

Sharing Incident and Threat Information for Common Situational Understanding (INSITU)

Project report: Methodology for terminology harmonisation

SAMRISK project 295848

December 2020

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Preface

The SAMRISK project “Sharing incident and threat information for common situational understanding“ (INSITU) started in May 2019. In particular, the project focuses on common terminology and exchange of geospatial information for establishing a common operational picture and common situational understanding.

Based on the needs expressed by emergency management stakeholders and our analysis of the current practices, we in this report propose a methodology for terminology harmonisation to be further refined in collaboration with the project reference group.

We are grateful to the emergency management professionals who have contributed with their time and expertise, and look forward to further collaboration. We also thank Marianne Aasgaard at the Language Council of Norway and Per Olaf Torkildsen at the Joint Rescue Coordination Centre Southern Norway for providing input to the report. The project is supported by the Research Council of Norway.

Lillesand, November 2020

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Full citation for the report:

Snaprud, M., Haldorsen, T. and Munkvold, B.E. (2020). Project report: Methodology for terminology harmonisation. SAMRISK project INSITU. University of Agder, Norway. ISBN 978-82-8427-012-8.

Abstract

A common understanding of language and concepts used is essential for any meaningful communication. For large rescue operations effective communication is crucial to save lives. Such operations can require cooperation among first responders from several sectors with a different understanding of terms and concepts. Redningshåndboka (the National Rescue handbook) provides a common glossary for use across all sectors for their communications in training and practice. However, today each sector maintains their own glossaries, acronyms and jargon, causing potential misunderstandings in joint operations.

In this report we propose a way to apply the Norwegian Public Management Standard from the Norwegian Digitalisation Agency for concept harmonisation or concept differentiation, to existing glossaries in crisis management. We also propose supporting actions for harmonisation and introduce aspects of oral and written communication related to similarities of sounds and meaning.

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1. Introduction

The project “Sharing incident and threat information for common situational understanding“ (INSITU) is funded by the SAMRISK programme of the Research Council of Norway for the period May 2019 – September 2022.

The project is addressing expressed challenges from emergency managers at both the national and regional level related to information sharing for common situational understanding. Despite increasing access to digital information services relevant for emergency preparedness and response, we are lacking an overview of how this information can be effectively collected and combined, and of the needs for information sharing between the agencies collaborating in a crisis situation. Different terminologies are also being used across disciplines, causing possible challenges for effective crisis communication and coordination of resources. Further, there is a lack of standardised map services for supporting cross-agency collaboration.

During emergency response, the information that is shared and received among the different first responder organisations has to be precise and clear. To reduce the risk of misunderstandings we need a well-established crisis management terminology. Several collections of terms have been prepared to cover different challenges such as pollution, radiation, fire safety, and dangerous goods. Today such terminologies are provided in different locations, depending on how the crisis management is organised. This distribution across web sites and documents and a range of different formats make them hard to use and maintain.

In 2018 the Joint Rescue Coordination Centre published Redningshåndboka (the National Rescue handbook) including concept definitions for joint rescue operations. Emergency responders from all sectors as well as NGOs are encouraged to use these concepts.

A revised version of this handbook with an updated list of concepts is scheduled for release in the autumn of 2021. The updates will be managed by an expert group of five persons, appointed by Nasjonalt Redningsfaglig Råd (NRR) (National Rescue Council), and Språkrådet (Language Council of Norway).

Internationally we are aware of three related terminology sources: [Preventionweb](#), [NATO](#), [ISO/TC 292/WG 1 Terminology](#). For the INSITU project we are in contact with NATO and the ISO initiative.

We have also found and collected around 40 sources covering Norwegian or English concepts. Some of these sources cover many language combinations, including the General Multilingual Environmental Thesaurus (GEMET) and EU climate change key terms, with over 500 combinations each. Translations with such combinations are relevant for large events such as forest fires where international support is needed.

