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ELRC Workshop Report for Lithuania



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1 Executive Summary

The 3rd ELRC Workshop in Lithuania took place as an online event via Zoom platform on the 1st of December 2021 from 9.30 – 13.30. The organisers considered the COVID-19 pandemic situation, as Covid cases were increasing in the country, therefore it was decided to decline a face-to-face workshop as for the previous two events.

The event was organised by the ELRC Representatives in Lithuania, Tilde IT. This is the 3rd ELRC workshop organised by Tilde IT. Despite the new challenge to organise the workshop as an online meeting, after a lot of work, the event was a success. There were over 150 invitations sent, 113 registrations received, and around 72 people attended at most times during the workshop. Others, who could not make it or could only attend a part of the workshop, expressed their interest in seeing the slides or the workshop recording afterwards. The participants were from public institutions, public administrations, the Parliament and ministries of Lithuania, as well as universities, research institutes, industry partners/SMEs, and freelance translators.

In general, the feedback from participants was very positive. The participants appreciated the workshop very much, and found a well-organised arrangement, technically perfect and interesting presentations, and fruitful round-table discussion.

An event-dedicated web page in Lithuanian was set up on the ELRC website before the event, at <https://lr-coordination.eu/lithuania3rd>. The page was populated with the agenda and the online registration form.

Invitations to the participants were sent out several weeks before the event. The invitation was followed by a personal e-mail to the persons to whom invitations were sent.

The full event recording can be found on the ELRC website: <https://lr-coordination.eu/lithuania3rd>.

2 Workshop Agenda

3rd ELRC virtual workshop in Lithuania

- | | |
|---------------|---|
| 09:30 – 09:40 | Welcome and introduction
<i>Renata Špukienė, Tilde IT, ELRC event organiser</i>
<i>Arūnas Butkevičius, Head of the Lithuanian Language Department, Directorate-General for Translation, European Commission</i> |
| 09:40 – 10:00 | Language Technologies and Artificial Intelligence: Are We There Yet?
<i>Prof. Tomas Krilavičius, Dean of Faculty of Informatics, Vytautas Magnus University</i> |
| 10:00 – 10:20 | State of play of the Lithuanian Language Technology Development – where we are, where we should be heading
<i>Audrys Antanaitis, Chairman of The State Commission of the Lithuanian Language</i> |
| 10:20 – 10:40 | Language Technologies in Lithuania
<i>Andrius Utkā, Vytautas Magnus University, The State Commission of the Lithuanian Language / ELRC National Anchor Point</i> |
| 10:40 – 11:00 | Coffee break |
| 11:00 – 11:20 | Creating, managing and sharing language data: existing practices and challenges
<i>Gediminas Navickas, Vilnius University, Institute of Data Science and Digital Technologies</i> |
| 11:20 – 11:40 | The CEF AT Platform
<i>Vilmantas Liubinas, Directorate-General for Translation, European Commission</i> |
| 11:40 – 12:10 | Language technologies for the public sector in Lithuania
<i>Lina Kurlenskaitė, State Tax Inspection / Virginijus Dadurkevičius, Vilnius University / Giedrius Karauskas, Tilde</i> |
| 12:10 – 12:30 | Federated Terminology Network
<i>Asta Mitkevičienė, Head of the Terminology Center of the Institute of the Lithuanian Language</i> |

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12:30 – 13:00 The value of data for developing leading language technologies (Round-table discussion)

Moderator: prof. Tomas Krilavičius

Participants: Andrius Utkā, Asta Mitkevičienė, Gediminas Navickas, Virginijus Dadurkevičius, Giedrius Karauskas

13:00-13:10 Wrap-up

3 Summary of Content of Sessions

3.1 Welcome and introduction

Arūnas Butkevičius, Head of the Lithuanian Language Unit of the European Commission's Directorate-General for Translation



