SIGN NEOLOGISMS WORKSHOP

D9.4 WORKSHOP AND TRAINING FOR EXPERTS IN UNDER-RESOURCED LANGUAGES AND NEOLOGISMS SESSION 1

Revision: v.1.0

Work package	WP 9
Task	Task 9.3
Due date	28/02/2023
Submission date	12/03/2023
Deliverable lead	Radboud University
Version	1.0
Authors	Hope E. Morgan (RU), Onno Crasborn (RU)
Reviewers	Michael Filhol (CNRS), Christan Tismer (NURO)

Abstract	This report describes a workshop held in Athens on February 10, 2023 designed as a forum for specialists from multiple fields to discuss how lexical gaps and neologisms in sign languages affect their work, and their approach to them.
Keywords	neologism, lexical gap

WWW.PROJECT-EASIER.EU

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* **(V 1.0)**

((ᵐ)) easier

Document Revision History

Version	Date	Description of change	List of contributor(s)
V0.1	09/03/2023	First draft of report for internal comments	Hope E. Morgan, Onno Crasborn
V0.2	10/03/2023	Second draft shared with reviewers	Michael Filhol, Christian Tismer
V1.0	12/03/2023	First version reflecting feedback	Hope E. Morgan

DISCLAIMER

The information, documentation and figures available in this deliverable are written by the "Intelligent Automatic Sign Language Translation" (EASIER) project's consortium under EC grant agreement 101016982 and do not necessarily reflect the views of the European Commission.

The European Commission is not liable for any use that may be made of the information contained herein.

COPYRIGHT NOTICE

© 2021 - 2023 EASIER Consortium

Project co-funded by the European Commission in the H2020 Programme		
Nature of the deliverable:	**R**	
Dissemination Level		
PU	Public, fully open, e.g. web	✔
CL	Classified, information as referred to in Commission Decision 2001/844/EC	
CO	Confidential to EASIER project and Commission Services	

* R: Document, report (excluding the periodic and final reports)

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc.

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* (V 1.0)

((( ))) easier

TABLE OF CONTENTS

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* (V 1.0)

((⑲)) easier

LIST OF FIGURES

LIST OF TABLES

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* (V 1.0)

easier

1 BACKGROUND

1.1 WHAT ARE LEXICAL GAPS AND NEOLOGISMS?

In translating between languages, there are countless words and phrases that have no single lexical equivalent in another language. Consider the Norwegian word *dynke* that means 'the act of dunking someone's face in snow', or *cigerci* in Turkish that means 'a seller of liver and lungs', or a word in the Bakweri language in Cameroon, *womba*, for 'the smiling in sleep by children' (de Boinod 2010). In trying to translate terms like these to another language, one is very likely to encounter a **lexical gap**: a missing translation equivalent. Lexical gaps also occur when new events, ideas, or technological inventions arise that lack a dedicated term.

When a lexical gap occurs, languages can fill the gap with a **neologism**: a new word that has a form-meaning pairing that didn't exist before. Words like *mitochondria, scuba, modem, Anthropocene*, and *Covid-19* all had to be innovated to talk about something new in the world.

Neologisms are not the only way to fill gaps. **Circumlocution** is a common way to fill a gap in translation and interpreting; that is, describing the idea or object rather than finding a new word. Another method is **borrowing**. In spoken languages, a word from another language can be imported, if it is available and transparent enough to the audience. In sign languages, a sign can be borrowed from another sign language or borrowed from a spoken language by means of a fingerspelled (using the manual alphabet of that language) and sometimes with a mouthed word in a shared spoken language – again, only if it is transparent enough to the audience and respecting linguistic norms for borrowing in different language contexts.

However, the focus on neologisms in sign languages is particularly acute for both historical and demographic reasons: existing sign languages appear to be so much younger than spoken languages, their vocabularies are still growing, and interpreters typically play a prominent role in the language community. This expansion of lexicon is directly tied to the inclusion of deaf people into all sectors of society. Deaf signers and sign language interpreters encounter significant lexical gaps in education, vocational and professional training, and in healthcare and other services.