However, for the purpose of this report we limit the scope to “Bokmål” as both source and destination language. Bokmål is the most widely used of the two Norwegian languages. This results in a list of 16 glossaries with concepts, abbreviations and their definitions. Three of these are published in Redningshåndboka: Terms, abbreviations, and names. However, we also need to point out that the official Norwegian language policy underlines the importance to increase the share of terminology provided in “Nynorsk”. Moreover, there are first responders located in areas of Norway where the official language for public management is “Nynorsk”.

In this report we propose how to apply the Norwegian Public management standard for concept harmonisation and differentiation for concepts to be used in rescue operations, to contribute to the updates of Redningshåndboka. As background to finding establishing and using concepts in this context, we also outline aspects of perception of speech, ways to assess similarities between spoken and written concepts, and semantic representations.

2. The INSITU harmonisation methodology

In this section we introduce a Norwegian public management standard (PMS) from the [Norwegian Digitalisation Agency](#) for concept harmonisation and concept differentiation (our translation), and propose how this can be applied as a method for the INSITU project. The original PMS name in Norwegian is “[Forvaltningsstandard for begrepsharmonisering og begrepsdifferensiering - Versjon 2.0.1](#)”.

We propose how to apply this PMS for concepts related to joint rescue operations. For a general introduction to concept analysis and terminology we refer to a publication called *Termlosen* (“Guide to Terminology”, <https://data.norge.no/specification/termlosen/>) published by the *The Language Council of Norway*. The original English version was provided by TSK in Finland, http://www.nordterm.net/filer/publikationer/guider/Guide_to_Terminology.pdf.

We can also refer to the online course [Begrip Begrepene](#) (Our translation: Grasp the concepts).

2.1. Overview of process for harmonisation and differentiation

The PMS is prepared to contribute to a common framework to manage and use terms in the Norwegian public sector, and in communications with citizens. The PMS describes a process to deal with similarities and differences in the content of central concepts and terms with the aim to harmonise or differentiate them.

To apply the PMS, the terms to harmonise or differentiate need to be described according to another PMS called “[Forvaltningsstandard for begrepsbeskrivelser](#)” (Our translation: PMS for concept descriptions).

2.1.1. Start

Before the “Start” we need to establish a working group of people to carry out the work. The working group should represent the different stakeholders with interests in the terms or concepts. The working group should include representatives for these stakeholders, a project leader, and people with skills to cover domain, legal, and terminology questions. It is important to determine who owns and who maintains the concepts to make sure that all relevant interests are represented. This is also essential for the take-up of the results.

The PMS provides a set of questions to set the scope of the work, and to assure suitable roles and people are represented.

1. What is the purpose of the work?
For INSITU: Assure efficient communication among staff from professional first responders and also NGOs and volunteers.

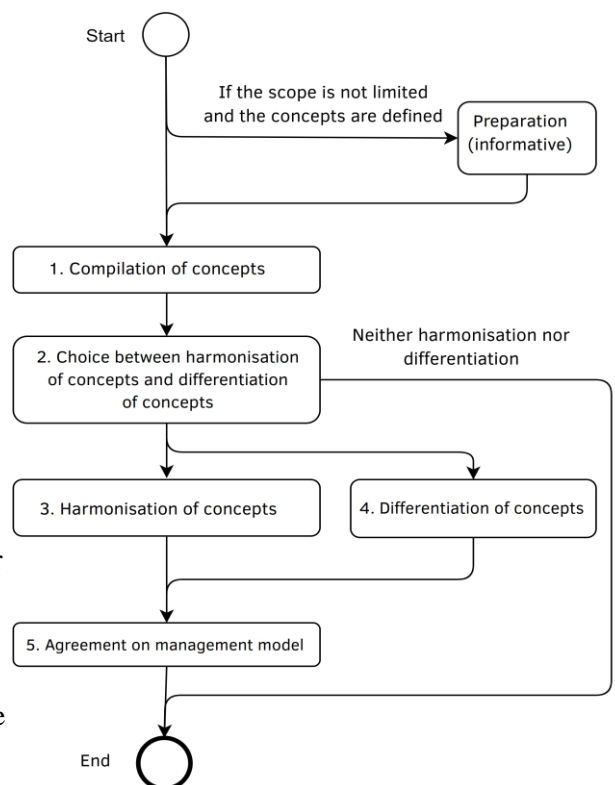


Figure 1. Process model for harmonisation or differentiation of concepts. Translated from source: <https://data.norge.no/specification/forvaltningsstandard-begrepskoordinering/#steg2>)

