelers can pay for lodging and meals and other services	
1	inadequate%3:00:00::	mitteadekvaatne_1, mittevastav_1, mittekattuv_1	puutteellinen; riittämätön; sopimaton	lacking the requisite qualities or resources to meet a task	EstWN synset members are odd or inadequate
1	incident%1:11:00::	vahejuhtum_1, intsident_1	tapahtuma; tapaus	a single distinct event	EstWN synset is too narrow
0	informal%3:00:01::	sundimatu_2	epävirallinen	not formal	PWN have 2 different meanings for word 'informal' and both EstWN and FinnWN use different meanings

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
1	initiative%1:04:00::	initsiatiiv_2, algatus_2	aloite; aloitus; avaus; ensimmäinen vaihe	the first of a series of actions	EstWN and FinnWN use different meanings of PWN 'initiative', FinnWN one is closer to PWN gloss
1	instruction%1:04:00::	pedagogika_1, kasvatusteadus_1	opettajanura; opettaminen; opetusala; pedagogiikka	the profession of a teacher	FinnWN synset is equal with PWN gloss, EstWN synset is inadequate with PWN gloss and focus on pedagogy as field of activity
1	introduce%2:32:00::	tutvustama_1, esitlema_1, kurssi_viima_1, ülevaadet_and ma_1, presenteerima_1	esitellä; tutustuttaa	cause to come to know personally	EstWN synset is much larger than just 'to know personally'
1	introduce%2:38:00::	tutvustama_2, tuttavaks_tege ma_1, esitlema_2	esitellä; tuoda	bring in a new person or object into a familiar environment	EstWN synset is mixed up with another 'introduce' - cause to come to know personally
1	investment%1:21:00::	investeerimisfond_1, mahutusfond_1	sijoitus; sijoitusrahastot	money that is invested with an expectation of profit	problems in EstWN synset distribution
1	kind%3:00:00::	meeldiv_1, sümpaatne_1, kena_1	hyväntahtoinen; kiltti; ystävällinen	having or showing a tender and considerate and helpful nature; used especially of persons and their behavior	EstWN synset is odd
1	law%1:14:00::	seadlus_1	juridiikka; laki	the collection of rules imposed by authority	EstWN synset member is too specific terminological word
0	leader%1:18:00::	komandör_2	johtaja; päällikkö	a person who rules or guides or inspires others	EstWN equal link should be eq_has_hyperonym
1	leader%1:18:00::	juhtija_7	johtaja; päällikkö	a person who rules or guides or inspires others	
1	leaf%1:20:00::	lehestik_1	lehdet; lehvistö	the main organ of photosynthesis and transpiration in higher plants	
1	leaf%1:20:00::	leht_1	lehdet; lehvistö	the main organ of photosynthesis and transpiration in higher plants	FinnWN synset focus on foliage, not leaf as single piece
1	leaflet%1:10:00::	brošüür_1	esite; kirjanen; lehtinen;	a small book usually having a paper cover	not all FinnWN synset members refer

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			lentolehtinen; pamfleetti; vihkonen		to binding with several sheets as it is explained in PWN gloss
1	licence%1:10:00: :	luba_2	lisenssi; lupa; lupakirja	a legal document giving official permission to do something	
1	loan%1:21:00::	rahalaen_1	laina	the temporary provision of money (usually at interest)	
1	lot%1:23:00::	hunnik_1, kuhi_1, virn_2, ports_2, laar_1, vare_2	aikamoisesti<idiomatic_pos/>; hatullinen<unconfirmed/>; huomattavasti<idiomatic_pos/>; iso; iso kasa; kasa; kasapäin<idiomatic_pos/>; kasoittain; keko; koko joukko; liuta; läjä; läjäpäin; nippu; paljon<idiomatic_pos/>; parvi; roppakaupalla; runsaasti<idiomatic_pos/>; röykkiö; suuri määrä; tukku; vuori	(often followed by `of') a large number or amount or extent	FinnWN synset content consists a lot of idiomatic expressions
