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Report from EFNIL

Author	Sabine Kirchmeier
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Author	Sabine Kirchmeier
Reviewers	Natalia Resende, Jiřina Popelíková
EC project officers	Susan Fraser, Miklos Druskoczi
Contact	<p>European Language Equality (ELE) ADAPT Centre, Dublin City University Glasnevin, Dublin 9, Ireland</p> <p>Prof. Dr. Andy Way – andy.way@adaptcentre.ie</p> <p>European Language Equality (ELE) DFKI GmbH Alt-Moabit 91c, 10559 Berlin, Germany</p> <p>Prof. Dr. Georg Rehm – georg.rehm@dfki.de</p> <p>http://www.european-language-equality.eu</p> <p>© 2022 ELE Consortium</p>

Consortium

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List of Acronyms

EFNIL	European Federation of National Institutes for Language
ELE	European Language Equality (<i>this project</i>)
ELE Programme	European Language Equality Programme (<i>the long-term, large-scale funding programme specified by the ELE project</i>)
EU	European Union
ICT	Information Communication Technology
LT	Language Technology/Technologies
SRIA	Strategic Research and Innovation Agenda

Abstract

The European Federation of National Institutions for Language (EFNIL) is a network of the central or national institutions for research, documentation and policy relating to the officially recognised standard languages within the states of the European Union. This report is based on the input of EFNIL members and EFNIL member contacts, and reflects therefore, first and foremost, views on LT support for the official languages of the EU. Some EFNIL institutions, however, cater also for minority languages. In these cases information on minority languages is included.

EFNIL institutions are mainly research institutions and specializing on the national languages and not on language technology, although many institutions are rather advanced users of specialized language technology solutions for the purpose of creating language descriptions such as structured text collections (corpora), dictionaries and grammars. Some of EFNIL's member institutions are strongly involved in language policies of their countries and may even be in charge of implementing and monitoring them, and some also have the responsibility of developing language technology services for the public user.

This report covers a large number of national languages in Europe and a small group of minority languages. It mainly reflects on language technology on a general user level, although views of specialized language technology users and developers are also included.

1. Introduction

This document presents the results of a survey of the LT user and consumer community, conducted by the EU project European Language Equality (ELE). These results will serve as input for strategic research, innovation and deployment agenda (SRIA) and roadmap, in order to tackle the striking imbalance between European languages in terms of the support they receive through Language Technologies (LTs) by 2030.

ELE collects the views of European LT users and consumers on the differences in terms of technologies for the languages they work with and of the measures that need to be put in place so that all European languages are equally supported through technology by 2030.

Due to the interdisciplinary nature of the field of Language Technology, which stands at the intersection of Linguistics, Computational Linguistics, Computer Science and Artificial Intelligence, the ELE project brings together diverse groups of stakeholders including researchers, representatives of communities of LT users and consumers, language professionals (e.g. translators, lecturers and professors in the field of Linguistics and Computational Linguistics) and stakeholders from different economic sectors (e.g. banking, health).

Although the methodology and instruments utilised have been common to all ELE consortium members, this report covers and analyses the subset of responses of stakeholders contacted by the European Federation of National Institutions for Language (EFNIL).¹

About EFNIL

The European Federation of National Institutions for Language (EFNIL) is a non-profit network of the central and national institutions for research, documentation and policy relating to officially recognised standard languages within the states of the European Union. The Federation was founded by the General Assembly of its member institutions in Stockholm on 14 October 2003.²

¹ Reports from other groups of ELE partners will be published on the ELE website, <https://european-language-equality.eu>, as they become available

² <http://efnil.org>

EFNIL consists of 37 member institutions located in 29 European countries and provides a forum for these institutions to exchange information about their work and to gather and publish information about language use and language policy within the European Union. The Federation encourages the study of the official European languages and a coordinated approach towards first and second language learning, as a means of promoting linguistic and cultural diversity within the European Union (STOA, 2017; European Parliament, 2018; Gavrilidou et al., 2012; Rehm and Uszkoreit, 2012; Blagoeva et al., 2012; Rehm et al., 2020b,a).

2. Methodology and Instruments

2.1. Online Survey

The survey addressed to LT users and consumers sought to elicit the respondents' views in a way that facilitates the analysis, consolidation and integration of the collected feedback into the ELE SRIA and roadmap. It had 63 questions in total. Some of the questions depended on previous answers. As a result, a respondent was presented with 30 (minimum) to 63 (maximum) questions, including "if other" questions. 46 questions were mandatory from which 33 were closed questions (single or multiple choice). Table 1 shows an overview of the types of questions.

Question types	Mandatory	Optional	Totals
Closed	20	13	33
Open-ended	26	4	30
Totals	46	17	63

Table 1: Type of survey questions

The survey was structured in four main parts. If any of the provided answers were not applicable, the respondents had the option to enter a different answer through the option "if other, please specify".

- **Part A. Respondents' profiling:** the first part of the survey included 13 questions for the demographic profiling of respondents with emphasis on characteristics relevant to the task at hand, i. e.
 - Country the respondents are based in
 - Name of the organisation/representative body the respondents work for
 - Communities they represent (if applicable)
 - Type of organisation the respondents work for
 - Sectors or domains that the respondents are active in (if applicable)
 - Role of the respondents in the organisation (if applicable)
 - Organisation's estimated revenue (if applicable)
- **Part B. Language coverage:** looked into the European languages the respondents work with and the languages they intend to include in their workflow, i. e.,
 - Languages that the organisations, associations, communities, professionals or LT users work with
 - Languages that organisations/institutions plan to support in the short- or medium-term

- **Part C. Evaluation of current situation:** assessed the current situation by asking respondents to evaluate the level of technology support for the official European languages they work with and any minority, regional or lesser used languages, i. e.,
 - Differences in availability of LTs between the official European languages they work with as well as the differences in availability of LTs between the minority, regional or lesser-used languages they work with, if applicable;
 - Gaps perceived in the technologies, tools or applications that the respondents work with especially in relation to specific languages;
 - Respondents' opinion on the performance of LTs with regard to specific languages
- **Part D. Predictions and visions for the future:** respondents are requested to share their needs and wishes for the future of language technologies, i. e.,
 - Policies or instruments that could contribute to speeding up an effective deployment of LT in Europe equally for all languages
 - Prediction of future opportunities for LTs in basic and applied research (scientific vision) and in innovation and industry
 - Expectations of the community with regard to the challenges an ELE Programme could address by 2030

Follow-up: The last three questions requested the respondent's permission to be contacted for an interview and, given an affirmative answer, their contact details. Respondents were also requested to click on a confirmation question stating "By clicking on 'Submit', I agree that my personal data (email address and/or name) can be used according to the Privacy Policy of the European Language Equality (ELE) project".

The survey was designed, set up and published on the EU Survey platform.³ The full survey, as published online, is presented in Appendix A (p. 13 ff.).

The survey was distributed by EFNIL through emails to members of the EFNIL network. It has additionally been advertised through the European Language Equality and European Language Technology websites, LinkedIn page and Twitter account as well as social media accounts of EFNIL members.

The survey was opened on 21 June 2021 and closed on 18 October 2021. In total, 246 responses have been collected, 28 of which were from respondents who were contacted directly by EFNIL. This subset of responses, representing the views of the stakeholders contacted by EFNIL, is analysed in this report.

2.2. Interviews

The survey was completed by 28 EFNIL members. Members of the EFNIL network that had not answered the questionnaire were contacted for interviews. In this way, 6 additional interviews were conducted and supplementary information was collected.

The interviews took place via Zoom from 1 November to 4 December 2021. The interviewer followed the structure of the survey and added the information to the survey template during the interviews.

³ <https://ec.europa.eu/eusurvey/runner/LTusers-consumers>

3. Analysis of Responses

3.1. Survey Responses

3.1.1. Respondents' profiling

In total, there were 34 respondents from 24 European countries; 28 responded via the survey (18 countries) and 6 via interviews (6 countries). Most answers came from Denmark (5) and Lithuania (4).

The following countries were covered via the survey: Bulgaria, Croatia, Denmark, Estonia, Finland, Greece, Hungary, Italy, Lithuania, Luxembourg, Malta, Romania, Slovenia, Sweden, Iceland, Ireland (and Northern Ireland), Norway and Switzerland.

The following countries were covered via the interview: Belgium, Germany, Latvia, Poland, The Netherlands, United Kingdom (and Northern Ireland).

For Belgium there were answers only regarding the Flemish language, not French. Figure 1 shows the breakdown of answers percentages.