2. What is the information to be represented with the concepts? For INSITU: Concepts for a Common Operational Picture (COP). In particular dealing with responders' roles, time, location, the event and its impact.
3. What is the information out of scope? For INSITU: Concepts used only by one of the response organisations such as concepts for medication, or fire fighters equipment. However, in a subsequent harmonisation process also some sector-specific terms may be relevant to include to enable a multi-skilled response e.g. a firefighter to pursue some of the health staff tasks before they arrive to the event location.
4. Are there related areas to be excluded? For INSITU: intentional threats and incidents such as terrorist attacks, politically motivated violence and cyber attacks are not our focus here.
5. Other possible scoping questions? For INSITU: How to consider the sound of concepts in radio communication and the impact this has on understanding what is being said. Words need to be easily recognisable through radio communication, so similar sounding words can be problematic.

For the purpose of efficient collaboration in rescue operations we do not consider all concepts in all of the collected glossaries, listed under Step 1, Section 2.1.2. Here we will focus on the concepts needed to communicate time, place, situation, roles and actions for collaboration across sectors. We are aware that in some situations there may be a need to communicate sector-specific terms across sectors. For example, firefighters may want to carry out a health service task with guidance from health staff, in case they arrive first on the site. However, for now we will assume that sector-specific tasks are carried out by the staff from that sector and therefore exclude sector-specific concepts from our scope.

To support this step and explore content across the collected sources we have prepared four tools for INSITU:

1. search for substrings in concepts across all the relevant sources. In this way we can search for strings like “tid” (time), “sted” (location), and will find concepts like responstid, and åsted. We also need to explore related strings and synonyms to find the concepts that are candidates for harmonisation.
2. search for substrings in definitions across all the relevant sources. In this way we can find definitions with the same substring.
3. compare similarity of concepts using the *Levenshtein distance*¹. In this way we can find the most similar concepts within one, or among several sources.
4. compare similarity of definitions using the *Levenshtein distance*. In this way we can find the most similar definitions within one, or among several sources.

These tools will be further described in the INSITU harmonisation tool report. One limitation with these tools is that they operate only on written content. We can envisage similar tools to process audio content, and uncover similarities as outlined in Annex 1, To assure the correct transmission on poor audio connections we can also use a phonetic alphabet as outlined in annex 2.

2.1.2. Step 1: Compilation of concepts

We propose several approaches to find the candidate concepts for harmonisation, including:

- Interviews with staff from different sectors, asking for possible misunderstandings caused by terminology confusion.

¹ https://en.wikipedia.org/wiki/Levenshtein_distance

- Email requests to NATO, Termcoord, and the UN.
- Observations from exercises.
- Exercise communication transcripts.
- Collection of sources for concepts, terms, abbreviations, and names.
- Concepts used for search from the Termer search tool on Hovedredningssentralen.no

Several sources have been proposed by members of the INSITU reference group. In addition, we have collected concepts from [Lovdata](#), [Termbasen SNORRE](#), [Store norske leksikon](#), Wikipedia, and EUR-Lex. Additional sources suggested in the PMS are [Felles begrepskatalog](#) and [Termportalen](#). These have been discarded as they do not seem to contain relevant content for the INSITU case.

Overall, we have collected 21 sources for terminology, abbreviations and names with content in Bokmål that may be relevant for harmonisation. We have also added a source for the project called UTKAST INSITU termer (DRAFT INSITU term), to collect terms that may need to be defined. These sources and their owners are indicated in alphabetical order in table 1.