1	love%1:09:00::	kirg_2	intohimo; intohimon kohde; rakkaus	any object of warm affection or devotion;	
1	marriage%1:04:00::	abielu_registree rimine_1	avioliiton solmiminen; häät; vihkiminen; vihkiäistilaisuus	the act of marrying; the nuptial ceremony	
1	measure%2:30:00::	kvantifitseerima _1	mitata; määrittää	express as a number or measure or quantity	EstWN synset member is too specific terminological word
1	meat%1:13:01::	tai_1, tailiha_1	liha	the flesh of animals (including fishes and birds and snails) used as food	
0	medal%1:10:00::	medaljon_1	ansiomerkki; kunniamerkki; laakeriseppele; medaljonki; mitali; palkinto; voitonpalmu	an award for winning a championship or commemorating some other event	
0	medal%1:10:00::	patera_1	ansiomerkki; kunniamerkki; laakeriseppele; medaljonki; mitali;	an award for winning a championship or commemorating some other event	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			palkinto; voitonpalmu		
1	meeting%1:04:00 ::	miiting_1	kokoontuminen; kokous	the social act of assembling for some common purpose	
1	memory%1:09:00 ::	meenutus_1, meenutamine_1	mielessä pitäminen; muistaminen; muisti	the power of retaining and recalling past experience	EstWN equal link should be eq_near_synonym
1	mind%1:09:00::	pea_2, pööning_2	järki; mieli; psyhyke; älli	that which is responsible for one's thoughts and feelings; the seat of the faculty of reason	EstWN synset is odd or equal link should be another
1	mother%1:18:00: :	vallasema_1, üksikema_1, sohitüdruk_1, kesanoorik_1, kasunaine_1	naispuolinen vanhempi; äiti	a woman who has given birth to a child (also used as a term of address to your mother)	
1	mouth%1:08:01::	suukoobas_1, suuõõs_1	kita; suu; suuontelo	the opening through which food is taken in and vocalizations emerge	
1	move%2:38:00::	liikuma_3	siirtää; viedä	move so as to change position, perform a nontranslational motion	EstWN synset members are causatives, FinnWN synset members rather non-causatives
0	multiply%2:31:0 0::	laiendama_2	kertoa	combine by multiplication	
0	neighbour%1:18: 00::	idanaaber_1	naapuri	a person who lives (or is located) near another	
0	neighbour%1:18: 00::	lõunanaaber_1	naapuri	a person who lives (or is located) near another	
0	neighbourhood% 1:15:00::	paikkond_1	läheisyys; lähiseutu; lähistö; lähiympäristö; seutu; tienoo; ympäristö	a surrounding or nearby region	
1	novel%1:10:00::	romaan_1	kertomus	an extended fictional work in prose; usually in the form of a story	FinnWN synset is more general, exact translate would be 'romani'
0	obstacle%1:06:00 ::	mittelõhkev_tõ ke_1	este	an obstruction that stands in the way (and must be removed or surmounted or circumvented)	
1	offence%1:04:01: :	kuritegu_1, seaduserikkumi ne_1,	lainrikkomus; rikos	(criminal law) an act punishable by law; usually considered an	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
		kuritöö_1, väärtegu_2, süütegu_2		evil act	
1	officer%1:18:01::	miilits_1, militsionäär_1	konstaapeli; poliisi	a member of a police force	
1	officer%1:18:01::	politseitöötaja_1, politseiametnik_1	konstaapeli; poliisi	a member of a police force	
0	opera%1:10:00::	melodraama_2	ooppera	a drama set to music; consists of singing with orchestral accompaniment and an orchestral overture and interludes	
1	order%1:26:02::	korrapärasus_1, regulaarsus_2, järjepidevus_2	hyvä järjestys; järjestys; kunto	a condition of regular or proper arrangement	