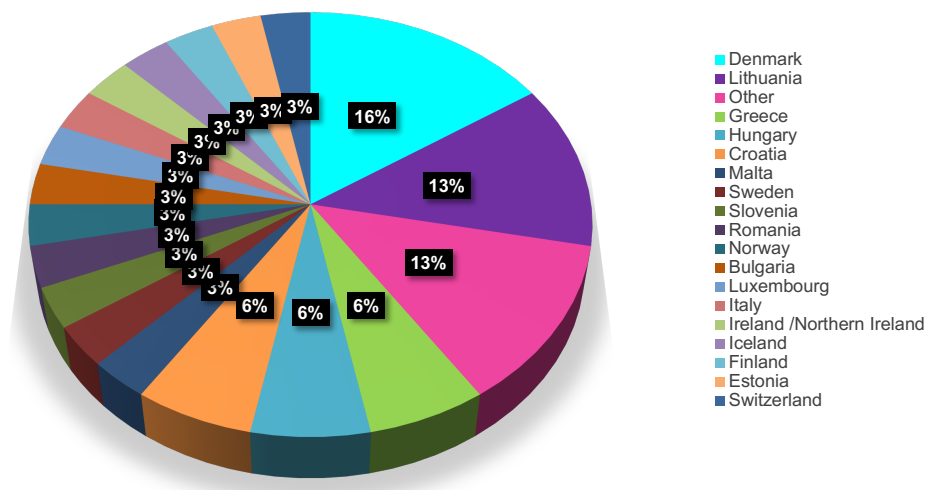


Figure 1: In which country are you based?

12 of the respondents in the survey represent organisations within digital humanities, arts, culture and other services (43%), the rest cover a broad spectrum of organisations ranging from education (29%), research (25%), information and communication technologies (18%), publishing (18%) and public administration (18%). The institutions in the interview show a similar distribution. Half of them represent organisations within digital humanities and the other half deal with education and/or research. Breakdown of the answers is shown in Figure 2.

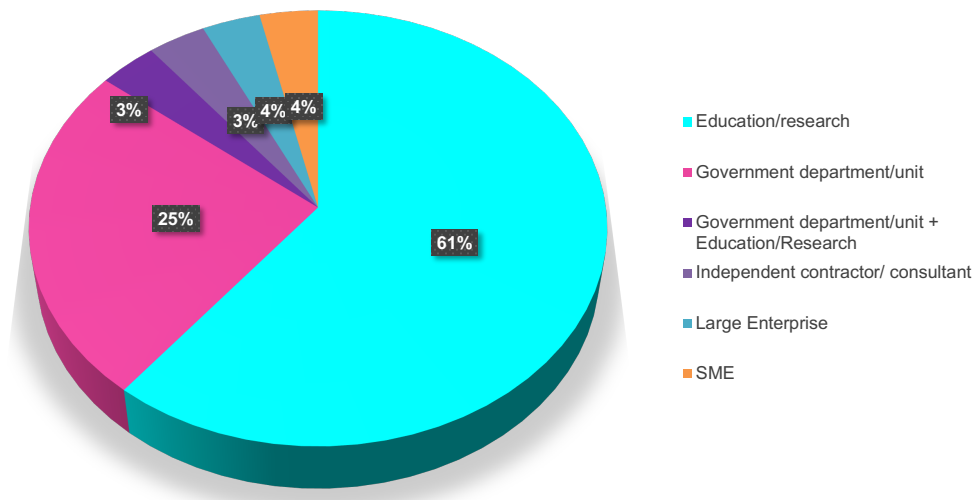


Figure 2: Which of the following best describes the type of organisation you work for?

Most of the organisations are rather small, between 11 and 100 employees (64%), only 2 have more than 500 employees. The majority (61%) are engaged in education and research, whereas 25% are governmental organisations in areas other than research and education.

1/4 of the respondents of the survey hold a leading position as director or department head, about 1/2 hold research positions, mainly senior positions such as professor or senior researcher, the last 1/4 constitutes a mix of different positions such as senior advisor in ICT, senior data scientist and self-employed. All 6 respondents in the interviews hold leading positions as directors or department heads.

3.1.2. Language Coverage

About one third (36%) of the organisations work with only one language, which is to be expected as EFNIL is an association of national institutions for language many of which are in charge of language standardisation and language planning. 25% work with at least two languages and the rest with up to seven different languages.

The language most frequently employed is English. 54% of the respondents report to be working in or with this language. Other frequently mentioned languages are German, Swedish and Danish (each mentioned by 18% of the respondents), followed by Croatian, Norwegian, Lithuanian and Italian (each mentioned by 14%). In total, 25 official European are mentioned as languages used by the respondents or their institutions. Two respondents report to be working with Russian. For Norway, there is furthermore mention of both New Norwegian and Bokmål as officially recognised language varieties.

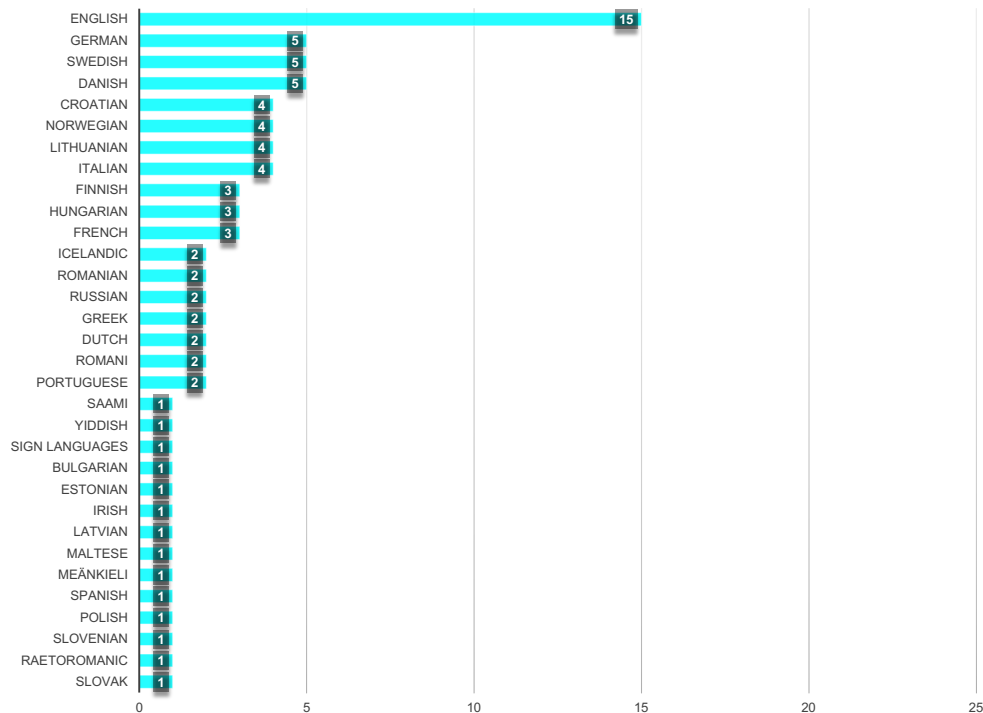


Figure 3: Which of the official European language(s) listed below do you or your organisation work with? if “Other”, please specify.

Out of the 6 respondents in the interviews, 4 reported to be working with English and 4 are working with more than one language.

4 of the respondents in the survey plan to include other languages in the future. Here German and French are the ones most frequently mentioned. Only one of the respondents in the interview is planning to include more languages but has not decided which ones.

5 out of the 28 respondents in the survey report to be working with minority languages, these are Kven, Norwegian Romani (Travellers Romani), Romani (Romanes), Meänkieli, Yiddish, North Saami, South Saami, Raetoromantic, Võru and Setu and Norwegian sign language. Out of the 6 respondents of the interviews, 5 also report to include minority languages, namely Frisian, Lower-German, Gaelic, Welsh and Ukrainian.

As mentioned above, the main task of EFNIL institutions is catering for the national language. Some institutions, however, have the broader task of catering also for the official minority languages in their country. This is, for instance, the case for Norway, Sweden, Finland, and the Netherlands.

3.1.3. Evaluation of the Current Situation

Most of the organisations related to EFNIL are users of general LT tools such as search tools (86%), proofing tools (71%), translation tools (71%) and language learning tools (57%). A few use more advanced tools such as tools for sentiment analysis (18%) or text summarizing tools (11%). The same applies for the 6 respondents in the interviews.