Source name (Norwegian names)	Owner (Norwegian names)
Flomordliste: NVE.no	NVE
Flomordliste: varsom.no	NVE
Kartverket ordbok	Kartverket
Kartverket symboler	Kartverket
Klima: Språkrådet	Språkrådet
Kollegiet for Brannfaglig Terminologi	Brannverforeningen
Medisinsk Operativ Manual	Oslo Universitetssykehus
Næringslivets Sikkerhetsorganisasjon (NSO)	NSO
Nødnett	Nødnett
NS 5830:2012: Samfunnssikkerhet - Beskyttelse mot tilsiktede uønskede handlinger	Standard Norge
Org. plan for redningstjenesten	Hovedredningssentralen
Petroleumstilsynet	Petroleumstilsynet
Politiets beredskapssystem Del I	Politiet
Prehospital akuttmedisin	Stavanger Universitetssjukehus
Redningshåndboka – forkortelser	Hovedredningssentralen
Redningshåndboka – navn	Hovedredningssentralen
Redningshåndboka – termer	Hovedredningssentralen
Redningshåndboka	Hovedredningssentralen
Sikkerhetsloven	Stortinget
UTKAST Barents Watch	Barents Watch

UTKAST INSITU termer	INSITU
Vegtrafikk	Statens Vegvesen

Table 1: Overview of terminology sources and their owners.

The PMS proposes a set of questions to identify central concepts, dealing with Who, What, Where, Why and When. This largely coincides with the groups of concepts we need for a common operating picture (COP). Here *Who* will focus on roles such as “innsatsleder” (fire chief), *What* would be concepts to describe the event such as “flom” or “brann” (flooding or fire), *Where* would be the location of the event in terms of GPS, street name etc. Some events may also have a geographical range and direction, e.g. a cloud of smoke. *Why* may be interesting but not necessarily relevant for dealing with the immediate response. *When* can be crucial for the event progress and to coordinate resources.

To find answers to these questions the PMS proposes to explore related documents such as reports, regulations, standards, forms and procedures. Brainstorming sessions and expert interviews are also suggested.

For INSITU we have used input from experts, audio logs and reports from exercises to collect concepts that may cause misunderstandings. We have also collected terms from a Norwegian Standard (NS5830:012 Samfunnssikkerhet – Beskyttelse mot tilsiktede og uønskede handlinger – Terminologi (Societal security - Prevention of intentional undesirable actions - Terminology) retrieved from a “dump” of the online terminology database called Snorre and several sector-specific terminologies to inform the harmonisation work. The current collection of around forty different sources is found at <https://insitu.termer.no/search> .

The Termer search tool from INSITU was installed on the pages of Hovedredningsentralen.no in June 2020. The search phrases collected from the recorded user logs from this installation can also indicate concepts in use. For example, we have seen several concepts in the search log related to emergency alerts: alarm, nødbluss, nødlys, nødrakett, nødsignal, rakett, signal, varsling (alarm, emergency light, emergency rocket, signal etc.).

2.1.3. Step 2: Choice between harmonisation of concepts and differentiation of concepts

This choice is informed by the answers to a set of questions according to the PMS which are:

- To what extent are the concepts overlapping?
- To what extent are the concepts equal?
- Potentially compare concept diagrams and compare to what extent the diagrams overlap.
- For concepts with hierarchical relations we may also compare to what extent the criterion of subdivision overlap” (criterion of subdivision = inndelingskriterium).

For administrative considerations the following questions are proposed in the PMS:

- What is the financial impact of a concept change?
- What are the administrative impacts of a concept change?

If a concept is defined in formal documents including law or regulation, public document or in a standard we ask:

- To what extent are the stakeholders bound by the concepts defined in such documents?

- To what extent can the stakeholders change the formal documents within a given time frame? Are there planned updates of the documents?
- To what extent are the stakeholders authorised to make changes to harmonise or differentiate the concepts?

It is important to document the answers and considerations to the above for later changes and for the overall maintenance continuity. Provided a change is feasible for a given concept it can be harmonised or differentiated as follows.

2.1.4. Step 3: Harmonisation

The methodology for harmonisation will combine a participatory process with a quantifiable justification process as a basis for selecting terms to be included in a common vocabulary.