As it was not the first time that Arūnas Butkevičius participated in seminars organised by ELRC, he also recalled previous seminars. He also presented the purpose of this seminar – to review the work already done by the ELRC consortium in recent years, as well as to discuss future plans and prospects for the current work and to develop new initiatives so that the work does not come to a halt. Mention was made of how many resources have already been accumulated during the last years and how those resources are being used in individual departments. Arūnas emphasised that the new Digital Agenda for Europe was recently approved in October, which includes machine translation, speech recognition, analysis of big data texts, and interactive question and answer systems. Many things have changed over the last five years, but the Digital Agenda for Europe will continue the work already begun, with a budget of 7.5 billion EUR funding from both the European Horizon Innovation Programme and the European Economic Recovery Plan. Language technology has changed over the last five years, with the appearance of many competing machine translation platforms, a significant number of websites with automatic translation options, and the ELRC page with the Tilde translation option based on eTranslation. The speaker mentioned that the work of the Lithuanian Language Unit of the Directorate-General for Translation could no longer be imagined without the eTranslation automatic translation platform. According to Markus Foti, the EC representative directly responsible for eTranslation, the tool will be available to consumers and widely available until 2027 and beyond.

3.2 Language Technologies and Artificial Intelligence: Are We There Yet?

Prof. Tomas Krilavičius, Dean of the Faculty of Informatics, Vytautas Magnus University



- Huge progress over the last 10 years
- Language dependent
- Slang



In his presentation, Tomas highlighted language technologies that are already advanced and those that are still deficient. Tomas distinguished two main directions: speech and text analysis. Tomas says that the situation with text to speech generation (TTS tools) is not bad in Lithuania. The solutions work and are used in a variety of areas. Speech recognition and speech transcription are however in a slightly worse situation. This technology works quite well in English, but the quality of Lithuanian language recognition is yet not very good. There is enough space to improve the tools for Lithuanian. It is not enough to show just experiments or functional solutions that are only adapted to a very narrow field. The goal is for people to be able to use such solutions without even thinking about it. The speaker presented the situation of Lithuanian language text analysis. At present, it is possible to identify named entities and perform text analysis, however there are still a number of challenges in slang and irregular language. Machine translation is presently good enough, while the progress is great both in terms of quality and functionality. Recent trends and current areas of interest are focusing on text generation, especially using GPT3 and other tools. Tomas shared the results of a practical text generation experiment, noting that the texts generated during the experiment contained personal details that could possibly be used as false data. The speaker drew attention to the dangers of using such tools, in particular the contamination of the information space with generated texts. In summary, Tomas pointed out that in Lithuania, we have to pay more attention to the processing of words that are non-normative, from other languages, or slang in character. Tomas mentioned the lack of data and computing resources as a challenge. If we want to move forward with the development of language technologies, we need to invest in the creation of data, its availability, and access to the capacity of high-performance computing resources.

Tomas wants developers to create tools that can be used daily, and users to send in their comments and refinements to help continue improving the tools.