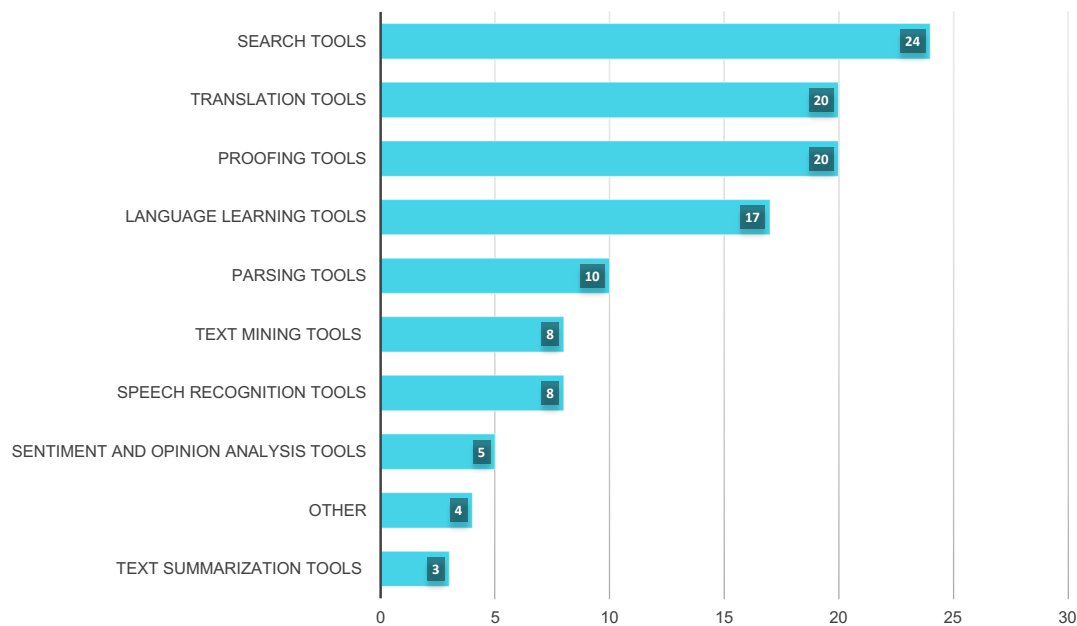


Figure 4: Which LT tools/applications listed below do you or your organisation use with the official European language(s) you or your organisation work with?

Among the proofing tools, spell checkers clearly dominate (68%), whereas grammar checkers and auto-correct tools are much less used about (30-40%). Most of the translation tools that are used are freely available generic translators such as Google Translate. Only 3 of the respondents use terminology management tools. Search tools of all kinds are widely used with web-based search tools clearly dominating (more than 70% of the respondents reported using Google search or similar search services). Among language learning tools, web-based thesaurus tools seem to be most widely used (54%). Speech tools (especially voice user interfaces and text-to-speech applications) and parsing tools (including part-of-speech taggers) are used by about 25% of the respondents.

68% of the participants in the survey and also in the interviews perceive gaps in the coverage of LT tools. Gaps were reported for 18 official European languages: Bulgarian, Polish, Slovenian, Spanish, Danish, English, French, Greek, Irish, Lithuanian, Maltese, Norwegian, Romanian, Croatian, Hungarian, Icelandic, Finnish and Swedish. Further gaps were reported in the interviews for German, Latvian, Dutch and Flemish.

The most frequently reported gaps were in the variety of applications and the quality of tools. 89% of the respondents to the survey report gaps in the variety of applications for their languages, whereas 94% of the languages have gaps in the quality of the tools. 72% of the languages have gaps with regard to the linguistic phenomena that are covered, and for 56% of the languages respondents report problems with the adaptability of the LT tools to various systems. The same applies for the languages in the interviews.

Regarding the assessment of the level of LT support for the different languages, only few languages are considered to have good support. Respondents were asked to rate the LT tools based on a four-point scale (where 1 = *very poor*, 2= *poor*, 3= *good*, 4= *excellent*). English shows an average score of 3.4. German has a little less that good support (average score 2.0), followed by Greek (1.8) Swedish (1.6), French and Danish (each 1.5). Czech, Latvian, Portuguese are perceived to have very poor support (an average score of 0.5). Figure 5 shows the breakdown of answers.

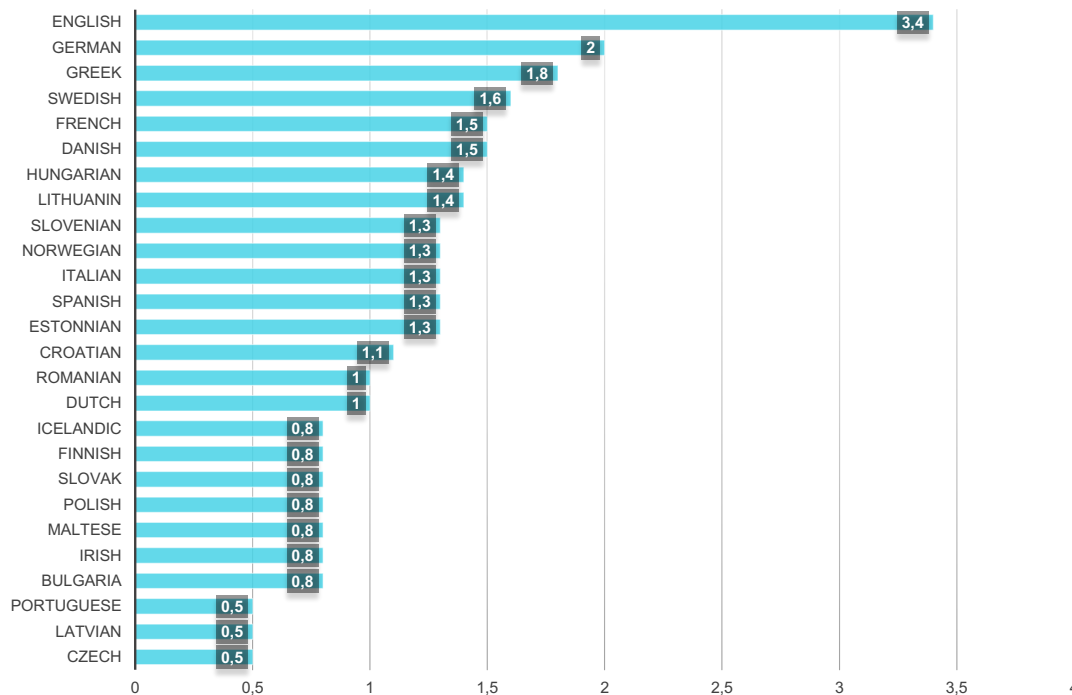


Figure 5: Please choose the option that best describes the level of language technology support for the official European language(s) you or your organisation work with.

The most widely and frequently used LTs are search tools and proofing tools to be the most frequently used tools. 61% of the respondents state that they use search tools every day, and 46% state that they use proofing tools every day. Next in line are translation tools that are used sometimes or frequently by 68% of the respondents, and language learning tools that are used sometimes or frequently by 59% of the respondents. Finally, speech recognition tools, text-to-speech and parsing tools are used only by some of the respondents. Almost half of the respondents state that they never use these tools.

Text summarizing, text mining and sentiment analysis tools are reported to be used sometimes or rarely by about 40% of the respondents, while about 60% state that they never use them. These tendencies were also reported in the interviews.

Three participants in the survey state that they use corpus tools and tools for the compilation of electronic dictionaries. One respondent states that her institution develops many kinds of interactive dictionary and text search tools for the general public and that the institution also participates in CALL-projects, e.g. developing tools for teaching dyslectic children.

6 respondents (21%) state that they or their institutions are working with language technology tools for minority languages. These are EFNIL members located in Ireland, Estonia, Malta, Norway, Sweden and Switzerland. In the interviews, members from Belgium, Latvia and the Netherlands also state that they use language technology for minority languages. These are mainly proofing, search and translation tools. Only for Frisian there is a wider range of tools, like text-to-speech, parsers and taggers. For most other minority languages, respondents report gaps at all levels.

Data on the performance of the language technology systems for minority languages is very scarce and quite diverse. For instance, the perception of the performance of proofing tools ranges from excellent (Malta), to very Poor (Sweden). Advanced tools, such as text-to-speech, sentiment analysis, text mining or summarizing tools are either not available at all

or perform very poorly.

The description of the level of language technology support for minority languages shows the same pattern. The Irish respondent reports that the proofing, search and translation tools for Irish are used every day or frequently. For the other countries that mention minority languages, these tools are rarely or never used. Only for Maltese it is reported that parsing, search and translation tools are used sometimes.