A resulting preference of one term or one definition over another is approached through the application of a set of criteria and the method for their use. This section adds to the PMS and is prepared by the INSITU project for the particular case of harmonisation of terms for first responders.

For the purpose of concept or term harmonisation in INSITU we propose a procedure where the working group agrees on the preference criteria to apply and potentially also the weights for each criterion. In this way, a preference score for each candidate concept or definition can be computed. We do not propose to use this to automate the process completely. The idea is rather to facilitate a discussion about the criteria and their importance and that the scores can serve as input to the harmonisation discussion in the working group. The working group may also want to add further elements to the discussion.

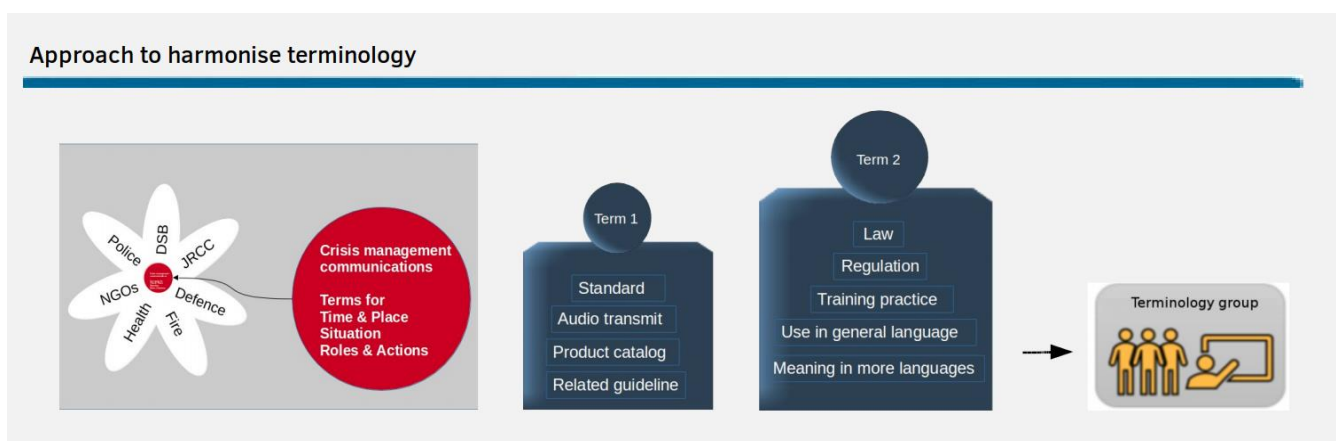


Figure 2. A novel approach to harmonise terminologies, using weighted preference criteria to compute a preference score. This approach was presented at the EAFT conference in Bilbao 2019.

2.1.5. Step 4: Differentiation of concepts

The purpose of the differentiation of concepts is to make clear the differences between two overlapping concepts which cannot be harmonised.

According to the PMS a change to differentiate can be achieved in the definitions, in comments to the definitions or in the terms. A differentiation of concepts can mean that at least one of the two terms is changed so that it is different from the other, e.g. if both glossaries defined the term “compensation” a differentiation can change one of the two to “travel refund”, assuming this is a more precise term for one of the definitions. For emergency

communication we propose to harmonise concepts as far as possible and to try to find clearly different terms if harmonisation is not possible.

2.1.6. Step 5: Agreement on management model

The aim of this step is to agree on a way to maintain the harmonised or differentiated terms. For the INSITU case the terms will be maintained in Redningshåndboken. An expert group will continuously consider new terms to be included in the list. The group has five members and is appointed by Nasjonalt Redningsfaglig Råd (NRR) (the National Rescue Council). The Language Council of Norway is to be included in the group.

3. Practical support for terminology harmonisation

Redningshåndboka introduced the first common list of terms to be used across all sectors in the Norwegian rescue services, and established that its use is mandatory among the rescue professionals. The handbook covers four word lists with abbreviations, terms used in the rescue services, a list of English terms used in the rescue services, and a list of names and their abbreviations for the organisations involved in rescue operations.