1.2 WHY ARE LEXICAL GAPS AND NEOLOGISMS RELEVANT IN THE EASIER PROJECT?

As with interpreting, the starting point of machine translation to and from sign languages is the basic assumption that each content word in a language has a corresponding content word in another language. However, we know that this is an extreme simplification. Indeed, if it is a simplification for spoken languages, that is especially true for sign languages, which encode linguistic structure in the visual-gestural modality. Sign languages contain complex simultaneous linguistic constructions (e.g., *constructed action*, *buoys*) by multiple articulators (dominant hand, non-dominant hand, head, mouth, eyebrows, torso, etc.) that resist simple one-to-one lexical translations into a spoken language. To manage these gaps, the EASIER project has built in a post-editing process in the pipeline, using a human translator to correct failures in translation (EASIER deliverable 5.1, '*A tool allowing post-editing of text*' and deliverable 5.2, '*A tool allowing post-editing of Sign Language (SL) with human SL input*').

An ancillary reason that lexical gaps are relevant for EASIER – which should be mentioned but is not the concern of this specific workshop – has to do with gaps in the *datasets* that are available for sign languages. Two of the main types of sign language data used in EASIER – *broadcast data* (with captioning and sign language interpretation) and *annotated corpora* (that

are hand-coded for multiple types of linguistic content) – are inherently locked in time. Until machine translation advances significantly, it will be necessary to continually reply on datasets that are out-of-date. Therefore, managing lexical gaps in translation will continue to be an issue into the foreseeable future. Also, all available datasets are relatively small, meaning that they have gaps for signs that exist in a language but are simply not found in a particular corpus. However, our main focus in this workshop is on lexical gaps between languages, not gaps in datasets.

1.3 HOW CAN THIS WORKSHOP ADDRESS THE PROBLEM?

With so many gaps that exist between spoken and sign languages, it is important to understand just how signers fill gaps and how neologisms are constructed in sign languages. This workshop creates a space for discussion between the specialists in machine translation and specialists with experience in creating and using sign language neologisms. An ultimate goal in line with the EASIER project would be to flag lexical gaps and implement neologisms in translation as quickly as they are adopted in sign language communities, and perhaps even find ways to anticipate what deaf signers do in order to fill lexical gaps in naturalistic ways – or at least to find acceptable stop-gap means of filling lexical gaps in automatic translation.

With these goals in mind, and through discussion with the workshop committee (*§1.4*), we decided to design a workshop format that would prioritise communication between people involved in various projects and research from as many countries as possible.

1.4 WORKSHOP PLANNING COMMITTEE

The workshop planning was led by Hope E. Morgan and Onno Crasborn at Radboud University with feedback and discussion from a committee made up of several EASIER partners. These include: Frankie Picron, Davy Van Landuyt, Rehana Omardeen from European Union of the Deaf; Eleni Efthimiou from ATHENA, Maria Kopf and Thomas Hanke from Universität Hamburg, Mélanie Hénault Tessier from Intepretis, Kearsy Cormier and Neil Fox from University College London, Sonja Dietschi from SWISS TXT; and Giacomo Inches and Margherita Facca from Martel Innovate. Eleni Efthimiou secured the workshop site, and Marc Schulder (Universität Hamburg) worked on set-up and organization the day of the workshop.

2   THE WORKSHOP

2.1   WORKSHOP PROGRAMME

The workshop was held on Friday, February 10, 2023 at Fresh Hotel in Athens. The workshop program is shown in Table 1. It featured five stage presentations and ten posters (including one demo). Slides of the stage presentations are available online: https://www.project-easier.eu/sign-neologisms/. Descriptions of the posters are provided in §2.2.