A detailed list and more exhaustive summary of all answers with the breakdown of LTs used by language can be found in Appendix B Table 5 and Table 6.

3.1.4. Predictions and Visions for the Future

Higher quality is clearly what most respondents (93%) think would increase the use of language tools for the specific languages they or their organisations use. A wider range of applications (68%) and more training of the personnel using the tools (61%) are also considered beneficial. The lack of quality is the most likely reason why tools may be rarely used even when they are available. If a tool performs poorly, it becomes too time-consuming or just not relevant for the user.

There is a tendency that institutions that report working with a broad range of tools with satisfactory results have more focus on the training of personnel. This indicates that training of users is of great importance for the successful use of LT and that good experience with the tools enhances the motivation in these organisation to introduce the tools to more users.

Automatic translation and speech tools are on top of the respondents' wishes for future applications. Other requests include corpus tools and tools that facilitate the development of high quality language resources such as dictionaries and thesauri. Parsing tools, semantic analysers and ontology building tools are also on the wish list.

The list of future applications reflects that many EFNIL members have their main focus on the description of the national languages, i.e. the lexical inventory, the terminology and the grammar. Consequently, they demand tools that facilitate their descriptive tasks, such as tools for analysing text and transcribing speech and managing language data. Such tools are also vital for the development of advanced LT. They are easily accessible for English, but in many cases still not readily available in sufficient quantity and quality for the majority of the official languages of Europe. Therefore, many EFNIL members strongly support the development of advanced LT, for the benefit of the language users as well as for their own benefit.

Regarding the expectations for the development of tools in the future, the majority of the respondents are rather optimistic. 50% agree and 25% strongly agree that in the next 10 years, there will be higher-quality language tools for all the languages that concern the respondents, including minority languages. Only the respondents from Croatia, Iceland and Norway disagree or strongly disagree.

The expectations for the range of available tools in the future are even higher. Almost all respondents (50% agree and 46% strongly agree) expect that in the next 10 years, there will be a wider range of language tools for European languages. Only one respondent (from Iceland) strongly disagrees.

The respondents are much more divided on the question of the maintenance of linguistic diversity. About half of the respondents, (29% agree and 25% strongly agree) believe that in the next 10 years, language technology tools will help prevent the loss of linguistic diversity. 25% of the respondents are undecided and 22% disagree or even strongly disagree. The respondent that strongly disagrees is, once again, from Iceland, but respondents in Denmark, Greece, Hungary and Switzerland also disagree. Figure 6 shows the breakdown of answers.

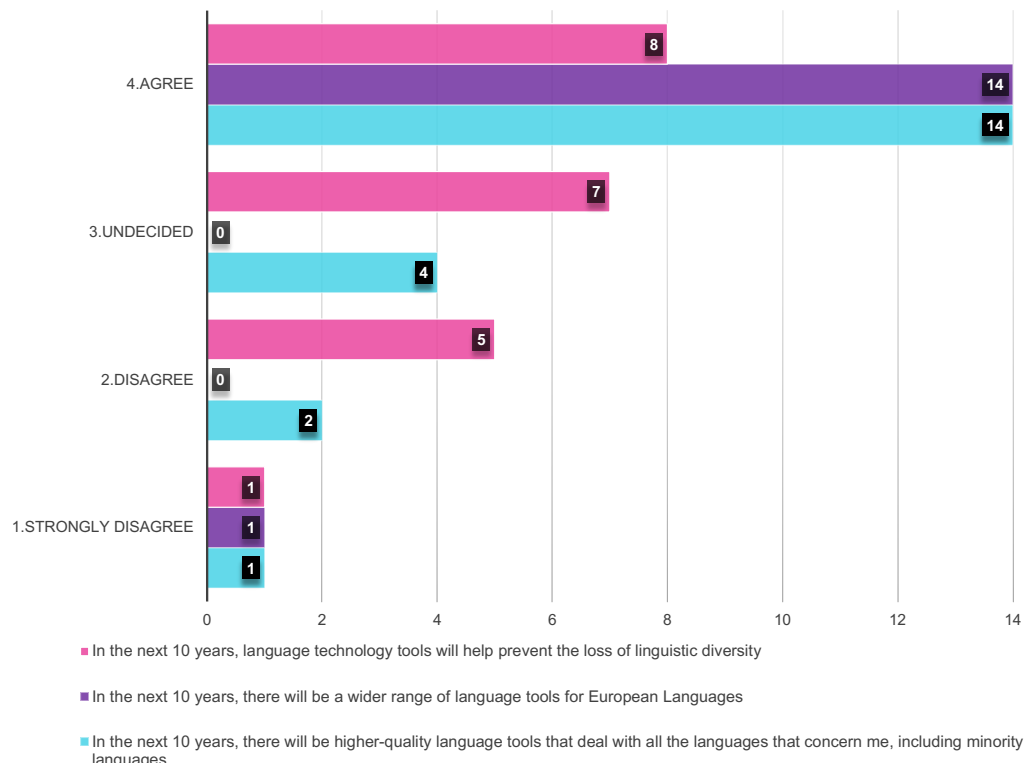


Figure 6: Please indicate the best option that describes your vision for the future of languages technology

The most relevant benefit of improving technologies is the enhancement of communication for people with disabilities. This is emphasised by 75 % of the respondents.

68% of the respondents believe that improved language technologies will prevent minority/regional languages from disappearing. Quite a large number of respondents (64%) think that better language technologies will increase peoples' engagement with social, leisure and work activities in their own language.

About half of the respondents believe that improved language technologies will increase individuals' exposure to their languages (including regional and minority languages), increase the number of speakers of those languages, and improve communication between native speakers. They also think that the technologies will improve literacy for minority/regional languages and online trade in countries where the languages are spoken.

Only 25% believe that more offline trade (i.e. not e-commerce) will be the result of improved language technologies.

3.2. Interview Responses

Interviews were conducted with 6 informants covering the Netherlands (Dutch, Frisian), Belgium (Flemish), Germany, Great Britain, Poland and Latvia. The results of the interviews have been reported in each section in connection with the results of the survey.

In most cases, the interviews confirm the overall tendencies that emerge from the survey. The level of support for Dutch and Flemish (in the group of national languages) as well as Frisian (in the group of minority languages) seems slightly better than for other languages with a comparable number of speakers. This is most likely due to the strong and continuous

strategic approach that has been taken to the development of language technology especially for the Dutch language over the years.

4. Conclusions

From the survey among EFNIL members regarding the official languages of the EU, a rather homogeneous picture emerges. The respondents mainly use free, generic systems provided by online services for search, proofing, translation and language learning. Speech tools and tools for text summarising or sentiment analysis are rarely used.

Respondents report severe gaps in the quality and variety of language technology applications. They also stress poor support or even very poor support for many official languages (see Figure 5). The only language where respondents experience good or even excellent support, is English. The situation is a little better for generic proofing tools, search systems, translation tools and language learning applications than for more advanced text and speech applications, like summarizing, sentiment analysis and text-to-speech systems. This, and the fact that many advanced tools are rarely integrated in the daily used applications, might explain why users rarely use these more advanced tools.

Some users report that there is a lack of knowledge in their own institutions and among professional users about the existence of LT tools and how to use them. This may also prevent a more widespread use of LT tools among non-professional users. This is particularly important for users with disabilities. “Access is important and access to access. Knowing how to find the tools. Elderly people risk to be left out. People often don’t know what language technology solutions exist” (respondent from Britain).

For minority languages, the situation is even more critical, and gaps and lack of variety and quality can be found in all tools. Advanced tools are hardly available, although the technical know-how in many cases does exist.

One respondent suggests that language technology tools for minority languages could be produced on the basis of the language models of larger, similar languages: “There are 7000 languages in the world. If we are going for language equality then we should focus on coupling minority languages to language models for majority languages (e.g. English, German, Chinese) rather than trying to create equally good data sets for the minority languages. Because only the very rich countries will be able to even get close to that” (respondent from Denmark). Whether this is a feasible solution remains to be seen. More research is also stressed as one of the possible measures that should be taken. “There has to be more funding for research to improve the systems. Often the users suffer from lack of funding to build the basic tools, for instance corpus for sign languages” (respondent from the Netherlands).

75% of the respondents expect that a greater variety, a better range of tools and a better quality of tools will be available for European languages in the future. Translation and speech tools are clearly the top priorities for applications that should be made available. As many EFNIL member institutions have a special obligation to provide linguistic resources such as dictionaries and grammatical descriptions of their languages as well as for language teaching, tools for organising linguistic data such as text corpora, dictionary compilation systems, and language teaching applications are also important priorities.