3.3 State of play of the Lithuanian Language Technology Development – where we are, where we should be heading

Audrys Antanaitis, Chairman of the State Lithuanian Language Commission



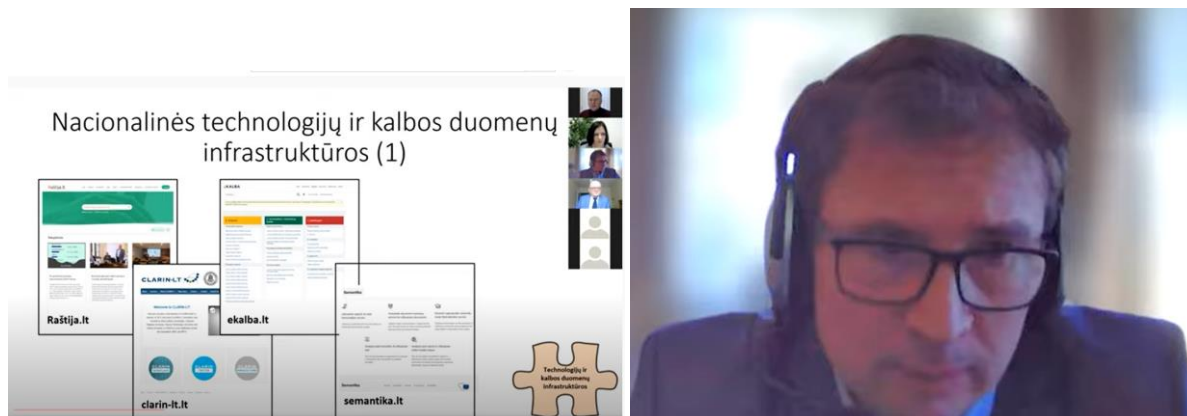
Audrys Antanaitis started his report with an overview on language development. He believes the development of language is inconceivable without written language. Mažvydas's great work in the 16th century "covering the language with a written cloth" was continued for three more centuries by other linguists until 1922, as the Lithuanian language was declared the official language. During the Soviet era, standardisation and management of the Lithuanian language had become part of the resistance, and since the proclamation of independence, the standardisation of the Lithuanian language has continued for at least another three decades. However, the changing world of technology has required new solutions, qualitatively new language policies, and different models and methods for the development of a common language. The speaker mentioned which institutions in Lithuania shape and are responsible for language policy. The issue with language personalisation processes in the digital space was also raised, and the boundary between the use of official and non-official languages and related challenges was discussed. Audrys emphasised that the Lithuanian language needs access to multilingual language technology infrastructures, which requires a targeted state policy, as it is not easy for a small language to withstand the major EU languages. The speaker gave a brief overview of the State Language Policy Guidelines, which set out the main principles, objectives, tasks and solutions of the five-year state Lithuanian language policy and the criteria for the progress of the state language. The Seimas Resolution "On the Approval of Guidelines for the Development of the Lithuanian Language in the Digital Environment and the Advancement of Language Technologies in 2021-2027" was also reviewed. The report refers to the need to assess the state of the Lithuanian Language Technological Area according to seven technological fields: national language technology and data infrastructure, language data and data sets, machine translation and localisation, speech technology, natural language processing, natural speech comprehension and natural speech generation. Concluding his presentation, Audrys emphasised that the changing paradigm of language technologies in the world and the development of intelligent technologies at an incredible speed set a clear ambitious goal: to ensure the full functioning of the Lithuanian language in the digital environment and progress of "Lithuanisation", and to promote the development of technologies adapted to the Lithuanian language. To this end, it is necessary to increase the compe-

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tence of language technology specialists and to raise the level of the society's ability to use the opportunities provided by language technologies, and furthermore to accumulate digital language resources, and to develop language technology infrastructure as well as the application of language technologies in the public sector and public services.

3.4 Language Technologies in Lithuania

Andrius Utka, Vytautas Magnus University, State Lithuanian Language Commission / ELRC representative