TABLE 1: SIGN NEOLOGISMS WORKSHOP PROGRAMME

Start time	Presentation Description	Presenter
	Event site: Fresh Hotel, Sofokleous 26 Athens, 105 52 Greece	
9:45am	Welcome	Onno Crasborn *(Radboud University)*
10:00am	Opening statement by Sofia Isari, president of European Union of the Deaf (introduced by Frankie Picron)	Sofia Isari, Frankie Picron *(EUD)*
10:15am	*Introducing the EASIER project*	Thomas Hanke *(Universität Hamburg)*
10:30am	**COFFE BREAK**	
11:00am	*Neologisms in sign languages: linguistic issues*	Kearsy Cormier *(University College London)*
11:45am	POSTER SESSION	*See list below*
12:30pm	**LUNCH**	
2:00pm	*How to fill lexical gaps in NGT?*	Richard Cokart *(Dutch Sign Centre)*
2:45pm	*Creating signs in technical and scientific fields*	Cyril Claudet *(STIM Sourd France)*
3:15pm	**COFFE BREAK**	
4:00pm	*Interpreter's ethics: Role and legitimacy in the process of creating sign language neologisms in the professional field*	Marine Dupont, Aline Alemany *(Interpretis)*

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* **(V 1.0)**

((•)) *easier*

4:45pm	GENERAL DISCUSSION	Moderators: Hope Morgan, Kearsy Cormier
5:15pm	Closing	Onno Crasborn
7:00pm	Social dinner; continue conversations	all participants welcome

2.2 POSTERS

Fanny Chopot (*Sign'Maths*, France): presenting *Sign'Maths*, a project which aims to create signs in the field of mathematics at all education levels (in partnership with Paul Sabatier University [Toulouse, France]); includes issues that emerged for students in understanding and adapting the neologisms (signmaths.univ-tlse3.fr)

Laurence Gagnon (*Université de Namur*, France and *Université du Québec à Montréal*, Canada): exploring the linguistic and sociolinguistic factors that influence the acceptability of neologisms in LSQ (Québec Sign Language); working with a corpus of 99 neologisms proposed by Deaf signers of LSQ

Lorraine Leeson (*Trinity College Dublin*, Ireland and SignON): introducing a new glossary of new terms in Irish Sign Language for domestic, sexual and gender-based violence; contributing to the Justisigns 2 project (justisigns2.com)

Rachel Moiselle (*Trinity College Dublin*, Ireland and SignON): investigating gesture and depiction in a range of new glossaries of Irish Sign Language and leveraging focus groups for insight into neologisms

Gary Quinn,[1] **Rachel O'Neill,**[2] **Audrey Cameron**[2] ([1]*Heriot-Watt University*, [2]*University of Edinburgh*, UK): presenting an established and internationally recognised workflow for developing a sign glossary, from the Scottish Sensory Centre's BSL Glossary for STEM. In addition to the workflow, four conclusions are presented with regard to the ethics of applying new signs in educational contexts. See: https://www.ssc.education.ed.ac.uk/BSL/

Christian Rathmann (*Humboldt-Universität zu Berlin*, Germany): types of iconic strategies used in the creation of technical signs in sign2mint.de, and various linguistic processes observed (back translation, lexicalisation, compounding, etc.)

Irene Strasly (*University of Geneva*, Switzerland): in work with Laurence Gagnon, comparing neologisms from Quebec Sign Language and Swiss French Sign Language in the major structural constituents of the signs (hand configuration, place of articulation, and movement)

Bruno Sonnemans (*LAB-LSFB at University of Namur and LSFB asbl, Belgium*): Sign Neologisms & Etymology

Rosalee Wolfe (*Institute for Language and Speech Processing, AthenaRC*): an avatar capable of producing neologisms is a technology that has the potential to act as a resource in linguistic study of sign languages as well as practical application for increasing Deaf accessibility to written and spoken information. This demo will describe state-of-the-art strategies to synthesize new words.

