D9.2 AN OVERVIEW OF RESOURCES IN THE MAKING

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Abstract	This report describes the effort to locate new sign language documentation projects within EU countries for under-resourced sign languages. A key reason to identify these projects is to train new documentation teams in how to create language datasets in a way that meets current standards and to prepare them to be relevant for the latest language technologies. The search for new documentation projects yielded very minimal results. We did not find any new or upcoming projects, but did uncover a few datasets and corpora that were not previously known to the EASIER project partners. The lack of results seems to confirm a relatively bleak picture: for almost a quarter of sign languages in Europe, there is no past or current project of language documentation, and seemingly no plans to do so in the future.
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* 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.

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EXECUTIVE SUMMARY

In this report, we describe our efforts to locate new sign language documentation projects within EU countries for under-resourced sign languages. A key reason to identify these projects is to train new documentation teams in how to create language datasets in a way that meets current standards and to prepare them to be relevant for the latest language technologies.

The report explains how we went about the search for new documentation projects, starting with information in a previous EASIER deliverable (D6.1), and how we focused on those EU countries with the least amount of sign language documentation. We used social media, internet research, and direct outreach to academics and deaf organizations in order to look for new or upcoming projects. The search unfortunately yielded minimal results. We did not find any new or upcoming projects, but did uncover a few datasets and corpora that were not previously known to the EASIER project partners. This includes a corpus project of Portuguese Sign Language and online lexical resources for Maltese Sign Language and Romanian Sign Language.

In undertaking this search, we gathered information about nine particularly under-resourced sign languages; i.e., for sign languages in the countries of Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Malta, Portugal, and Romania. We present an overview of this information in a brief sketch of each country with accompanying references. The report ends with a summary, generalizations about our findings, and a statement on current standards for new sign language documentation going forward.

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1 INTRODUCTION

This report has the primary goal of *identifying relevant language documentation resources that are currently in the making*. The identification of new resources follows an earlier EASIER report, D6.1, by Kopf et al. 2021, which identified current datasets suitable for integrating into the EASIER pipeline. D6.1 helped to reveal potential gaps in documentation for European sign languages, as described in §2. In order to reach the most under-resourced sign languages, the current report focused on those sign language with no known corpora or lexical resources.

By doing this, we want to ensure that creators of new resources are approached as early as possible and that the specifications in other deliverables (an overview of minimal contents for datasets, workflow documents, and training workshops), can steer the resource development where this is necessary.

It is understood that new documentation projects may arise or come online at any point during the EASIER project, which includes after publishing v.1 of this report. Also, the training workshops in EASIER deliverables D9.4 and D9.5 will continue to look for participants well into 2023. It is also the case that key contacts may be slow to receive information or to reply to us about new projects. For all these reasons, this report is inherently a snapshot in time, and a v.2 or even v.3 may be necessary within the timeframe of the EASIER project.

This report could be as brief as a simple list of new or forthcoming sign language documentation projects. However, we did not find any projects of the type we were hoping for: those whose results would be amenable to integration into EASIER. Also, the investigation to locate these resources yielded information about the 'under-resourced' sign languages of Europe that seemed worth sharing more widely. Therefore, we decided to use the occasion of this report to provide a light sketch of the context of these languages, focusing on nine EU countries where no significant language documentation could be found. These sketches, presented in §4, provide a brief overview of the situation in each country vis-à-vis sign language documentation and resources, with references to publications about the language. This also revealed patterns in the types of institutions that tend to stimulate academic research and prompted us to consider the limitations of these research paradigms, and the need for new models. This is discussed in §5.

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2 SUMMARY OF SIGN LANGUAGE RESOURCES IN EUROPE

The starting point in our search for under-resourced sign languages in Europe originated from D6.1, *the Overview of Datasets for the Sign Languages of Europe* (Kopf et al. 2021). This report details those lexical and corpus datasets with data that would be eligible to be used in the EASIER pipeline. A visual summary of the D6.1 report is provided in Figure 1, which shows the relative amount of documentation for each sign-spoken language pairing in four levels: a relatively high degree of coverage (dark blue), some coverage but with less or unclear coverage (light blue), some data but the amount is unclear (dark yellow), and those language pairings with no known documentation. By "coverage", we mean the amount of video hours (which is itself a relative measure) combined with the depth and breadth of annotation in a corpus, and the number of signs and degree of coding per sign in a lexical resource. The focus on language pairings rather than simply sign languages is due to the goal of EASIER to facilitate the automatic translation between languages, and these are (1) the pairings that would typically appear together in datasets and (2) the languages most useful to translate between for a local/national audience.