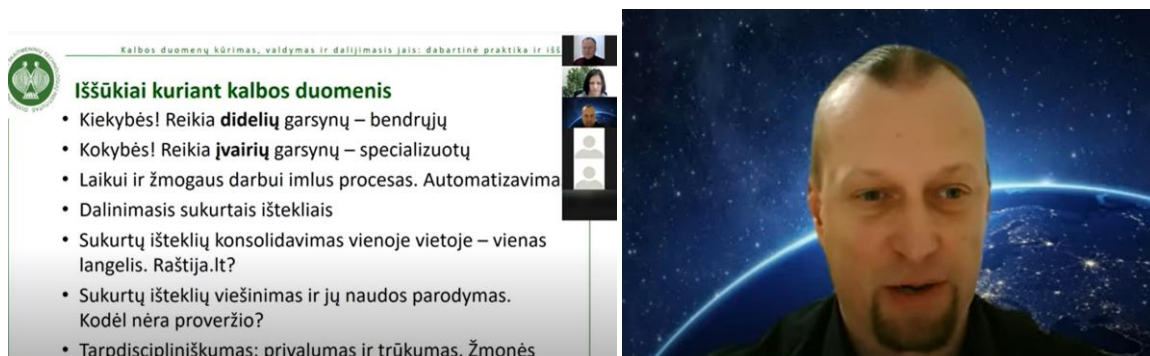
The speaker presented the “Guidelines for the Development of the Lithuanian Language in the Digital Environment and Language Progress 2021-2027”, prepared by teams of experts from science and business institutions. The guidelines cover seven areas: technology and language data infrastructures, language data, machine translation and localisation, speech technology, natural language processing, natural language generation, and natural language comprehension. Andrius presented all these areas in his subsequent speech. Regarding national technological and language data infrastructures, Andrius mentioned the infrastructures of raštija.lt, ekalba.lt, clarin-it.lt and semantika.lt, which have various resources and applications, as well as a number of smaller infrastructures which host several or individual language data sets or an existing language technology. Andrius stressed, especially in regard to the future, the importance of adding new resources to existing infrastructures, upgrading infrastructure hardware, integrating the foregoing into international or larger national infrastructures, promoting the openness of protected technologies and data, and fostering collaboration between developers. Regarding language data, he emphasised that most data is currently collected in the form of texts, but that there is a serious lack of open and large texts. Open and closed sound systems for speech technology have been developed, as well as digital dictionaries, translation memories, ontologies and geoinformative language data. Andrius believes that data is fundamental for improving language technologies. Therefore, larger amounts of structured and unstructured data are needed, both quantitatively and qualitatively, as well as in terms of their openness and compatibility with personal data protection. Speaking about machine translation, he touched on its development, especially in Lithuania, and the current global competition. Andrius emphasised the need to develop machine translation locally in Lithuania, focusing on specific areas and languages, and that monolingual and multilingual data are very much needed to improve machine translation. In terms of speech technology, the speaker singled out the work done in the field of speech recognition and speech synthesis as well as areas for improvement, such as the development of new and diverse areas, dialects, age groups and background sounds. While focusing on advancing natural language processing technologies, Andrius presented the individual tools and solutions already developed, and pointed out the lack of data for machine learning, which is especially needed to create modern tools such as sentiment recognition, hate speech or named entities.

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In summary, Andrius presented a national progress plan for 2021–2030, which also includes works on the digitisation of Lithuanian language resources. In total, it is planned to allocate more than 34 million euros in three directions.

3.5 Creating, managing, and sharing language data: existing practices and challenges

Gediminas Navickas, Vilnius University, Institute of Data Science and Digital Technologies



Kalbos duomenų kūrimas, valdymas ir dalijimasis įsis: dabartinė praktika ir išš

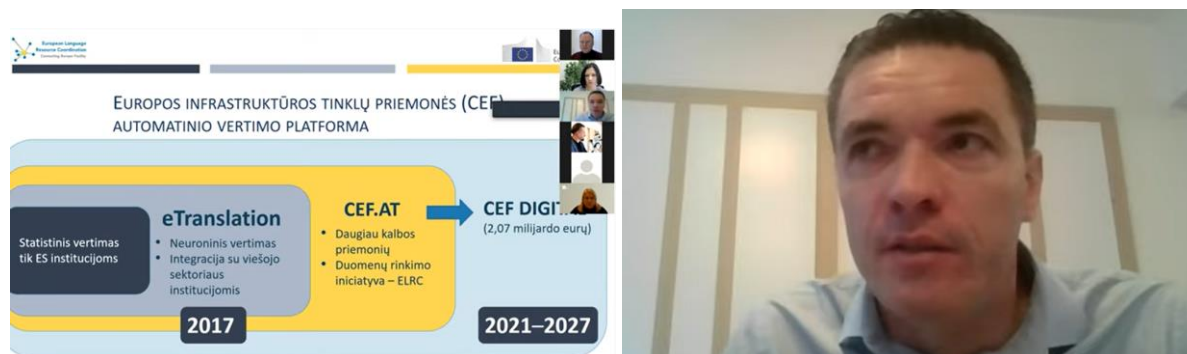
Iššūkiai kuriant kalbos duomenis

- Kiekybės! Reikia **didelių** garsynų – bendrųjų
- Kokybės! Reikia **įvairių** garsynų – specializuotų
- Laikui ir žmogaus darbui imlus procesas. Automatizavimas
- Dalinimasis sukurtais ištekliais
- Sukurtų išteklių konsolidavimas vienoje vietoje – vienas langelis. Raštija.lt?
- Sukurtų išteklių viešinimas ir jų naudos parodymas. Kodėl nėra proveržio?
- Tarpdiscipliniškumas: privalumas ir trūkumas. Žmonės