0	ordinary%3:00:00::	korraline_2, ordinaarne_1	tavallinen	not exceptional in any way especially in quality or ability or size or degree	EstWN synset is wrong, correct equivalent would be 'tavaline, igapäevane, harilik'
1	owner%1:18:00::	eraomanik_1, eravaldaja_1	omistaja	(law) someone who owns (is legal possessor of) a business	
1	owner%1:18:00::	peremees_1	omistaja	(law) someone who owns (is legal possessor of) a business	EstWN synset is too narrow, equal link should be eq_has_hyperonym'
0	package%1:14:00::	pakk_6	käärö; paketti; pakkaus	a collection of things wrapped or boxed together	
1	package%1:14:00::	saadeti_1	käärö; paketti; pakkaus	a collection of things wrapped or boxed together	
1	package%1:14:00::	pakett_2	käärö; paketti; pakkaus	a collection of things wrapped or boxed together	
0	panel%1:06:00::	peegel_2	levy; peili	sheet that forms a distinct (usually flat and rectangular) section or component of something	
0	panel%1:06:00::	suurplokki_1, montaaži plokki_1	levy; peili	sheet that forms a distinct (usually flat and rectangular) section or component of something	
1	panel%1:06:00::	paneel_2	levy; peili	sheet that forms a distinct (usually flat and rectangular)	EstWN synset is too narrow, equal link should be

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
				section or component of something	eq_has_hyperonym'
1	party%1:14:00::	istung_2, oleng_1, koosviibimine_2	bailut; bileet; joukko; juhla; kemut; seurue	a group of people gathered together for pleasure	
0	passage%1:08:00::	trakt_1	käytävä; tie	a path or channel or duct through or along which something may pass	
1	peace%1:12:00::	hingerahu_1, südamerahu_2	ataraksia; levollisuus; mielenrauha; rauha; rauhallisuus; tyyneys	the absence of mental stress or anxiety	
1	performance%1:04:01::	ettekanne_2, esitus_2	esitys	the act of presenting a play or a piece of music or other entertainment	
1	personality%1:07:00::	isikupära_1, omapära_2, individuaalsus_1	luonne; persoonallisuus	the complex of all the attributes--behavioral, temperamental, emotional and mental--that characterize a unique individual	
1	plant%1:06:01::	tööstushoone_1, tööstusehitis_1	laitos; tehdas; tuotantolaitos	buildings for carrying on industrial labor	
1	play%1:10:01::	lavateos_1	näytelmä	a dramatic work intended for performance by actors on a stage	
0	point%1:25:02::	mõttepunkt_1, katkestuspunkt_1	piste; täplä	a very small circular shape	
1	point%1:25:02::	punkt_5	piste; täplä	a very small circular shape	
0	politician%1:18:00::	poliitjuht_1, politruk_1	poliitikko	a person active in party politics	
1	position%1:26:00::	staatus_2, positsioon_2	asema	the relative position or standing of things or especially persons in a society	EstWN synset has missing the best equivalent 'asend'
1	press%2:35:00::	pressima_1, litsuma_1, suruma_1	painaa	exert pressure or force to or upon	EstWN synset has missing the best equivalent 'vajutama'
1	price%1:07:00::	müügihind_1	hintaa; rahallinen arvo	the property of having material worth (often indicated by the amount of money something would bring if sold)	
0	prisoner%1:18:00::	jäävang_2	rangaistusvanki; vanki	a person who is confined; especially a	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
				prisoner of war	
0	production%1:04:00::	tootmisviis_1	tuotanto	the act or process of producing something	
1	professor%1:18:00::	professor_1	opettaja; professori; yliopistonopettaja	someone who is a member of the faculty at a college or university	FinnWN has too different equivalents