To follow up on the mandatory use of these lists we would propose to collect all the sector-specific terminologies and review their potential overlap and deviations from those given in Redningshåndboka. The findings can serve as input to the handbook revision planned to be concluded in 2021. As a first step we propose to make sure that all these concepts are aligned across all the lists. To assure synchronisation over time we would also propose to explore a way to move the ownership and maintenance of the terms used in the collaboration from the sector-specific glossaries to those maintained in the collaboration behind Redningshåndboka.

The handbook also refers to a planned online terminology resource with word lists to be available in 2018 from the Joint Rescue Coordination Centre web site (JRCC). However, the handbook was published with the word lists only available in the PDF document from <https://www.hovedredningssentralen.no/redningshandboken-er-endig-her/>.

A collaboration between the JRCC and the INSITU project has implemented a service to deliver the planned online resource. The service is based on Tingtun Termer and can search across the word lists from Redningshåndboka, and all the known sector-specific sources to facilitate further harmonisation.

This online resource also includes a feedback functionality so that users can comment on both existing and missing terms. We think this can be helpful to maintain the content and to collect input to discussions for harmonisation. The foreseen revision of Redningshåndboka every three years can support to collect and maintain updated word lists.

Redningshåndboka is available for download from the JRCC website, where a dedicated email address redningshandboka@jrcc-stavanger.no is provided for users to send in suggestions for revisions. In addition to this email option we propose to add a functionality to allow users to send in comments from the Termer search service. In figure 3 we propose a way to enable users to read a document with access to comments on terms.



Figure 3. Users can read and comment on concepts in a more integrated way.

A harmonised and maintained list of concepts and terms is necessary, but not sufficient to achieve harmonisation in practice. We also need to make sure that the agreed harmonised terms and their meanings are used in relevant documentation including learning materials. Procedures, and web sites.

In addition to the web resource on the JRCC web site we propose four practical ways to use the harmonised concepts from Redningshåndboka.

1. Introduce the harmonised concepts and terms in all related **training materials** and courses across the sectors.
The web resource used on the JRCC web site can be used also on learning materials on web pages or PDF documents. See also <https://insitu.termer.no/search>.
2. **Support authors** to use the harmonised concepts and terms instead of different sector-specific ones.
With an overview of all the sector-specific glossaries an automatic detection of concepts to replace with harmonised ones can be developed. This is currently not within the scope of the project.
3. **Support readers** to quickly find the definition of harmonised concepts.
The web resource used on the JRCC web site can also be used as an extension to the web browser to allow for lookup of definitions from other online content. This page can be found at <https://insitu.termer.no/bookmarklet>.
4. Enable users of **web sites in related sectors** to find the definitions provided in Redningshåndboka, in addition to the sector-specific terms.
Provide a self-service page to configure and generate a script to install a service similar to the one on the JRCC web site on the related web sites. This page can be found at https://insitu.termer.no/site_install.

4. Concluding remarks

In this document we have introduced the basis for harmonisation of concepts, including terminologies, acronyms and names in Norwegian Bokmål for rescue operations. The methodology is building on the Public Management Standard from the [Norwegian Digitalisation Agency](#) for concept harmonisation and concept differentiation (our translation), and we propose how this can be applied as a method for the INSITU project. The original PMS name in Norwegian is “[Forvaltningsstandard for begrepharmonisering og begrepsdifferensiering - Versjon 2.0.1](#)”.

Redningshåndboka (the National Rescue handbook), will be revised and published with an update of concepts and definitions, in 2021. The concept updates are managed by an expert group of five persons, appointed by Nasjonalt Redningsfaglig Råd (NRR) (National Rescue Council), and Språkrådet (Language Council of Norway). Concepts defined in Redningshåndboka are mandatory to use across the emergency response sectors.

A harmonised source of concepts is a necessary but not sufficient prerequisite for harmonisation in practice. We also need to make sure the concepts are accepted, understood and indeed used in emergency and preparedness communications and in related documentation including legal documents, guidelines, standards and in training materials. Harmonised concepts can also be useful for additional areas including policy and insurance.