Juan Martinez, Luca Marra (SWISS TXT): This poster describes the features of the interface of the NERstar editor, a tool within EASIER that will allow human post-editors to review and evaluate Natural Machine Translation (NTM) of spoken language text in the context of sign language and audio descriptions, as well as of traditional, live, and automatic segmented text. The editor is provided as a web-based system that runs in Google Cloud. For more information, see this report: https://www.project-easier.eu/wp-content/uploads/sites/67/2022/06/D5.1-A-TOOL-ALLOWING-POST-EDITING-OF-TEXT_v1_final.pdf

2.3 PARTICIPANTS

Specialists from multiple professions (architecture, animation, avatars, computer science, linguistics, lexicography, deaf education, interpreting, mathematics, poetry, software development, translation, etc.) attended, coming from eleven countries: Belgium, Canada, England, France, Germany, Greece, Ireland, Netherlands, Scotland, Switzerland, and the United States. A total of 48 people attended (Figure 1), nearly reaching our limit of 50 attendees.

FIGURE 1: SIGN NEOLOGISMS WORKSHOP ATTENDEES

2.4 PRESENTATIONS, POSTERS, AND DISCUSSION

In the stage presentations, **Onno Crasborn** opened the workshop (Figure 2), followed by **Sofia Isardi**, President of the European Union of the Deaf (EUD; Figure 8), who gave an opening statement that encouraged the audience to think about the consequences for the deaf community in developing automatic machine translation of sign languages and getting it right. Next, **Thomas Hanke** introduced the EASIER project to the audience, explaining the role of datasets to train models for translation and the barriers to making advances in translation, including the fact that no datasets are complete and that all of them are out-of-date from the moment data collection stops. This requires any translation system to have a way of handling never-before-seen words — i.e., neologisms, in a broad sense — as well as managing situations when no word exists — lexical gaps — even in the language community.

After the coffee break, **Kearsy Cormier** provided a perspective from linguistics on lexical gaps and neologisms in sign languages (Figure 5), which requires first considering *what makes something a sign in the first place?* I.e., a sign has a conventional form and meaning that is

accepted by the community of language users. Processes of sign formation were described with examples, from lexical extension to compounding, blending, and borrowing.

With this foundation of linguistic structure in mind, the **Poster/Demo Session** began, and continued for around an hour (Fig. 8–12), transitioning to a buffet style lunch across the hall, all of which facilitated a continuation of conversations started in the poster session.

FIGURE 2: ONNO CRASBORN OPENS WORKSHOP

FIGURE 3: CYRIL CLAUDET SHARES THE INTERACTIVE PROCESS OF CREATING STEM VOCABULARY IN LSF

FIGURE 4: RICHARD COKART EXPLAINS HOW THE DUTCH SIGN CENTRE APPROACHES NEW SIGNS

FIGURE 5: KEARSY CORMIER GIVES AN OVERVIEW OF THE LINGUISTIC ASPECTS OF NEOLOGISMS & GAPS

FIGURE 6: WORKSHOP ATTENDEES, WITH INTERPRETERS IN FOREGROUND: LIZ SCOTT GIBSON & GERDINAND WAGENAAR

FIGURE 7: SIGN NEOLOGISM WORKSHOP ATTENDEES IN FRESH HOTEL CONFERENCE ROOM

Following lunch, the workshop resumed with a stage presentation by **Richard Cokart** (Figure 4), in which he described the work of the *Sign Atelier* group of the Dutch Sign Centre in The Netherlands, which meets for a full day four times a year to discuss new signs to consider for inclusion into the lexicon of NGT (Sign Language of the Netherlands), following specific criteria. He used several examples to illustrate the types of signs encountered, and examples of issues that must be resolved; e.g., when to borrow a sign from another sign language into NGT (e.g.,

signs for Cherokee, sultan, feta) and when that isn't appropriate (e.g., BREXIT from BSL which results in a poor calque in NGT).