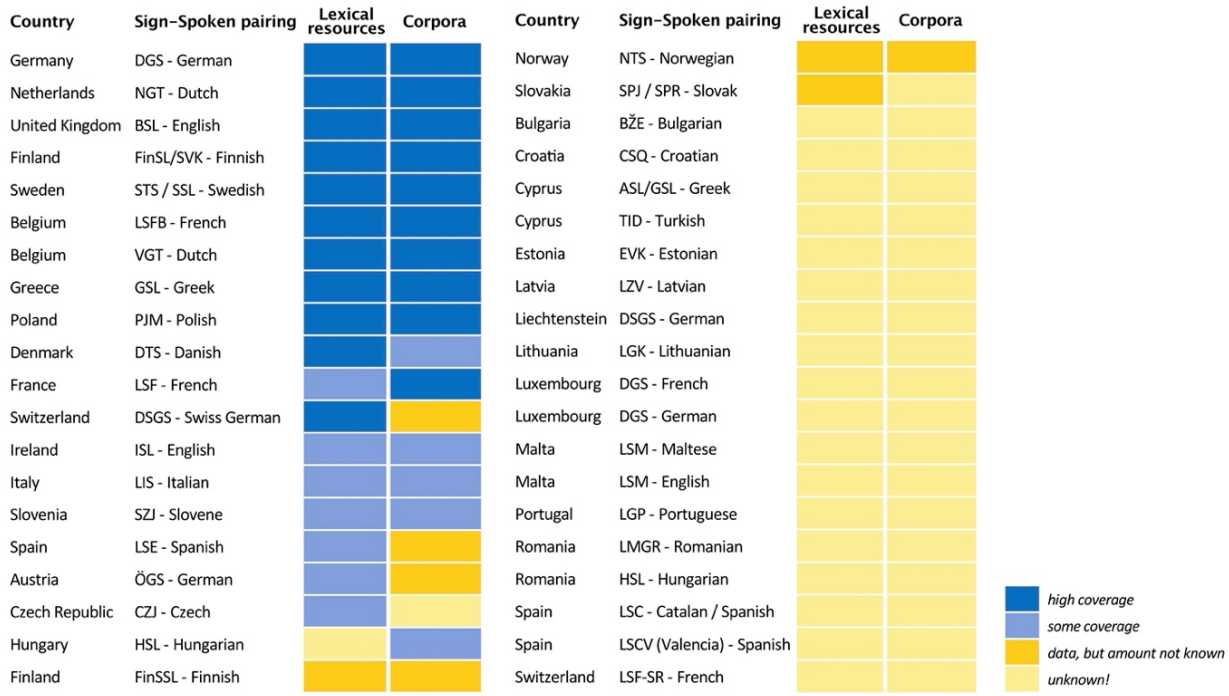

FIGURE 1: : COVERAGE OF LANGUAGE RESOURCES (LEXICAL, CORPUS) IN LANGUAGES OF THE EUROPEAN UNION, LISTED BY LANGUAGE PAIRING (SIGN LANGUAGE - SPOKEN LANGUAGE PAIR)

The chart shows 19 language pairs with a completely unknown or absent language documentation (in light yellow). We decided to give priority to countries with the greatest degree of under-documentation. We therefore set aside a few languages that are variants of another national sign language that was already well documented and/or those in countries with active sign language documentation projects of the standard sign language (e.g., DSGS in Liechtenstein, DGS-German in Luxembourg, LSF-SR in Switzerland). The remaining language pairings are found in nine countries: Bulgaria, Croatia, Cyprus, Estonia, Latvia, Lithuania, Malta, Portugal, and Romania. We also acknowledge the work of Bickford (2005), who provided an earlier overview of Eastern-European sign languages.

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3 PROCEDURE

Here we describe how we tried to locate new or upcoming language documentation projects. First, we realized that documentation could be located in different types of setting: in academia, within deaf institutions, or in other types of social organization (e.g., interpreter associations, associations for parents of deaf children, etc.). In the three sub-sections that follow, we describe the outreach effort to specific audiences.

Second, to support our searches and provide context to the findings, we also sought out information about the political, historical situation in the country (i.e., policies regarding sign language, deaf education, interpreters, etc.) as well as clues within the publication record for hints about the situation of sign language research and centers of power vis-à-vis deaf people in the country. This information is included in the sketches in §4.