In his presentation, Gediminas presented how language data is created, managed and disseminated, with a greater emphasis on the data required for speech technology. The speaker presented the LIEPA projects, which produced spoken e-services and sounds. Gediminas emphasised that both LIEPA projects are based on data-annotated sounds, stemming from which various e-services were created. The new 1000-hour annotated sound is distributed free of charge and anyone who wants to can create various e-services based on it. The speaker also introduced a synthesiser and an identifier integrated into the NAO robot. Speaking about the challenges of creating language data, Gediminas not only emphasised the greater need for data, but also its quality and specialisation (domain specific). Regarding data generation, he pointed out that data generation could focus more on automating data generation, thus saving time and creating more data at a lower cost. He furthermore identified the challenges in sharing the resources created. Both scientists and businesses often do not share the resources on which technologies have been developed. Even when researchers conduct and publish experiments, they do not share resources to verify the results of their research. Gediminas pointed out that it is very important to open up resources and technologies that are created with EU or state funding. Gediminas also introduced a unified resource-sharing platform. There are many places right now where various resources are put together in different formats. Gediminas believes it would be good to have one portal, one place to consolidate all resources, in a format that everyone can understand and accept. In his view, publicising such resources and clearly identifying the benefits could lead to much greater re-use and technological breakthroughs. In summary, Gediminas presented a practical example in which he demonstrated the language technologies required for the NAO robot Ažuolas to speak Lithuanian. In order for a robot to understand and be able to respond in Lithuanian, it is necessary to make a sound speech identifier and synthesiser, to create an identifier and synthesiser, to devise and create a curriculum, and to integrate everything into a single system using robotic control software.

ELRC Workshop Report for Lithuania**3.6 The CEF AT Platform**

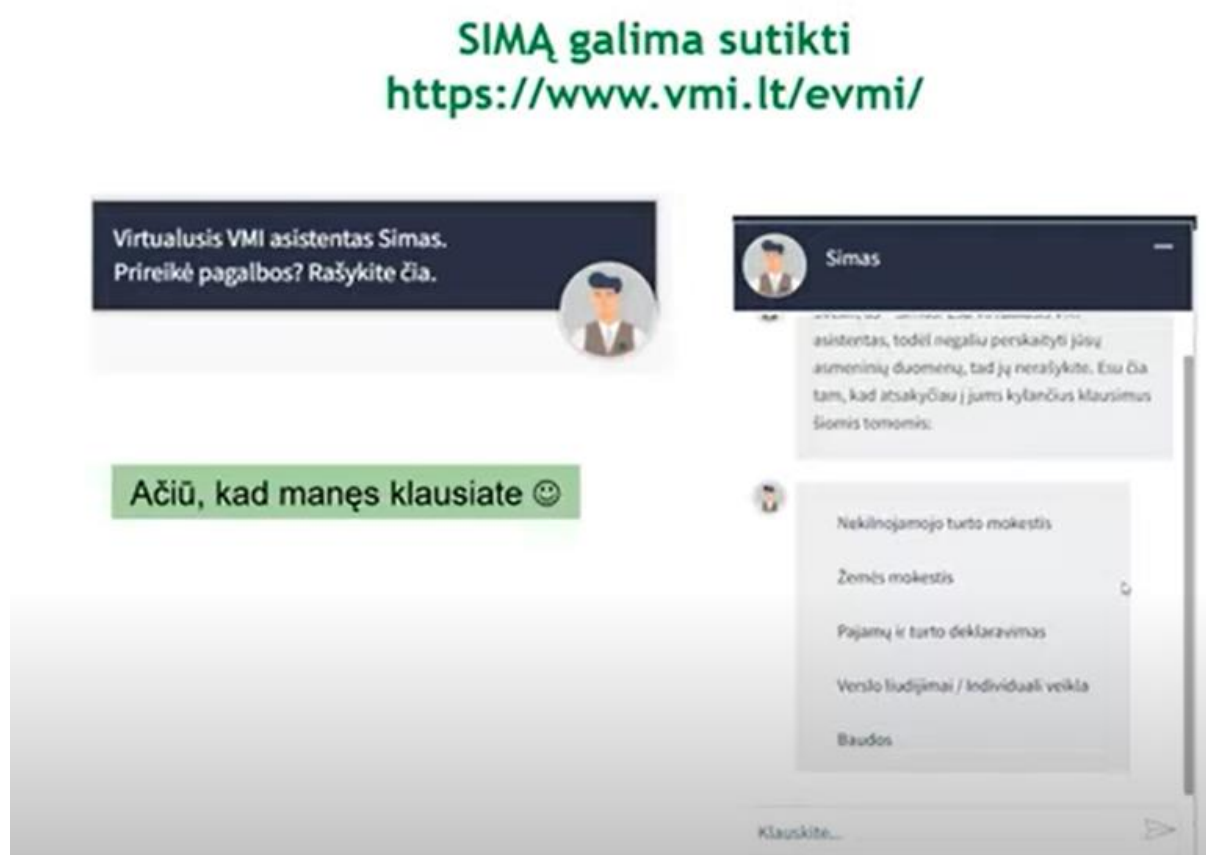
Vilmantas Liubinas, Directorate-General for Translation of the European Commission