FIGURE 8: POSTER PRESENTATIONS BY CHRISTIAN RATHMANN (LEFT), LORRAINE LEESON (CENTER), & BRUNO SONNEMANS (NOT PICTURED); SOFIA ISARDI, PRESIDENT OF EUD (2ND FROM RIGHT) WITH AN ATTENDEE

FIGURE 9: ROSALEE WOLFE (CENTER) PRESENTS HOW AN AVATAR COULD MANAGE NEOLOGISMS
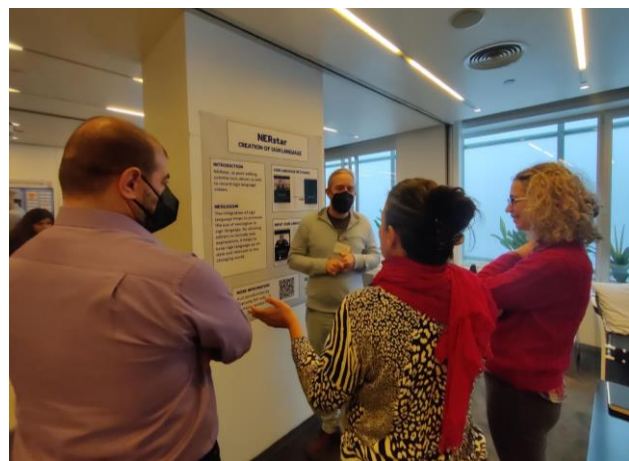

FIGURE 10: MARC SCHULDER (CENTER, WITH MASK) DISCUSSES A POSTER BY SWISS TXT WITH ATTENDEES

FIGURE 11: RACHEL MOISELLE (FOREGROUND CENTER) PRESENTS HER POSTER (FANNY CHOPOT IN BACKGROUND CENTER)
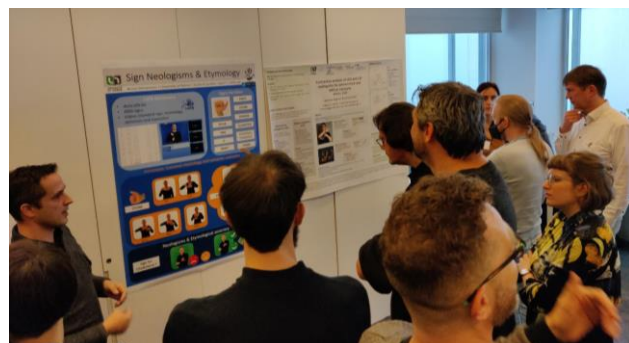

FIGURE 12: BRUNO SONNEMANS (LEFT) PRESENTING HIS POSTER; POSTER ON RIGHT BY LAURENCE GAGNON & IRENE STRASLY (OBSCURED)

The next stage presentation was by **Cyril Claudet** (Figure 3), a French architect who is also a member of an association group of around 30 LSF signers who have been meeting every

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* **(V 1.0)**

((•)) easier

month since 2017 in rotating locations around France (and on Zoom in the last few years) to discuss new LSF signs for terminology in different fields. The group was inspired in part by the need for deaf students to be able to study in a variety of fields, especially in science, technology, engineering, and mathematics (represented by the acronym STIM in French). The group consists of scientific experts, linguistic experts, and pedagogical experts. They produce a video of each new sign that is agreed upon, that shows the sign and an explanation for its form-meaning construction. Finally, on a micro-level, Claudet describes the process that he personally uses with a handful of LSF interpreters (including Marine Dupont and Aline Alemany, below**)** in his professional work, in which they develop a customised terminology for architecture.

The last stage presentation was by **Marine Dupont** and **Aline Alemany** (with input from **Claire Bonrepos**), taking the perspective of hearing interpreters approaching the issue of lexical gaps. Through their training and experience, their usual methods for filling gaps is through fingerspelling, a free combination of signs (circumlocution), using a temporary sign negotiated on-the-spot with a deaf person, or asking for further explanation if the lexical gap is not clear. They also discuss the process of working with Cyril Claudet on terminology in architecture, and how it has been very productive, although it also requires extra commitment and voluntary time. Lastly, they reflect on issues of legitimacy in who is allowed to develop new signs, noting that some deaf people don't think that hearing interpreters should have any role in the process. Yet, their work with Claudet has shown how a collaborative approach in specific settings can be successful, and produce terminology that could be useful to others.