3.1 SOCIAL MEDIA OUTREACH

To cast a wide net and take advantage of the connectivity of social networks, we created a social media post that was shared on Twitter, Facebook, and the EASIER website. This post requested help from the public to locate new sign language documentation projects.

FIGURE 2: SOCIAL MEDIA POST, SHARED IN DIFFERENT VENUES

3.2 OUTREACH TO ACADEMICS

Since the typical setting for sign language documentation projects is within academia (i.e., a university or college), we tried to locate academics who might know about or be involved in new documentation projects in their countries. Therefore, we looked for researchers who had published research (in English) on sign language or related topics, such as pedagogical research in deaf education, in the nine target countries. We next found email addresses for those academics and sent an explanation of our project and its goals along with a short questionnaire, show below. This questionnaire was made as concise as possible to encourage responses.

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CONTENTS OF EMAIL QUESTIONNAIRE:

Here are a few questions to clarify the current situation for XXX Sign Language. Please respond to this email and add your answers.

1. Is there a digital lexical resource of XXX, such as a lexical database, dictionary, or online repository of signs in the language?
ANSWER:

1a. If 'yes', where is it stored? Can you tell us anything about its contents (number of signs, information on variants and usage, etc.)?
ANSWER:

2. Is there a collection or archive of videos in XXX, and has this collection been made accessible for other researchers?
ANSWER:

2a. If 'yes', has the video been annotated (for example, in ELAN)?
ANSWER:

2b. If 'yes', how much of the video is annotated (rough proportion)?
ANSWER:

3. Is anyone currently working on the documentation of XXX?
ANSWER:

3a. If 'yes', who is leading the documentation (person/group/institution)?
ANSWER:

4. If 'no' to 3, are there plans to start documenting XXX, or even to apply for funding?
ANSWER:

4a. If 'yes', who is leading the search for funding, or the project?
ANSWER:

5. Is there anything else important to add about the documentation of XXX?
ANSWER:

3.3 OUTREACH TO DEAF ORGANIZATIONS

Another audience who would likely know about new sign language documentation projects and may also be leading such a project are members of the deaf community in that country. Therefore, we sent an appeal for information through the newsletter of the European Union of the Deaf (EUD), one of our partners in this project.

3.4 OTHER TARGET AUDIENCES

Another possible audience to reach would be different social groups within each country. These might include groups made up of parents of deaf children, teachers of deaf students, interpreters, other interested parties, or an association made up of blends of these groups. However, we found that these types of groups operate almost exclusively in their national language. Due to this language barrier, we therefore did not pursue outreach to these groups.

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4 SKETCH OF LANGUAGE DOCUMENTATION IN UNDER-RESOURCED COUNTRIES

In what follows, we look at the least resourced European sign languages and provide a brief sketch of the current situation for each one in terms of information relevant for language documentation. This includes (i) some idea of the national status of the language (which can affect accessibility to project funding), (ii) any existing documentation that is known, including dictionaries, corpora, and linguistic grammars, (iii) an overview of the publication record, with an eye on linguistic research and possible institutional centers of research, and (iv) any information gained from our outreach program.

It is also worth mentioning in advance that eight out of the nine languages are represented in the Spread the Sign online lexical repository: https://www.spreadthesign.com. While these signs could be usable for documentation within a separate lexical database linked to a corpus or as part of a dictionary project, in this current format they are not sufficiently documented nor freely accessible to researchers, and so we do not consider that repository as sufficient as a lexical resource in itself.

4.1 BULGARIA (BŽE – BULGARIAN)

As of 2012, Bulgarian Sign Language was not officially recognized as a national language (Wheatley & Pabsch 2012). At least three print dictionaries exist (from 1961, 1996, 2005), and Slavina Lozanova reports in 2018 that “at the moment, intensive work is being done on investigating the nature of the BGSL – linguistic description and analysis” (Lozanova 2018: 137). However, no output of these efforts has been found in English. In terms of language documentation, the only online data we found was in Spread the Sign. Compared to the other nine sign languages, BŽE is relatively better studied and appears to have an active deaf organization, the Bulgarian Union of the Deaf. However, we did not find any current or planned language documentation projects.