Vilmantas introduced eTranslation, the CEF machine translation service of the European Commission's Directorate-General for Translation. From the very beginning, the service was based on machine translation using statistical methods, but now the service is supported by machine translation systems trained with the latest neural network methods. The eTranslation service was previously only used for translations by EU institutions, but is now open to institutions and organisations in all EU countries. The speaker pointed out that in addition to the machine translation service, other technologies such as speech recognition, synthesis, terminology, linguistic analysis, etc. are currently available on the CEF platform. There is yet no Lithuanian speech identifier on the platform, but there are plans to have one. Vilmantas explained more about the languages to and from which he could translate with eTranslation, and shared the impressive volumes of the text translated with the help of machine translation. In 2021 alone, machine translation helped translate 185 million pages of text. The speaker drew attention to the machine translation options available on the eTranslation platform. He recommended Lithuanians a machine translation system in the general language area, and for legal texts, a machine translation system in the legal area. eTranslation can translate documents in a variety of formats, while preserving their formatting. Professional translators can also find the formats they use, such as the tmx format. Presenting other eTranslation features, Vilmantas introduced the Twitter message service, where the message you want to communicate can be translated and distributed in different languages simultaneously. Vilmantas introduced one of the various useful possibilities of eTranslation, a document categorisation tool, which classifies user-uploaded documents into a certain EUROVOC category. In terms of core subjects, or components, Vilmantas singled out data and machine learning, which uses data for teaching. The speaker explained how neural networks work and how they help the system learn to translate texts from one language to another.

3.7 Language technologies for the public sector in Lithuania (practical cases)

Lina Kurlenskaitė, State Tax Inspectorate

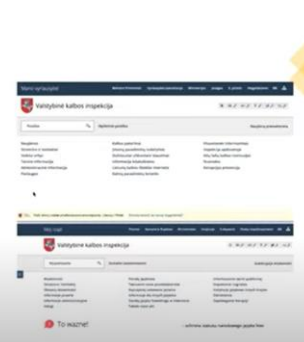


The speaker presented Simas, a virtual assistant developed and implemented by the State Tax Inspectorate (STI).