Expectations are rather low with regard to the future for linguistic diversity. About half of the respondents believe that language technology will prevent the loss of linguistic diversity. The other half is undecided or disagrees or even strongly disagrees.

As one of the respondents puts it: “There is not yet any commercial interest in producing tools for the minority language of the Nordic countries (e.g. Meänkieli, the Saami language, Yiddish, and Romani). In order to support these language, there is a need for state or EU funding. There is a lot of local knowledge of how these tools would be best produced (a lot

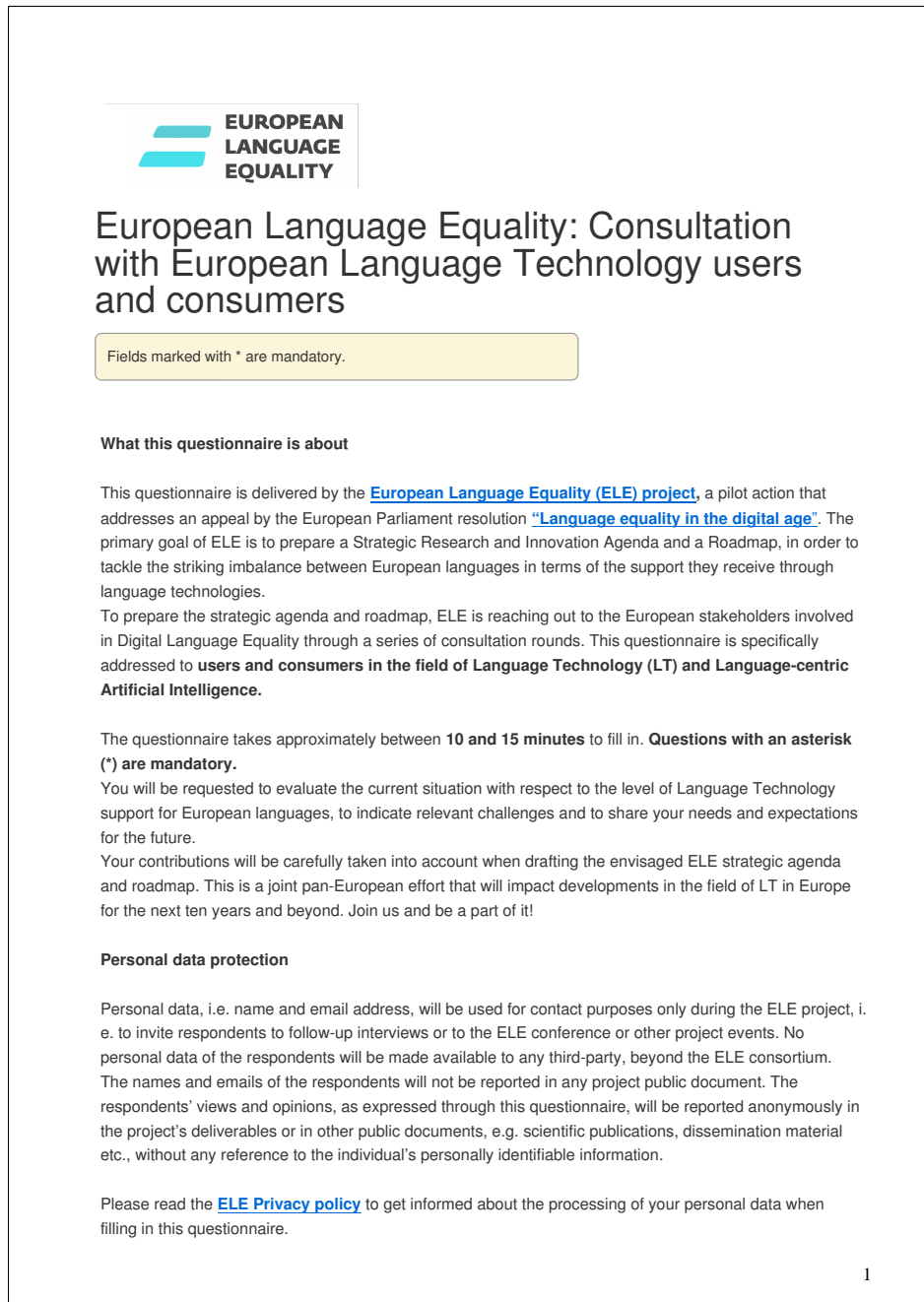
of good work has been conducted for the Saami languages, for instance), but the funding to conduct the work is lacking.” (respondent from Sweden).


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A. LT users and consumers survey

Figures 7 to 24 show the complete LT research and developers survey.



 **EUROPEAN
LANGUAGE
EQUALITY**

European Language Equality: Consultation with European Language Technology users and consumers

Fields marked with * are mandatory.

What this questionnaire is about

This questionnaire is delivered by the [European Language Equality \(ELE\) project](#), a pilot action that addresses an appeal by the European Parliament resolution "[Language equality in the digital age](#)". The primary goal of ELE is to prepare a Strategic Research and Innovation Agenda and a Roadmap, in order to tackle the striking imbalance between European languages in terms of the support they receive through language technologies.

To prepare the strategic agenda and roadmap, ELE is reaching out to the European stakeholders involved in Digital Language Equality through a series of consultation rounds. This questionnaire is specifically addressed to **users and consumers in the field of Language Technology (LT) and Language-centric Artificial Intelligence**.

The questionnaire takes approximately between **10 and 15 minutes** to fill in. **Questions with an asterisk (*) are mandatory.**

You will be requested to evaluate the current situation with respect to the level of Language Technology support for European languages, to indicate relevant challenges and to share your needs and expectations for the future.

Your contributions will be carefully taken into account when drafting the envisaged ELE strategic agenda and roadmap. This is a joint pan-European effort that will impact developments in the field of LT in Europe for the next ten years and beyond. Join us and be a part of it!

Personal data protection

Personal data, i.e. name and email address, will be used for contact purposes only during the ELE project, i. e. to invite respondents to follow-up interviews or to the ELE conference or other project events. No personal data of the respondents will be made available to any third-party, beyond the ELE consortium. The names and emails of the respondents will not be reported in any project public document. The respondents' views and opinions, as expressed through this questionnaire, will be reported anonymously in the project's deliverables or in other public documents, e.g. scientific publications, dissemination material etc., without any reference to the individual's personally identifiable information.

Please read the [ELE Privacy policy](#) to get informed about the processing of your personal data when filling in this questionnaire.

1

Figure 7: Full survey as published (page 1/18)

Introduce yourself and your organisation

*** In which country are you based?**

☐ Austria ☐ Germany ☐ Poland
☐ Belgium ☐ Greece ☐ Portugal
☐ Bulgaria ☐ Hungary ☐ Romania
☐ Croatia ☐ Ireland ☐ Slovak Republic
☐ Cyprus ☐ Italy ☐ Slovenia
☐ Czechia ☐ Latvia ☐ Spain
☐ Denmark ☐ Lithuania ☐ Sweden
☐ Estonia ☐ Luxembourg ☐ Other
☐ Finland ☐ Malta
☐ France ☐ Netherlands

*** If "other", please specify.**

*** Which association(s)/community(ies)/organisation(s)/sector(s) of users and consumers do you represent?**

Please, select as many as apply

<input type="checkbox"/> Agriculture and fisheries	<input type="checkbox"/> Finance/banking	<input type="checkbox"/> Publishing
<input type="checkbox"/> Digital Humanities, arts, culture and other services	<input type="checkbox"/> Health	<input type="checkbox"/> Research
<input type="checkbox"/> Broadcasting	<input type="checkbox"/> Industry and manufacturing	<input type="checkbox"/> Security (threat detection in general)
<input type="checkbox"/> Business services	<input type="checkbox"/> Information and Communication Technologies	<input type="checkbox"/> Social Sciences
<input type="checkbox"/> Construction	<input type="checkbox"/> Insurance industry	<input type="checkbox"/> Tourism, accommodation and food services
<input type="checkbox"/> eCommerce	<input type="checkbox"/> Justice and legal	<input type="checkbox"/> Trade and repair
<input type="checkbox"/> Education	<input type="checkbox"/> Media	<input type="checkbox"/> Transportation, logistics and storage
<input type="checkbox"/> Energy/green economy /environment	<input type="checkbox"/> Public administration	<input type="checkbox"/> Other

*** If "other", please specify.**

2

Figure 8: Full survey as published (page 2/18)

*** What is the name of the organisation/representative body you work for? (if you are self-employed or if you are not employed, please specify)**

*** How many members are there in the association(s)/community(ies)/organisation(s)/sector(s) of users and consumers you represent in this survey? (total number of full-time employees)**

☐ 1-10
☐ 11-100
☐ 101-500
☐ 501-5000
☐ More than 5000
☐ N/A
☐ Not sure

*** Which of the following best describes the type of organisation you work for?**

☐ Professional association
☐ Government department/unit
☐ SME
☐ Large Enterprise
☐ Independent contractor/ consultant
☐ Education/research
☐ N/A
☐ Other

*** If "other", please specify.**

*** What is your main role at the organisation where you work? (if you are self-employed or if you are not employed, please specify)**

If you are the representative of a community of users and consumers, please enter your role at the representative body you work for.