1	program%1:09:00::	abiprogramm_1, utiliit_1, utiliitruitiin_1, teenindusprogramm_1	ohjelma; suunnitelma	a series of steps to be carried out or goals to be accomplished	
0	program%1:10:01::	otseülekanne_1	lähetys; ohjelma	a radio or television show	
0	program%1:10:02::	kloon_3	ohjelma; tietokoneohjelma	(computer science) a sequence of instructions that a computer can interpret and execute	
1	proud%3:00:00::	uhke_2, tähtis_2, kõrk_1	ylpeä	feeling self-respect or pleasure in something by which you measure your self-worth; or being a reason for pride	EstWN synset meaning is little different, expressing more arrogance
1	provision%1:04:01::	tarne_1, tarning_1	hankinta; järjestäminen; toimittaminen	the activity of supplying or providing something	
1	publish%2:32:00:	välja_andma_3, publitseerima_1, kirjastama_1, üllitama_1, ära_trükkima_1, avaldama_1, ilmutama_3	julkaista	prepare and issue for public distribution or sale	EstWN equal link should be eq_near_synonym
0	rack%1:06:01::	rest_1	häkki; naulakko; teline	framework for holding objects	this English word have too different equivalents in both languages
1	radio%1:06:00::	raadio_1, raadioside_2	radio; radiolähetin; radiotekniikka	a communication system based on broadcasting electromagnetic waves	FinnWN some equivalents does not fit with PWN gloss
0	reader%1:18:02::	abonent_1	lukija; tilaaja	someone who contracts to receive and pay for a service or a certain number of issues of a publication	
1	real%3:00:00::	mitteformaalne_1, tegelik_2, sisuline_1, päris_2	olemassaoleva; tosi-	being or occurring in fact or actuality; having verified existence; not illusory; not ghosts	EstWN have some odd members like 'mitteformaalne' (non-formal), 'sisuline' and missing 'realne'

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
					(real)
1	relate%2:31:00::	seostama_2, assotsieerima_1	assosoidia; liittää; linkittää; yhdistää	make a logical or causal connection	
1	repeat%2:36:00::	dubleerima_1	kopioida; toistaa; uusia	make or do or perform again	EstWN equivalent is too specific
1	report%1:10:03::	aruanne_1	kirjallinen raportti; selvitys; tutkimus	a written document describing the findings of some individual or group	
1	responsibility%1: 04:00::	kohustus_2, kohus_1	vastuu; velvollisuus	the social force that binds you to the courses of action demanded by that force; every opportunity, an obligation; every possession, a duty- John D.Rockefeller Jr	
1	restaurant%1:06: 00::	restoran_1	ravintola; ruokala; ruokapaikka	a building where people go to eat	EstWN represents only specific narrower meaning as restaurant
1	risk%1:04:00::	oht_1, hädaoht_1, ohtlikkus_1	riski; uhka; vaara	a venture undertaken without regard to possible loss or injury	
1	room%1:06:00::	ruum_4	huone	an area within a building enclosed by walls and floor and ceiling	
1	room%1:06:00::	körvalruum_3	huone	an area within a building enclosed by walls and floor and ceiling	
1	run%2:38:00::	jooksutama_1, jõlgutama_1, siia- sinna_läkitama _1	juosta	move fast by using one's feet, with one foot off the ground at any given time	
0	salt%1:13:00::	meresool_1	pöytäsuola; ruokasuola; suola	white crystalline form of especially sodium chloride used to season and preserve food	
1	say%2:32:00::	väljendama_1, avaldama_3, teatama_1, välja_tooma_3, ära_tooma_1	kertoa	express in words	
1	scene%1:10:01::	filmivõte_1, võte_4, filmimine_1	kohtaus; kuva; otto	a consecutive series of pictures that constitutes a unit of action in a film	
1	scene%1:26:01::	stseen_2	hysterinen	a display of bad	EstWN equivalent is