For the maintenance and use of the harmonised concepts we propose practical measures to be tested and evaluated in collaboration with emergency management experts in the INSITU reference group.

To follow up on the official Norwegian language policy to increase the share of terminology provided in “Nynorsk” we propose to include such wordlists in Redningshåndboka.

To cater for a better connection to international development in the area of Civil protection and resilience we also propose to coordinate the revision of the concepts in Redningshåndboka with the concepts in ISO 22300:2018, Security and resilience – Vocabulary, which is expected to be released in 2020 and will be translated into a range of languages. Potential intellectual property rights issues have been clarified to cater for efficient coordination.

Annex 1 - Perception of speech – from sound to meaning

The characteristics of languages

Speech perception is about the construction of abstract phonological representations structured in such way that they can interface with lexical representation as characterised in current linguistic theory.

About half of the world's languages are a tonal language. That means that different tones are used to distinguish the meaning between words. In pure tone languages like Chinese and Vietnamese, every syllable each have their own tone.

Norwegian and English however are characterized as stress languages meaning some syllables have certain amount of stress in its surrounding syllables than tonal languages. ... There are two main types of dialects in Norwegian regarding the tonal system: Low tone dialects and high tone dialects. Low tone dialects, e.g. Eastern region Norwegian dialect, have a low tone (L) on first syllable stress tone like in the word <loven>, while high tone dialects, e.g. Bergen dialect, have a high tone (H) on the first syllable stress tone like in the same word <loven> [Kl-Hu-2008].

Something to consider along with harmonising words is the tonal differences in some words. These kinds of words that are distinguishable merely by tonal sound might need to be replaced with words more easily recognized.

Dialect differences in Norwegian

Norwegian has no official phonology, that is also why you do not find pronunciation in a Norwegian dictionary.

The reason for this is that Norwegian has many dialects. Some dialects do not even have noticeable distinction between the tonemes, like some of the Northern Norway dialect, “nordnorsk”. To better understand the differences of the Norwegian tonemes, it is best to listen to a native Norwegian pronouncing them. [Hannah-2014].

Annex 2 - Phonetic alphabets

International and Norwegian phonetic alphabet

The NATO phonetic alphabet is a set of words used instead of letter in oral communication, like over military radio or phone. The phonetic alphabet is used internationally. Each word stands for its initial letter [World-2020].

When speaking on radio, the police uses the phonetic alphabet when it is hard to distinguish letters if pronounced normally. Using the phonetic alphabet, a car's registration number DS-24689 would be communicated as "Delta-Sierra 24689".

Illustration 4 shows the Norwegian phonetic alphabet, including the last three letters that are specific for Norway.. There are two different editions for these: "Ærlig", "Østen" and "Åse" for military use and "Ægir" "Ørnulf" and "Ågot" for sivilian use [AIO-2020]. Except for the Norwegian letters, the honetic alphabets are identical. However, in the Norwegian version it is suggested better to write the "alpha" as "alfa" to avoid confusion.

Phonetic numerals is also needed to avoid confusion and errors during voice transmission. Numbers are spoken digit by digit, except for when there are multiple thousands.

- 0 – ZE-RO 4 – FOW-ER 8 – AIT
- 1 – WUN 5 – FIFE 9 – NIN-ER
- 2 – TOO 6 – SIX
- 3 – TREE 7 – SEV-EN

For example, 479 is pronounced as "FOW-ER SEV-EN NIN-ER", 1800 is "WUN AIT ZE-RO ZE-RO" and 23000 is "TOO TREE THOUSAND". Same goes for date and time, and map coordinates which are also spoken digit by digit using the phonetic numerals

phonetic alphabet		A alpha	B bravo	C charlie
D delta	E echo	F foxtrot	G golf	H hotel
I india	J juliett	K kilo	L lima	M mike
N november	O oscar	P papa	Q quebec	R romeo
S sierra	T tango	U uniform	V victor	W whiskey
X xray	Y yankee	Z zulu	<small>With this NATO alphabet chart you will no longer use "M as in Mancy" during a support call with your mom, or while defusing a bomb.</small>	