3

Figure 9: Full survey as published (page 3/18)

Language Coverage

*** Which of the official European language(s) listed below do you or your organisation work with?**
 if you represent an organisation/community of users and consumers please select the languages this organisation /community work with. Otherwise, please select the languages you work when using language technologies.

<input type="checkbox"/> Bulgarian	<input type="checkbox"/> German	<input type="checkbox"/> Norwegian
<input type="checkbox"/> Croatian	<input type="checkbox"/> Greek	<input type="checkbox"/> Polish
<input type="checkbox"/> Czech	<input type="checkbox"/> Hungarian	<input type="checkbox"/> Portuguese
<input type="checkbox"/> Danish	<input type="checkbox"/> Icelandic	<input type="checkbox"/> Romanian
<input type="checkbox"/> Dutch	<input type="checkbox"/> Irish	<input type="checkbox"/> Slovak
<input type="checkbox"/> English	<input type="checkbox"/> Italian	<input type="checkbox"/> Slovenian
<input type="checkbox"/> Estonian	<input type="checkbox"/> Latvian	<input type="checkbox"/> Spanish
<input type="checkbox"/> Finnish	<input type="checkbox"/> Lithuanian	<input type="checkbox"/> Swedish
<input type="checkbox"/> French	<input type="checkbox"/> Maltese	<input type="checkbox"/> Other

*** If "other", please specify.**

*** Do you or your organisation plan to include additional languages in your workflow in the next 3 years?**

☐ Yes
☐ No
☐ Not sure

*** Which language(s)?**

<input type="checkbox"/> Bulgarian	<input type="checkbox"/> German	<input type="checkbox"/> Norwegian
<input type="checkbox"/> Croatian	<input type="checkbox"/> Greek	<input type="checkbox"/> Polish
<input type="checkbox"/> Czech	<input type="checkbox"/> Hungarian	<input type="checkbox"/> Portuguese
<input type="checkbox"/> Danish	<input type="checkbox"/> Icelandic	<input type="checkbox"/> Romanian
<input type="checkbox"/> Dutch	<input type="checkbox"/> Irish	<input type="checkbox"/> Slovak
<input type="checkbox"/> English	<input type="checkbox"/> Italian	<input type="checkbox"/> Slovenian
<input type="checkbox"/> Estonian	<input type="checkbox"/> Latvian	<input type="checkbox"/> Spanish
<input type="checkbox"/> Finnish	<input type="checkbox"/> Lithuanian	<input type="checkbox"/> Swedish
<input type="checkbox"/> French	<input type="checkbox"/> Maltese	<input type="checkbox"/> Other

*** If "other", please specify.**

4

Figure 10: Full survey as published (page 4/18)

Is any of the languages you selected considered a minority/regional/lesser-used language?

☐ Yes

☐ No

*** Do you or your organisation work with any minority/regional/lesser-used language(s) not included in the list of EU languages provided above?**

Minority languages/regional/lesser-used languages are languages that are traditionally used within a given territory of a state by nationals of that state who form a group numerically smaller than the rest of the state's population and [are] different from the official language(s) of that state" (Council of Europe, 1992, p. 2)

☐ Yes

☐ No

*** Which minority/regional/lesser-used language(s)?**

Evaluation of the current situation

*** Which language technology tools/applications listed below do you or your organisation use with the official European language(s) you or your organisation work with?**

If you are the representative of a organisation/community of users and consumers, please select the tools used by the organisation/community. Otherwise, select the tools you use with the languages you work with.

For examples of these types of tools/applications, click on boxes and select as many as apply.

<input type="checkbox"/> Proofing tools	<input type="checkbox"/> Sentiment and opinion analysis tools
<input type="checkbox"/> Translation tools	<input type="checkbox"/> Text summarization tools (e.g. Quilbot AI)
<input type="checkbox"/> Speech recognition tools	<input type="checkbox"/> Text mining tools (e.g. IBM Watson)
<input type="checkbox"/> Parsing tools	<input type="checkbox"/> Language learning tools
<input type="checkbox"/> Search tools	<input type="checkbox"/> Other

*** Proofing tools**

Please, select as many as apply.

☐ Spell checkers

☐ Grammar checkers

☐ Autocorrect tools

*** Translation tools**

☐ Computer-assisted translation tools (e.g. translation memories)

☐ Terminology management applications

5

Figure 11: Full survey as published (page 5/18)

☐ Generic translation tools freely available on the web (e.g. Google Translate)

☐ Custom-built translation engines

* Speech recognition tools

☐ Voice user interfaces (e.g. Siri, native android, native iOS, smart speakers [Google home, Alexa, ...], Bose Headphones, Adobe Acrobat reader, Amazon Polly, Chromevox, Wordreference)

☐ Text-to-speech systems (i.e. systems that turn text into speech for reading texts out loud (e.g. Amazon Polly, Adobe Acrobat reader)

* Parsing tools

☐ Dependency or constituency parsing systems to automatically analyse the syntax of textual or spoken data (e.g. Stanford NLP's CoreNLP java framework, Stanford NLP Stanza, AllenNLP parsing, UDPipe, MaChAmp)

☐ Part-of-speech taggers of any type (e.g. NLTK python library, NLPdotnet)

* Search tools

☐ Web-based question-answering systems (e.g. Stack exchange, StackOverflow, Quora, Google search)

☐ Ontology tools for extracting the corresponding domain's terms and the relationships between the concepts that these terms represent in a text (e.g. Robot tool)

☐ Generic search systems freely on the web (e.g. Google search)

☐ Customer-build search engines (e.g. organisations or vendors create search engines themselves)

☐ Domain-specific search engines (focusing on domain-specific topics, e.g. PubMed, Copernic, CC search)

☐ Multilingual search engines (e.g. Google, Wikipedia)

☐ Cross-language search engines (e.g. eBay, Aliexpress)

☐ Language-focused search engines (e.g. Baidu)

☐ Multimedia search engines (e.g. plantnet, or applications like 'Snooth')

☐ Private search engines (e.g. Search Encrypt and OneSearch, use different encryption methods to keep your query private)

* Language learning tools

☐ Computer-assisted language learning tools (e.g. Duolingo, FluentU, SKELL)

☐ Web-based thesaurus tools (help users to find synonyms of words)

☐ Intelligent systems to aid and assess reading comprehension (e.g. Whooo's Reading, Storia)

☐ Web-based translation search engines (e.g. Linguee)

* If "other" tool(s), please specify.

* **Do you perceive gaps in technological support for the official European language(s) you work with?**

By gaps in technological support we mean, for instance, gaps in the variety of available applications for certain languages, gaps in the quality of tools for certain languages, among other gaps listed in the next questions.

☐ Yes

☐ No

6

Figure 12: Full survey as published (page 6/18)

Please, indicate the language(s) you perceive the gaps below.
Please, select as many gaps and languages as apply.

	Amount and variety of available applications	Quality of the tool/application (delays in responding, difficulties with special characters, language-related errors in the output etc.)	Variety of linguistic phenomena /text types covered	Adaptability to systems (e.g. adaptability to iOS system)	Other
Bulgarian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Croatian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Czech	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dutch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Estonian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finnish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
French	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
German	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greek	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hungarian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Icelandic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Italian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7

Figure 13: Full survey as published (page 7/18)

Latvian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lithuanian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maltese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Norwegian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portuguese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Romanian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slovak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slovenian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spanish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swedish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

8

Figure 14: Full survey as published (page 8/18)

* If "other", please specify.

In general terms, how do you evaluate the performance of the tools you use for the official European language(s) you work with?

Please evaluate based on a four-point scale.

Please, evaluate as many tools as apply. If you do not know one or more tools, please select non-applicable (N/A).