Lina pointed out that the STI receives increasingly greater requests from customers through various channels. So, in order to reduce the workload of consultants, the STI opted for a DI-based virtual assistant development and implementation project. During the project, the STI team developed and implemented an automated customer service solution - the Simas chatbot. Simas was provided with a design, a personality profile, refined chat scripts, trained coaches, and a trained virtual assistant. Simas is trained with the help of AI, so it can understand the questions asked in free language, sometimes with mistakes. Initially, Simas was able to communicate with clients on land tax, administrative fines and individual activities, but now Simas can advise clients on 12 topics. Lina pointed out that the team at the institution is reviewing the questions that Simas was unable to answer, and is constantly updating conversation topics. The chatbot's growing popularity is also being observed. More than 74,000 customers have interacted with Simas in one year. In summary, the speaker identified the main benefits of implementing the Simas AI-based chatbot in terms of improved service availability, shifting the call load from consultants, and improving the image of the institution.

ELRC Workshop Report for Lithuania*Virginijus Dadurkevičius, Vilnius University***Iškiepiai**

- Naršyklėms „Microsoft Edge“, „Firefox“, „Chrome“, „Safari“.
- Biuro programoms „OpenOffice“ / „LibreOffice“
- Automatiniam svetainių vertimui „iš vidaus“:
 - lengvai integruojant;
 - derinant sąsajos išvaizdą;
 - parenkant specifinį vertimą tam tikriems sakiniais, tikriniais vardams.



The speaker presented a Vilnius University project, which created a public machine translation platform based on the latest artificial intelligence technologies. According to Virginijus, this machine translation platform is especially important for the public sector, and representatives of national minorities, as it includes not only translation into Lithuanian from English, but also from Polish, Russian, German, French and vice versa. The translation systems have been developed using the most advanced neural network technologies and compiling the most relevant texts. The platform has various functionalities that allow not only to translate text, but also entire documents, to voice the translated text or to translate the entire website. Virginijus drew attention to the translation plugin, which may be particularly useful for public authorities for the automatic translation of their portals into the languages supported by the platform. The speaker also presented the possibility of using the platform by integrating it into internal information systems using an API. As such, texts in the institutions' or companies' internal information systems can be translated into the desired languages automatically.

Giedrius Karauskas, Tilde

Ką galime daryti geriau?
Atskleisti viešojo sektoriaus potencialą naudojant mašininį vertimą





In his report, Giedrius presented the machine translation used by professional translators of the Chancellery Office of the Seimas of the Republic of Lithuania. The speaker drew attention to the diversity of languages in different countries, as well as to the extent of public procurement in EU countries, stressing that language technologies such as machine translation have great potential to reduce translation costs for all countries. In his opinion, machine translation as a technology can be adapted to the client's needs, and integrated into the client's infrastructure to perform translations quickly and securely. Presenting the challenges of the Chancellery of the Seimas of the Republic of Lithuania, the speaker emphasised the daily increasing amount of translated data and limited human resources for the work. After assessing the situation, the institution decided to introduce a machine translation technology specially adapted for them into the translation process of professional translators, thus increasing the efficiency of translation. In this case, the Lithuanian-English/Russian-Lithuanian machine translation systems in the legal

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field were trained for a special institution and integrated into the SDL Trados Studio software used by the translators. Giedrus states that the institution's use of machine translation technology is currently particularly intensive, with the institution translating more than 3.5 million words in 11 months in 2021 alone, thereby increasing the translator productivity by about 30%, as per preliminary calculations. Summarising the use of machine translation technologies to increase translator efficiency, the speaker drew attention to the upcoming new trends, i.e. dynamic learning machine translation, where the machine translation system learns from the translator's translations in real time and immediately offers adjusted suggestions.

3.8 Federated Terminology Network

Asta Mitkevičienė, Head of the Terminology Centre of the Lithuanian Language Institute



Federacinis Eurotermbank tinklas

- atviras, lengvai įdiegiamas ir pritaikomas Eurotermbank priemonių rinkinys (**nemokamas**) → federaciniai mazgai
- patogi terminų rinkinių tvarkyba ir dalijimasis jais
- terminų išteklių viename tinkle
- reguliari sinchronizacija su centriniu mazgu (*Eurotermbank*)
- terminų paieška vieno langelio principu (**eurotermbank.com**)
- → ELRC-SHARE saugykla → CEF *eTranslation*