A final statement was offered by **Chrissostomos Papaspyrou**, a deaf linguist and educator in Greece. He reflected on the embodied nature of deaf communication and the need for signers to feel a lived connection to new signs. This was something he observed in the reactions of deaf children that he taught for decades; when he taught them with concepts depicted elegantly and concisely in sign language, they learned quickly, effortlessly. He also reminded us that creating new signs is a process of *co-creation*. It cannot be one person making up words alone, at a computer; it must be done in interaction, in community.

In the **General Discussion** period, Kearsy Cormier led with a number of discussion points for the audience on a slide. She also emphasized that lexical gaps and neologisms aren't a problem in everyday communication; they only become a challenge when the concepts haven't been fully discussed within a community of signers.

Rehana Omardeen brought up the issue of everyday signs and signed expressions that are easily understood by fluent signers, but are actually difficult to translate and probably require an understanding of the full context to do so. What can we do with those in machine translation? Those are likely to be problematic.

Christian Rathmann mentioned that based on his experience in interpreting, he found that L2 signers sometimes got fixated on trying to find sign equivalents to individual words or even phrases, but he observed that when they started to focus instead on translating *concepts* to sign, they began to improve. He then integrated this observation more explicitly into his training of interpreters: translate from concept to concept. That perspective appears to play a role in the creation of good neologisms, too.

Fanny Chopot had both positive and negative impressions of the workshop to share. First, she observed that there have been several gatherings like this, with similar questions posed; however, without efforts to develop concrete proposals or implement next steps, the experience sharing misses something important. On the positive side, though, she was very impressed with the completely new directions in research of neologisms, especially as shown in the posters, and she was excited to find out about that work, seeing it as a promising future direction.

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* **(V 1.0)**

((\^ᵐ)) easier

Eleni Efthimiou then posed a question to the audience, on behalf of the EASIER project: what are the needs of the community and interpreters with respect to tools that would help their work – either as members of deaf community or scientific sectors where you work or international translators and interpreters? For example, there were wonderful crowd-sourcing efforts in France and The Netherlands. Could we create something similar online or a tool that helps to facilitate that more, or in new directions, perhaps internationally? Christian Tismer also reinforced this message of being available as a service provider to create technological solutions for the communities in the room, and welcomed people to send those ideas to Eleni. Hope Morgan observed that it was social connectedness, motivation, and commitment that appeared to make these crowd-sourcing groups who were creating new signs so successful and productive, and that the tools at hand appeared to be suitable, but if not, that would be helpful to know from the audience.

Kearsy Cormier mused that one ideal scenario that might be possible with technical assistance would be to share all the sign neologisms created around the world in one place so that separate national groups needing to use new signs could go there and see what kinds of signs already existed for a concept. Indeed, there are so many old recordings of signing all over the world that aren't available to those who could really use them. To be able to look at resources that are out there, all together in a single place would be amazing.

Cyril Claudet said that this brings up an issue for the neologisms they created with architecture terminology in LSF. Should they keep everything, or delete some that didn't end up working? If they kept it all, then there would be a historical record. Yet if it is kept, it needs to be managed somehow.

Richard Cokart responds to this by saying that all signs created by the Sign Atelier group for NGT neologisms are kept, even if they are updated later; all versions are there. This also allows them to show all the work that goes into their process and how new signs can evolve over time.

Onno Crasborn closed the workshop, thanking everyone for coming, and thanking those who gave presentations and shared posters and demonstrations of their work, and those who participated with questions and in conversation, as well as the interpreters, organisers, and the people managing the site. He notes that everyone will return home with food for thought after meeting new people and encountering new projects, research, and ideas on this topic.