	1. Very poor	2. Poor	3. Good	4. Excellent	5. N/A
Proofing tools (e.g. Spell checkers, Autocorrect)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translation tools (e.g. Google Translate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speech recognition tools (e.g. Siri, Alexa)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parsing (e.g. PoS taggers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search tools (e.g. Google search)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sentiment analysis and opinion analysis tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text summarization (e.g. Quillbot)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text mining (e.g. IBM Watson)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language learning (e.g. Duolingo, thesaurus, bilingual dictionaries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* If "other", please specify.

Please choose the option that best describes the level of language technology support for the official European language(s) you or your organisation work with.

Please, choose as many languages as apply.

	1. No support	2. Poor support	3. Good support	4. Excellent support	5. I do not know
Bulgarian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Croatian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Czech	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 15: Full survey as published (page 9/18)

Danish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dutch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Estonian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finnish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
French	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
German	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Greek	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hungarian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Icelandic	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Italian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Latvian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lithuanian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Maltese	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Norwegian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Polish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Portuguese	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Romanian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Slovak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Slovenian	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spanish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Swedish	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please indicate based on a five-point scale how frequently you use the language technology tools /applications listed below for the languages you work with.

Please, select as many tools as apply.

	1. Never	2. Rarely	3. Sometimes	4. Frequently	5. Every day
Proofing tools (e.g. Spell checkers, Autocorrect)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translation tools (e.g. Google Translate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Figure 16: Full survey as published (page 10/18)

Speech recognition tools (e.g. Siri, Alexa)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parsing (e.g. PoS taggers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search tools (e.g. Google search)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sentiment analysis and opinion analysis tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text summarization (e.g. Quillbot)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text mining (e.g. IBM Watson)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language learning (e.g. Duolingo, thesaurus, bilingual dictionaries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* If "other" tool(s), please specify.

Please indicate for which language(s) you or your organisation use the language technology tools /applications listed below.

Please, select as many tools and languages as apply.

	Proofing tools (e.g. Spell checkers, grammar checkers)	Translation tools (e.g. Google Translate)	Speech Recognition tools (e.g. Siri, Alexa)	Search tools (e.g. Google search, Wikipedia)
Bulgarian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Croatian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Czech	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Danish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dutch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Estonian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finnish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
French	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
German	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Greek	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hungarian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Icelandic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Figure 17: Full survey as published (page 11/18)

Irish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Italian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Latvian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lithuanian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maltese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Norwegian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Polish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Portuguese	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Romanian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slovak	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slovenian	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Spanish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Swedish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* If "other" language(s), please specify.

Are there language technology tools/applications available for the minority/regional/lesser-used language(s) you or your organisation work with?

☐ Yes
☐ No
☐ I do not know

*** Which tools/applications do you use with these minority/regional/lesser-used languages?**

For more examples of these types of tools, click on the boxes and select as many tools as apply.

<input type="checkbox"/> Proofing tools	<input type="checkbox"/> Search tools	<input type="checkbox"/> Language learning tools
<input type="checkbox"/> Translation tools	<input type="checkbox"/> Sentiment and opinion analysis tools	<input type="checkbox"/> Other
<input type="checkbox"/> Speech recognition tools	<input type="checkbox"/> Text summarization tools (e.g. Quilbot AI)	
<input type="checkbox"/> Parsing tools	<input type="checkbox"/> Text mining tools (e.g. IBM Watson)	

*** Proofing tools**

Select as many as apply.

☐ Spell checkers
☐ Grammar checkers
☐ Autocorrect

Figure 18: Full survey as published (page 12/18)

*** Translation tools**
Select as many as apply.

- ☐ Computer-assisted translation tools (e.g. translation memories)
- ☐ Terminology management applications
- ☐ Generic translation tools freely available on the web (e.g. Google Translate)
- ☐ Custom-built translation engines

*** Speech recognition/synthesis tools**
Select as many as apply.

- ☐ Voice user interfaces (e.g. Siri, native android, native iOS, smart speakers [Google home, Alexa, ...], Bose Headphones, Adobe Acrobat reader, Amazon Polly, Chromevox, Wordreference)
- ☐ Text-to-speech systems (i.e. systems that turn text into speech or for reading text out loud (e.g. Amazon Polly, Adobe Acrobat reader)

*** Parsing tools**
Please, select as many as apply.

- ☐ Dependency or constituency parsing systems to automatically analyse the syntax of textual or spoken data (e.g. Stanford NLP's CoreNLP java framework, Stanford NLP Stanza, AllenNLP parsing, UDPipe, MaChAmp)
- ☐ Part-of-speech taggers of any type (e.g. NLTK python library, NLPdotnet)

*** Search tools**
Please, select as many as apply.

- ☐ Web-based question-answering systems (e.g Stack exchange, StackOverflow, Quora, Google search)
- ☐ Ontology tools for extracting the corresponding domain's terms and the relationships between the concepts that these terms represent in a corpus (e.g. Robot tool)
- ☐ Generic search systems freely on the web (e.g. Google search)
- ☐ Customer-build search engines (e.g organisations or vendors create search engines themselves)
- ☐ Domain-specific search engines (focusing on domain-specific topics, e.g. PubMed, Copernic, CC search)
- ☐ Multilingual search engines (e.g. Google, Wikipedia)
- ☐ Cross-language search engines (e.g. eBay, Aliexpress)
- ☐ Language-focused search engines (e.g. Baidu)
- ☐ Multimedia search engines (e.g. plantnet, or applications like 'Snooth')
- ☐ Private search engines (e.g. Search Encrypt and OneSearch, use different encryption methods to keep your query private)

*** Language learning tools**
Please, select as many as apply.

- ☐ Computer-assisted language learning tools (e.g. Duolingo, FluentU, SKELL)
- ☐ Web-based thesaurus tools (help users to find synonyms of words e.g. thesaurus.com)
- ☐ Intelligent systems to aid and assess reading comprehension (e.g. Whooo's Reading, Storia)
- ☐ Web-based translation search engines (e.g. Linguee)

*** If "other", please specify.**

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Figure 19: Full survey as published (page 13/18)

Do you perceive gaps in technological support for the minority/regional/lesser-used language(s) you work with?

By gaps in technological support we mean, for instance, gaps in the variety of available applications for certain languages, gaps in the quality of tools for certain languages, among other gaps listed in the next questions.

☐ Yes
☐ No

Please, indicate the gap(s) you perceive.

Please, select as many as apply.

☐ Gaps in the amount and variety of available applications
☐ Gaps in the quality of the tool/application (delays in responding, difficulties with special characters, language-related errors in the output etc.)
☐ Gaps in the variety of linguistic phenomena/text types covered
☐ Gaps in adaptability to systems (e.g. adaptability to iOS system)
☐ Not sure
☐ Other

* If "other", please specify.

In general terms, how do you evaluate the performance of the language technology tools for the minority/regional/lesser-used language(s) you work with? Please evaluate based on a four-point scale.

Please, select as many tools as apply. If you cannot evaluate for any reason, please select not applicable (N/A).

	1. Very poor	2. Poor	3. Good	4. Excellent	5. N/A
Proofing tools (e.g. Spell checkers, Autocorrect)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translation tools (e.g. Google Translate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speech recognition tools (e.g. Siri, Alexa)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parsing (e.g. PoS taggers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search tools (e.g. Google search)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sentiment analysis and opinion analysis tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Figure 20: Full survey as published (page 14/18)

Text summarization (e.g. Quillbot)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text mining (e.g. IBM Watson)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language learning (e.g. Duolingo, thesaurus, bilingual dictionaries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If "other", please specify.

Please, choose the option that best describes the level of language technology support for the minority/regional/lesser-used language(s) you or your organisation work with.

Please, select as many tools as apply. If you do not know one or more tools, select not applicable (N/A).

	1. Very poor	2. Poor	3. Good	4. Excellent	5. N/A
Proofing tools (e.g. Spell checkers, Autocorrect)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translation tools (e.g. Google Translate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speech recognition tools (e.g. Siri, Alexa)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parsing (e.g. PoS taggers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search tools (e.g. Google search)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sentiment analysis and opinion analysis tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text summarization (e.g. Quillbot)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text mining (e.g. IBM Watson)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language learning (e.g. Duolingo, thesaurus, bilingual dictionaries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* If "other", please specify.

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Figure 21: Full survey as published (page 15/18)

Please indicate based on a five-point scale how frequently you use the language technology tools /applications listed below for the minority/regional/lesser-used languages you work with.

Please, select as many tools as apply.