The Head of the Terminology Centre of the Institute of the Lithuanian Language dedicated her report to reviewing the international project of the Centre and the corresponding results. The Federal Terminology Network project is dedicated to the sharing and use of terminological data and resources that various institutions collect. The speaker stated that terms form the basis of business communication, that terms are needed everywhere, that they are constantly increasing as new phenomena emerge, and that new terms are born, especially during a pandemic. When new terms are needed, users first look them up in databases. There are four main databases in use in Lithuania – LT Term Bank, the terminology base of the Lithuanian Standardisation Department, the IATE international terminology base, and the 32 dictionaries found on the raštija.lt website. Terms are very important for people's work, and technology makes it easier to collect, manage, search and disseminate the required terms. According to Asta, terminology is important in the development of various language technologies and their solutions, such as machine translation, information search engines, as well as text analysis and knowledge management systems. She further emphasised that the quality of language technologies inevitably depends on the availability, quality and quantity of terms. It is therefore essential that terminology resources are accumulated and managed properly. There is currently no well-established system or formalised procedure

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for collecting terms, and a Federal Terminology Network project has been initiated to properly collect, store and process terms, and conveniently share publicly available databases.

3.9 The value of data for developing leading language technologies (Round-table discussion)

Moderated by Prof. Tomas Krilavičius



According to Tomas, after today's reports, there are few questions or discussions about the value or the necessity of data, and there is no doubt that data needs to be shared. However, there are other important things that Tomas has invited the participants to discuss.

The moderator asked the participants why data sharing has stalled and what is needed to make it more active. A. Utkā believes there is more than one reason for not sharing: first, there is no sharing due to competitive advantage; scientists do not want to share their accumulated data, for fear of being overtaken by others. Another reason is two contradictory things – GDPR and the initiative to open up data. On the one hand, there is a tightening of the protection of personal data, a desire to comply with the law and legal regulation, but on the other, there is a call for that data to be shared as widely as possible. A. Mitkevičienė states that the value of data sharing, dissemination and licensing issues may not be clear enough. G. Karauskas emphasised that data sharing is not clearly regulated by the state, therefore there is a great deal of uncertainty for everyone - both those who share it and those who want to use it. V. Dadurkevičius added that it is necessary to adjust the Law on copyright and related rights when it comes to data availability and sharing. This is one of the biggest obstacles to the whole idea of open data. There are also technical reasons: where to publish that data, what resources to use. Another reason is the lack of incentive. An institution devotes its own funds, time and resources to sharing, which is work, but it is not encouraged or motivated to do so. Therefore, the question naturally arises: who needs it? G. Navickas agrees that not every institution is ready to share data, as it is not clear who is responsible for what, how to do it correctly, or where to get enough resources or funds to acquire and maintain these resources. A. Utkā said that researchers still need to process the data further and take extra time to share the data in a way that works for others, but that scientists are not given extra time or funds by universities. Another pressing issue is the quality of open data, which is often not of the highest quality. It takes effort, work, and input to raise data quality. Someone must work with this, so the question that needs to be answered is who is responsible for it, and who is funding it.

4 Synthesis of Workshop Discussions

In summary, the moderators have identified several key issues that need to be addressed:

- Revision of the Copyright and Related Rights Law.
- Regulation of data collection, processing, and preparation for sharing.
- Promoting data sharing by motivating both the sharing institutions and the staff of those institutions who are able and willing to share data.
- Technical resources for storing data.

5 Country Profile: Language data creation, management and sharing

Based on the input from the workshop session, and the participants' answers and feedback, the following highlights could be identified:

- Language resources for further development of language technologies are scarce and require much effort to collect or create them manually or synthetically.
- There is a no legal framework to collect public sector language resources.
- There is a lack of attention and support both from government and institutions to collect, store and share data. This means funding as well as human resources.

6 Workshop Participants

The Lithuanian ELRC workshop received 113 registrations spanning a wide range of ministries and public organizations, and from LSPs and academia. Before the workshop the cold calling activities were organized in this way organizers were able to make sure that important public administration institutions were represented.