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			kohtaus; kiukunpuuska; kohtaus; raivokohtaus; raivonpuuska	temper	too specific
1	scientific%3:00:00::	teaduslik_1	luonnontieteellinen <narrower/>; oikeustieteellinen< narrower/>; tieteellinen; yhteiskuntatieteelli nen<narrower/>	conforming with the principles or methods used in science	FinnWN synset has also narrower equivalents included
1	send%2:32:00::	korrespondeeri ma_1, kirjavahetuses_ olema_1	lähettää; postittaa; toimittaa	cause to be directed or transmitted to another place	
1	sheet%1:06:00::	tekikott_1, tekiümbrik_1	lakanat; vuodevaatteet	bed linen consisting of a large rectangular piece of cotton or linen cloth; used in pairs	
1	single%5:00:00:unshared:00	separaatne_1, eraldine_1, lahusolev_1, apartne_1	henkilökohtainen; yhden hengen<gen/>	characteristic of or meant for a single person or thing	FinnWN synset members focus on human
1	sky%1:17:00::	taevas_2, taevalaotus_1, laotus_1	taivas; yötaivas<narrower/ >	the atmosphere and outer space as viewed from the earth	FinnWN synset has also narrower equivalents included
1	snow%1:19:00::	lumesadu_1	lumi; lumisade	precipitation falling from clouds in the form of ice crystals	EstWN first equivalent should be 'lumi'
1	soul%1:18:00::	psühholoogia_2 , hingelaad_1, sisemaailm_1, hingeelu_1, psüühika_2	psyhyke; sielu	the immaterial part of a person; the actuating cause of an individual life	
1	spirit%1:26:01::	enesetunne_1	mielentila; tunnetila; tuuli	the state of a person's emotions (especially with regard to pleasure or dejection)	
0	stable%1:06:00::	härjatall_1	talli; tallit	a farm building for housing horses or other livestock	
1	state%1:15:01::	kubermang_1	maakunta; osavaltio	the territory occupied by one of the constituent administrative districts of a nation	
1	step%2:38:01::	tallama_1, sõtkuma_1	astua	put down or press the foot, place the foot	EstWN equivalents are odd
1	stone%1:17:00::	kivimürakas_1	kivi	a lump or mass of hard consolidated mineral matter	
1	stop%2:38:00::	peatuma_3,	pysähtyä; seisahtua	come to a halt, stop	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
		seiskuma_1, soikuma_1, seisma_jääma_3		moving	
1	stress%2:32:00::	rõhutama_1, esile_tõstma_2, esile_tooma_2, toonitama_1, markeerima_1, eristama_2	korostaa; painottaa; tähdentää	to stress, single out as important	
1	structure%1:06:00::	ehitatu_1, ehitus_1, ehitis_2	rakennelma	a thing constructed; a complex entity constructed of many parts	
1	structure%1:06:00::	konstruksioon_1, tarind_1	rakennelma	a thing constructed; a complex entity constructed of many parts	
1	student%1:18:00:	kasvandik_2	opiskelija; oppilas	a learner who is enrolled in an educational institution	
1	study%1:10:00::	aruanne_1	kirjallinen raportti; selvitys; tutkimus	a written document describing the findings of some individual or group	
1	support%1:06:00:	kandeosa_1, kandedetail_1, tugidetail_1	tuki	any device that bears the weight of another thing	
0	teacher%1:18:00:	tantsumeister_2	kouluttaja; ohjaaja; opettaja	a person whose occupation is teaching	
1	teacher%1:18:00:	õpetaja_5, harija_1, koolitaja_1	kouluttaja; ohjaaja; opettaja	a person whose occupation is teaching	
1	test%1:10:00::	kontrolltöö_1	koe; kuulustelu; tenti; testi; tutkinto	a set of questions or exercises evaluating skill or knowledge	
1	theory%1:09:01::	hüpotees_1	oletus; teoria	a tentative insight into the natural world; a concept that is not yet verified but that if true would explain certain facts or phenomena	EstWN equivalent is wrong!