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4.2 CROATIA (HZJ – CROATIAN)

Croatian Sign Language does not seem to be recognized yet as a national language of Croatia. According to Majetić & Bago, there was an online dictionary of HZJ called CroDeafWeb, but it became incompatible with internet browsers over time and is no longer accessible. In late 2015, a Croatian team partnered with Spread the Sign; as of 2018, they have added almost 10,000 entries to that online repository (Majetić & Bago 2018). However, based on feedback from our email questionnaire, it appears there is no documentation project for HZJ currently underway or planned in the near future. In terms of publications, however, there are several individual research projects in the last ten years or so. These continue to be conducted at the University of Zagreb (in multiple departments: Department of Hearing Impairments, Department of Information and Communication Sciences, and the Department of Linguistics). In addition, several lines of linguistic research on HZJ have been published in collaboration with Prof. Ronnie Wilbur in the United States.

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4.3 CYPRUS (CSL/ΚΝΓ – GREEK)

After CSL/ΚΝΓ was recognized by a legislative act in 2006 (Wheatley & Pabsch 2012), *The Cypriot Sign Language Recording Project* (2007-2010) was undertaken. In 2009, this project yielded a degree of CSL/ΚΝΓ documentation, which was published locally by the Cyprus Ministry of Education and Culture with the collaboration of the Cyprus School for the Deaf and the Cyprus Federation of the Deaf. According to Kyrillou et al. (2021), there were three outputs: a traditional grammar, conceptual dictionary, and communication grammar. Unfortunately, online links to these outputs are no longer working. Contact with individuals in Cyprus has not yet yielded more information about these resources. That said, they do not seem to be based on a corpus of the language. To date, no current or upcoming documentation projects of CSL/ΚΝΓ have been found. No publications were found that focus on the linguistic structure of CSL/ΚΝΓ.

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4.4 ESTONIA (EVK – ESTONIAN)

Estonian Sign Language was recognized in 2007 by the 'Language Law', after many years of effort by a working group consisting of the national deaf association, a main deaf school, an interpreter group, an association of parents of deaf and hard-of-hearing children, the Institute of Estonian Language, and the Institute of Humanities. In terms of publications, there are quite a few independent linguistic research projects that have been done, focusing on several aspects of the linguistic structure of EVK. In terms of language documentation, however, there seem to be no corpora. There are only collections of EVK signs, such as in Spread the Sign, and in a DVD from 2008. Yet, the collaborations between social organizations and the number of research publications would seem to suggest a ripe environment for language documentation of EVK.

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4.5 LATVIA (LZV – LATVIAN)

LZV is not recognized officially as a national language, though it is mentioned in the Official Languages Law: “The State shall ensure the development and use of the Latvian Sign Language for communication with people with impaired hearing.” In terms of documentation, there is mention of a decades-old print dictionary and a book describing the grammar of LZV by Dina Bethere, published in 2004. There is also a collection of signs in Spread the Sign, and a small corpus of around 2-3 stories by 15 people, but the latter is not publicly available. Altogether, LZV is one of the least documented sign languages in the group.

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4.6 LITHUANIAN (LGK – LITHUANIAN)

Lithuanian Sign language is mentioned in a law that states, “(s)ign language is the native language of the deaf.” However, as of 2012 LGK is not specifically recognized as a national language (Wheatley & Pabsch 2012). However, other laws have mandated standards for interpreter services and bilingual education of the deaf. Other than sign entries in Spread the Sign (used by Yu et al. 2018), no language documentation could be found, and there is practically no research whatsoever on LGK itself. Publications in English that mention LGK

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tend to be from a deficit/disability/medial framework, rather than from a linguistic perspective. Taken together, LGK appears to be acutely under-described and under-resourced.

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4.7 MALTA (LSM-MALTESE, LSM-ENGLISH)

LSM was recognized in 2016 with the passing of the Maltese Sign Language Recognition Law. As a consequence of our social media outreach for this project, we found out about *The Maltese Sign Language Research Project* at the Institute of Linguistics and Language Technology (University of Malta, Msida). This project has yielded an online dictionary with what appears to be at least 2,000 signs (the exact number is not listed). One notable aspect of this dictionary is that there are Signwriting entries for the signs. Currently, there is not a corresponding LSM corpus, nor immediate plans for one, but unlike some other sign languages in this under-resourced group, Malta seems poised to move forward with further documentation. In the publication record of LSM, there are several linguistically-oriented papers, chapters, and theses. In addition, the University of Malta is in the process of filling a tenure-track position on General, Applied or Computational Linguistics (with a specialization in Sign Linguistics) Institute of Linguistics and Language Technology.