	1. Never	2. Rarely	3. Sometimes	4. Frequently	5. Every day
Proofing tools (e.g. Spell checkers, Autocorrect)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Translation tools (e.g. Google Translate)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speech recognition tools (e.g. Siri, Alexa)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parsing (e.g. PoS taggers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search tools (e.g. Google search)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sentiment analysis and opinion analysis tools	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text summarization (e.g. Quillbot)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Text mining (e.g. IBM Watson)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language learning (e.g. Duolingo, thesaurus, bilingual dictionaries)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

* If "other" tool, please specify.

Predictions and visions for future

* In your opinion, what provision of resources would increase the use of language tools for the specific languages you or your organisation use?

Please, select as many as apply.

- ☐ A wider range of language tools for the languages I work with
- ☐ Higher-quality tools for the languages I work with
- ☐ More training of personnel dealing with such tools
- ☐ Other

* If "other", please specify.

Figure 22: Full survey as published (page 16/18)

Which tools or applications that could potentially use language technology do you want to see that is not currently available for the languages you work with (we welcome any suggestion, even ideas that are not possible with current technology)?

Please indicate the best option that describes your vision for the future of languages technology.

	1. Strongly disagree	2. Disagree	3. Undecided	4. Agree	5. Strongly Agree
• In the next 10 years, there will be higher-quality language tools that deal with all the languages that concern me, including minority languages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
• In the next 10 years, there will be a wider range of language tools for European Languages	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
• In the next 10 years, language technology tools will help prevent the loss of linguistic diversity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*** In your opinion, what would be the most relevant benefits of improving technologies for the languages you or your organisation work with (including minority/regional/lesser-used languages)?**

Please, select as many as apply.

- ☐ Increase individuals' exposure to these languages
- ☐ Prevent minority/regional languages from disappearing
- ☐ Increase the number of speakers of those languages, including minority/regional languages
- ☐ Improve communication between native speakers
- ☐ Improve literacy for minority/regional languages
- ☐ Enhance the communication capabilities of people with disabilities
- ☐ Increase engagement with social, leisure and work activities in their own languages
- ☐ Improve online trade in countries where those languages are spoken
- ☐ Improve offline trade (i.e. not e-commerce) in countries where those languages are spoken
- ☐ Other

• If "other", please specify.

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Figure 23: Full survey as published (page 17/18)

If you have any comments/suggestions, please let us know.

* Can we contact you to arrange a possible follow-up discussion?

☐ Yes
☐ No

* What is your e-mail address?

What is your name?

☐ By clicking on 'Submit', I agree that my personal data (email address and/or name) can be used according to the Privacy Policy of the European Language Equality (ELE) project.

[ELE Privacy Policy.pdf](#)

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Figure 24: Full survey as published (page 18/18)

B. Additional tables and graphs

Country	Respondents %	
Denmark	5	14,7
Lithuania	4	11,8
Croatia	2	5,9
Greece	2	5,9
Hungary	2	5,9
Bulgaria	1	2,9
Estonia	1	2,9
Finland	1	2,9
Italy	1	2,9
Luxembourg	1	2,9
Malta	1	2,9
Romania	1	2,9
Slovenia	1	2,9
Sweden	1	2,9
Iceland	1	2,9
Ireland and Northern Ireland	1	2,9
Norway	1	2,9
Switzerland	1	2,9
The Netherlands	1	2,9
Latvia	1	2,9
Germany	1	2,9
Poland	1	2,9
Belgium	1	2,9
UK + Northern Ireland	1	2,9

Table 2: Breakdown of answers to the questions “In which country are you based? If, ”other”, Please specify”

Types of organisations	Answers count	%
Education/research	17	60,7
Government department/unit	7	25,0
Government department/unit + Education/Research	1	3,6
Independent contractor/ consultant	1	3,6
Large Enterprise	1	3,6
SME	1	3,6

Table 3: Breakdown of answers to the question “Which of the following best describes the type of organisation you work for? if ”other”, please specify”

Languages	Answers count	%
English	15	54%
Lithuanian	7	25%
Danish	6	21%
German	5	18%
Italian	5	18%
Other	5	18%
Swedish	5	18%
Croatian	4	14%
French	4	14%
Finnish	3	11%
Hungarian	3	11%
Icelandic	3	11%
Norwegian	3	11%
Romanian	3	11%
Dutch	2	7%
Greek	2	7%
Irish	2	7%
Maltese	2	7%
Norwegian	2	7%
Portuguese	2	7%
Slovenian	2	7%
Bulgarian	1	4%
Estonian	1	4%
Latvian	1	4%
Polish	1	4%
Slovak	1	4%
Spanish	1	4%

Table 4: Breakdown of answers to the question “Which of the official European language(s) listed below do you or your organisation work with? if ”other”, please specify”

Language Technologies	Answers counts	%
Parsing tools		
Part-of-speech taggers of any type	10	36
Dependency or constituency parsing	7	25
Proofing tools		
Autocorrect tools	10	36
Grammar checkers	11	39
Spell checkers	19	68
Search tools		
Multimedia search engines	1	4
Private search engines	1	4
Cross-language search engines	3	11
Ontology tools	4	14
Customer-build search engines	6	21
Language-focused search engines	6	21
Domain-specific search engines	8	29
Multilingual search engines	14	50
Web-based question-answering systems	14	50
Generic search systems freely available online	20	71
Speech technologies		
Text to speech	6	21
Voice user interface	7	25
Translation tools		
Generic translation tools freely available online	1	8.3
Computer-assisted translation tools	2	16.7
Terminology management applications	1	8.3
Custom-built translation engines	2	16.7
Language Learning tools		
Computer-assisted language learning tools	4	14
Intelligent systems to aid and assess reading comprehension	1	4
Web-based thesaurus tools	15	54
Web-based translation search engines	1	4

Table 5: Breakdown of answers to the question: “Which language technology tools/applications listed below do you or your organisation use with the official European language(s) you or your organisation work with? if “other”, please specify.”

Language Technologies	Answers counts	%
Proofing tools		
Spell checkers	3	60%
Autocorrect	1	20%
Grammar checkers	1	20%
Translation tools		
Terminology management applications	3	60%
Computer-assisted translation tools	2	40%
Generic translation tools freely available online	2	40%
Custom-built translation engines	1	20%
Parsing tools		
Part-of-speech taggers of any type	2	40%
Dependency or constituency parsing systems	1	20%
Search tools		
Generic search systems freely available online	2	40%
Multilingual search engines	2	40%
Cross-language search engines	1	20%
Web-based question-answering systems	1	20%
Language Learning tools		
Computer-assisted language learning tools	2	40%
Web-based thesaurus tools	2	40%
Language learning tools	1	20%
Web-based translation search engines	1	20%

Table 6: Breakdown of answers to the question: "Which tools/applications do you use with these minority/regional/lesser-used languages? if "other", please specify"

Higher quality machine translation tools in the public domain.
Sentiment analysis; automatic dictionary compilation
Tools for collecting lexical data and speed up the process of dictionary building.
speech technology
language learning
summarisation
text simplification
anonymisation
Better translation tools between Danish and other languages than English.
Much better parsing of Danish than currently available.
Speech-to-text and parsing for Hungarian
Very basic things to start with for the minority languages of Sweden. E.g. spell checking, support for keyboard input, both on computers and on smartphones (for smartphones, there is also the algorithm for predicting what you write, and for that you need language technology and text corpora that you can use for statistics of letter co-occurrences). The next step is language learning tools. A larger content in bilingual dictionaries, and bilingual corpora with an open licence.
1) high level freely available translation tool from Finnish to at least Swedish and English and vice versa; 2) AI based automatic Finnish and Swedish language consultation service; 3) tool for finding automatically new words (neologisms) in Finnish and Swedish texts; 4) effective editing program for compiling Finnish and Swedish dictionaries.
speech recognition for dialects
Parsing tools
Terminology management applications
Ontology tools for extracting the corresponding domain's terms and the relationships between the concepts that these terms represent in a text
Computer-assisted language learning tools
Authorship detection
morphological parser and tagger
Tools related to meaning and semantics.
Our public sector is often ill-advised by big international companies into buying text and speech tools of relatively poor quality, and very poorly maintained/developed
Denmark currently has no dedicated education for language technology or computational linguistics. Some courses are given at KU, ITU, DTU, AU, but none of them address the Danish language specifically.

Table 7: Full list of answers to the questions “Which tools or applications that could potentially use language technology do you want to see that is not currently available for the languages you work with (we welcome any suggestion, even ideas that are not possible with current technology)?”