1	thought%1:09:00:	kaasamõtlemine_1	ajattelemine; ajattelu; ajatuskulku	the process of using your mind to consider something carefully	
1	title%1:26:00::	esikoht_1	mestaruus	the status of being a champion	EstWN has missing equivalents
1	top%1:15:02::	mäetipp_1	huippu; kärki; laki; pää; yläreuna	the top or extreme point of something (usually a mountain or hill)	EstWN equivalent focus on mountain topp only
1	tourist%1:18:00::	matkaja_1, matkamees_1	lomamatkailija; matkailija; turisti	someone who travels for pleasure	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
1	tourist%1:18:00::	välisturist_1	lomamatkailija; matkailija; turisti	someone who travels for pleasure	
0	trade%1:04:02::	suurtehing_1	kauppa; liiketoimi	a particular instance of buying or selling	
1	trainer%1:18:00::	treener_1	kouluttaja; valmentaja	one who trains other persons or animals	
1	trainer%1:18:00::	kasvatija_7, arendaja_1	kouluttaja; valmentaja	one who trains other persons or animals	
1	trainer%1:18:00::	treenija_2	kouluttaja; valmentaja	one who trains other persons or animals	EstWN has missing equivalents
1	treatment%1:04:01::	ümberkäimine_1	kohtelu; käsittely	the management of someone or something	
0	treatment%1:10:00::	läbiarutamine_1	käsittely; pohdinta; tarkastelu	an extended communication (often interactive) dealing with some particular topic	
1	treatment%1:10:00::	arutus_1, arutamine_1, arutlus_1	käsittely; pohdinta; tarkastelu	an extended communication (often interactive) dealing with some particular topic	
1	trouble%1:11:00:	pahategu_1, kahjutegu_1, pahandus_1, inetus_1	ongelma; vaiva	an event causing distress or pain	
1	trustee%1:18:00::	volinik_1	holhooja; uskottu mies	a person (or institution) to whom legal title to property is entrusted to use for another's benefit	
1	update%2:32:00::	päevakohastam a_1	kertoa uutiset	bring up to date; supply with recent information	odd equivalents in both side
1	use%1:07:00::	tarve_1, tarbimine_1, tarvitus_1	funktio; rooli; tarkoitus; tehtävä	what something is used for	
0	value%1:09:00::	väärtus_5, atribuudi_väärt us_1	arvo	a numerical quantity measured or assigned or computed	
1	version%1:10:02:	mugandus_1, mugand_1, mugandatu_1	sovitus; versio	a written work (as a novel) that has been recast in a new form	
1	version%1:10:02:	adaptatsioon_2, adaptatsioon_1	sovitus; versio	a written work (as a novel) that has been recast in a new form	
0	voice%1:18:00::	pressisekretär_1	asiamies; edustaja; esittäjä<approxima te/>; tiedottaja	an advocate who represents someone else's policy or purpose	
1	volume%1:10:00:	raamat_2, köide_3	nide; osa; volyymi	a publication that is one of a set of several	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
				similar publications	
1	vote%1:04:00::	hääletamistulemus_1	äänestyslippu; ääni	a choice that is made by counting the number of people in favor of each alternative	FinnWN equivalent do not focus on choice
1	wall%1:06:00::	sein_2	seinä	an architectural partition with a height and length greater than its thickness; used to divide or enclose an area or to support another structure	
1	wall%1:06:00::	sein_3	seinä	an architectural partition with a height and length greater than its thickness; used to divide or enclose an area or to support another structure	
1	weapon%1:06:00::	sõjariist_2	ase	any instrument or instrumentality used in fighting or hunting	
0	weather%1:19:00::	loodusjõud_1	ilmakehän olosuhteet; sää; sääolosuhteet; säätila	the atmospheric conditions that comprise the state of the atmosphere in terms of temperature and wind and clouds and precipitation	
1	weight%1:23:00::	mark_1	paino; painoyksikkö	a unit used to measure weight	
1	wildlife%1:14:00::	loodus_1	villieläimet	all living things (except people) that are undomesticated	EstWN synset should have eq_near_synonym link
0	winner%1:18:00::	maratonivõitja_1	voittaja	the contestant who wins the contest	
0	winner%1:18:00::	üllatusvõitja_1	voittaja	the contestant who wins the contest	
0	winner%1:18:00::	kuldmedalimeeskond_1, meistermeeskond_1	voittaja	the contestant who wins the contest	
1	winner%1:18:00::	karikavõitja_1	voittaja	the contestant who wins the contest	
1	winner%1:18:00::	üldvõitja_1	voittaja	the contestant who wins the contest	
1	world%1:17:01::	loodus_3	avaruus; kosmos; luomakunta; maailma; maailmankaikkeus; makrokosmos;	everything that exists anywhere	

	WN_synset	EstWN_synset	Finnish_synset	WN gloss	Comments
			olemassaolo; universumi		
1	world%1:17:01::	maailm_1, universum_1	avaruus; kosmos; luomakunta; maailma; maailmankaikkeus; makrokosmos; olemassaolo; universumi	everything that exists anywhere	FinnWN synset is too broad