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4.8 PORTUGAL (LGP – PORTUGUESE)

As of 2012, the constitution mentions “sign language”, but in the section on education rather than language, and LGP is not recognized as a language in its own right. In terms of documentation, there is greater coverage of LGP than expected when we started searching. There is an LGP reference corpus at the Portuguese Catholic University (Universidade Católica Portuguesa) in Lisbon, though in response to our questionnaire we found out that the project is currently on hold while more funding is sought. Also, there is an online lexical repository of LGP signs, Infopédia (www.infoedia.pt). Recent publications about LGP in English tend to be related to computational projects, such as vision recognition, animation/avatars, and various computer modeling, rather than linguistic content or description; however, it is known that much more research on LGP has been published in Portuguese. Compared to the other sign languages in this group, LGP has much greater documentation coverage and research attention, although it is still not as extensive as many other sign languages in the EU.

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4.9 ROMANIA (LSR-ROMANIAN)

While a law in 2006 guaranteed several rights to disabled persons, including access to interpreters and the involvement of the national deaf association (ANSR) be part of the approval process for interpreters (Eberle et al. 2015), Romanian Sign Language seems to have not yet been recognized as an official national language. The publication record for LSR is spotty, with a PhD thesis on narrative structure in LSR (Sohre 2017), but little found on basic

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linguistic description of the language. However, a SIL sociolinguistic survey report (Eberle et al. 2015) shows a rich linguistic environment that would benefit from language documentation. As a result of our searches, we discovered an online lexical repository of LSR, *Dictionar Limbaj Mimico Gestual* or *DLMG* (http://dlmg.ro/dictionar/), which has videos and Romanian glosses of what appear to be at least 1,500 signs (though possibly many more). No corpus project has been identified.

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5 SUMMARY AND CLOSING STATEMENT

Even within these least-resourced sign languages of Europe there are gradations of coverage of language documentation. Fortunately, we found a few more resources than we were expecting at the outset, such as the corpus of Portuguese Sign Language and the online lexical repositories of Maltese Sign Language and Romanian Sign Language. Yet we also confirmed that there are major gaps in documentation, with some countries having very little coverage, even in publications. Latvia and Lithuania and, to some extent, Cyprus are among these. And unfortunately, we were unable to find any new or upcoming projects, as we had hoped.

Some other trends we noticed during our searches and outreach are worth mentioning. First, the source of research varied quite a lot, with some countries having active research programs in pedagogy or computational approaches, but lacking linguistic description. In other countries linguistic research took place but sometimes focused on narrow research questions. Also, the research sometimes originated from within the country (e.g., Bulgaria, Estonia) and sometimes originated from outside the country (though usually by nationals of the country) or via international collaborations (e.g., Croatia). Second, it is quite likely that other research and possibly even documentation projects have been done in the national language of the country and were not picked up in the English-language literature and searches. This also speaks to the trade-offs in targeting a local audience (including in the deaf community) versus an international audience. Given finite resources, it is understandable to focus primarily on a national audience. For integration with language technologies developed elsewhere, a multilingual approach that also includes English may be desirable. Third, the participation of deaf signers or deaf organizations in each country was not very apparent or at the forefront in many projects, though again this could be a consequence of our reliance on English to some extent (and deaf signers preferring the written national language).

However, this last point leads to an observation about current practices in some countries that have set new standards for documentation projects. In particular, several centers for language documentation consist of teams with a high proportion of deaf members or even fully deaf teams. When such teams collaborate with or are fully integrated with linguists, lexicographers, and individuals with technical expertise, this can create a fruitful environment for high quality language documentation. Examples of these centers include but are not limited to the Vlaams-Gebarentaalcentrum (Flemish Sign Language Center); the Swedish Sign Language Corpus Project at Stockholm University, the BSL Corpus project at DCAL (which has since disbanded), or the Institute of German Sign Language and Communication of the Deaf. Other best practices are outlined in deliverable D9.1, *Definition of Minimal Contents of Dataset for Participation*, available on the EASIER website: https://www.project-easier.eu/deliverables/.

In closing, we find a real gap in the documentation of European sign languages and no indication that the situation will change soon. Further deliverables in our work package (WP9) will provide some guidance to those wanting to start such projects in the form of workflow documents and training workshops, and we hope these may offer new encouragement, particularly to the deaf community and linguists within the countries profiled here.

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