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* **(V 1.0)**

((⑦)) easier

3 CONCLUSIONS AND FUTURE DIRECTIONS

This workshop revealed four overall enterprises when it comes to lexical gaps and neologisms, though these areas of activity currently operate separately from each other in most cases. **First**, several community-based organisations in different countries have built resilient processes to fill lexical gaps by creating or deciding upon new signs in their respective national sign languages. While no two organisations have done it quite the same way, all have converged around similar guidelines for arriving at neologisms that are acceptable to the signing community. This means signs that are transparent in meaning (given knowledge about the concept), and acceptable in form; i.e., distinct from other signs (if necessary; they can be polysemous) and conforming to the phonotactics and morphophonology of the language. **Second**, sign language linguists are starting to do more research on the linguistic properties of neologisms to understand their semantic, phonological, and morphological properties; yet, there is much more to investigate in this area. **Third**, the role of interpreters' creations was raised. Interpreters find themselves negotiating lexical gaps and neologisms regularly in their professional work, yet their role in language creation is controversial. This critical issue requires continuing discussion and (re)evaluation. **Fourth**, professional translation services that use human post-editors to manage lexical gaps and neologisms are a necessary step in machine translation for now.

The topics raised in the general discussion period frame a natural direction forward, covering the following points, as well as a couple more taken from observations about the overall workshop:

➲ For those European countries without a community-based organisation committed to meeting regularly to discuss new signs…

- Should there be support to form such organisations, or should they be allowed to arise in a purely organic way?

- Who are the best members in a national signing community to be the 'anchors' in such an organization? Presumably, a mix of STEM/STEM professionals, linguists, educators, interpreters, translators, and general community members.

➲ Do professional translation services, including ones in EASIER or any other machine translation of sign language project, have sufficient access to datasets of new signs?

- What are tangible ways to bring post-editors and community organisations creating new signs together?

➲ Are there technological tools (software, internet-based, apps, etc.) that would facilitate the points above, or that would help existing organisations to meet, store, collect, and disseminate their work?

➲ Could there be an international storehouse of neologisms in different sign languages, searchable by concepts, for organisations in other countries to use – either to borrow (if they fit the phonotactics and semantics of another language) or for inspiration?

D9.4: Workshop and training for experts in under-resourced languages and neologisms, Session 1: *Sign Neologisms Workshop* **(V 1.0)**

easier

REFERENCES

The following are resources for further reading on lexical gaps and neologisms. See also the presenters slides for this workshop: https://www.project-easier.eu/sign-neologisms/.

[1]   De Boinod, A. J. (2010). *I Never Knew There Was a Word For It*. London: Penguin Books.

[2]   Fumani, M. R. F. Q., & Abdollahpour, S. (2017). Translation of neologisms in fishery-engineering based on Kurki's (2012) framework: a strategy-based analysis. *International Journal of English Language & Translation Studies*, *5*(2), 43-52.

[3]   Johnston, T., & Napier, J. (2010). Medical Signbank: Bringing deaf people and linguists together in the process of language development. *Sign Language Studies*, *10*(2), 258-275.

[4]   Lehrer, A. (2003). Understanding trendy neologisms. *Italian Journal of Linguistics*, *15*, 369-382.

[5]   Lehrer, A., & Veres, C. (2010). Experiments on processing lexical blends. *On line: http://alehrer. faculty. arizona. edu/research_interests*.

[6]   Lepic, R. (2016, September). Lexical blends and lexical patterns in English and in American Sign Language. In *Mediterranean Morphology Meetings* (Vol. 10, pp. 98-111).

[7]   Major, G., Napier, J., Ferrara, L., & Johnston, T. (2012). Exploring lexical gaps in Australian Sign Language for the purposes of health communication. *Communication & medicine*, *9*(1), 37-47.

[8]   Vale, M., & McKee, R. (2022). Neologisms in New Zealand Sign Language: A case study of COVID-19 pandemic-related signs. *Lexicography of Coronavirus-related Neologisms*, *163*, 261.

[9]   Newmark, P. (1988). *A Textbook of Translation*. New York: Prentice Hall International.

[10]   Rey, A. (2005). The concept of neologism and the evolution of terminologies in individual languages: translated by Juan C. Sager. *Terminology. International Journal of Theoretical and Applied Issues in Specialized Communication*, *11*(2), 311-331.