Figure 4: International Phonetic Alphabet (NATO) Source: [EMCrit Project https://emcrit.org/wp-content/uploads/2016/06/NATO-](https://emcrit.org/wp-content/uploads/2016/06/NATO-)

A – Alfa (AL FAH)	K – Kilo (KEY LOH)	U – Uniform (YOU NEE FORM)
B – Bravo (BRAH VOH)	L – Lima (LEE MAH)	V – Victor (VIK TAH)
C – Charlie (CHAR LEE)	M – Mike (MIKE)	W – Whiskey (WISS KEY)
D – Delta (DELL TAH)	N – November (NO VEM BER)	X – X-ray (ECKS RAY)
E – Echo (ECK OH)	O – Oscar (OSS CAH)	Y – Yankee (YANG KEY)
F – Foxtrot (FOKS TROT)	P – Papa (PAH PAH)	Z – Zulu (ZOO LOO)
G – Golf (GOLF)	Q – Quebec (KEH BECK)	Æ – Ægir / Ærlig
H – Hotel (HOH TELL)	R – Romeo (ROW ME OH)	Ø – Ørnulf / Østen
I – India (IN DEE AH)	S – Sierra (SEE AIR RAH)	Å – Ågot / Åse
J – Juliett (JEW LEE ETT)	T – Tango (TANG GO)	

Glossary

Concept	Definition	Sources of concepts
Criterion	A standard, rule, or test on which a judgement or decision can be based.	https://www.thefreedictionary.com/criterion
Envisage	1. To conceive an image or a picture of, especially as a future possibility. 2. To consider or regard in a certain way.	https://www.thefreedictionary.com/envisage
First responder	A person, such as a police officer, firefighter, or EMT, trained in urgent medical care and other emergency procedures and prepared to move quickly to the scene of an accident or disaster.	https://www.thefreedictionary.com/first+responder
Geospatial	Of relating to analysis of geographical data from multiple sources and technologies.	https://www.thefreedictionary.com/geospatial
Lexical	Of or relating to the vocabulary of words, or morphemes of a language	https://www.thefreedictionary.com/lexical
Methodology	1. A set of working methods. 2. The study or theoretical analysis of working methods.	https://www.thefreedictionary.com/methodology
Morpheme	The smallest unit of language capable of carrying meaning.	https://en.wikipedia.org/wiki/Morpheme
Phoneme	A speech sound capable of differentiating morphemes. The smallest phonetic unit in a language that is capable of conveying a distinction in meaning, as the m of mat and the b of bat in English.	https://www.thefreedictionary.com/phoneme
Nasal	Articulated by lowering the soft palate so that air resonates in the nasal cavities and passes out the nose, as in the pronunciation of the consonants (m), (n), and (ng) or the nasalised vowel of French <i>bon</i> .	https://www.thefreedictionary.com/nasal
Phoneme	A speech sound capable of differentiating morphemes. The smallest phonetic unit in a language that is capable of conveying a distinction in meaning, as the m of mat and the b of bat in English.	https://www.thefreedictionary.com/phoneme
Phonetics	The art of representing vocal sounds by signs and written characters.	https://www.wordnik.com/words/phonetics
Phonology	The sound system of a language.	https://www.thefreedictionary.com/phonology
Polysyllabic	Consisting of more than two syllables.	https://www.thefreedictionary.com/polysyllabic

Concept	Definition	Sources of concepts
Rhotic	Phonetics denoting or speaking a dialect of English in which postvocalic (<i>r</i>)'s are pronounced.	https://www.thefreedictionary.com/rhotic
Semantic	Relating to a meaning in language or logic. Relating to <i>semantic</i> , the study of meanings: the historical and psychological study and the classification of changes in the signification of words or forms viewed as factors in linguistic development.	https://en.wikipedia.org/wiki/Semantics
Semantic relation	A relation between meanings.	https://www.thefreedictionary.com/semantic+relation
Toneme	Any of the phonemes of a tone language by which tone conveys differences in lexical meaning.	https://www.thefreedictionary.com/tonemic

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