

European Language Grid Workshop Nederland

Vincent Vandeghinste
NCC lead Nederland

14.00 uur	Welkom	Vincent Vandeghinste (INT)
14.05 uur	Introducing the European Language Grid	Georg Rehm (DFKI)
14.35 uur	Demonstratie van de ELG, met focus op het Nederlands	Vincent Vandeghinste (INT)
15.00 uur	Vraag- en antwoordsessie en discussie	
15.10 uur	Pauze	
15.25 uur	Taalmaterialen voor het Nederlands	Bob Boelhouwer (INT)
15.35 uur	Presentaties van verschillende bedrijven (3) <ul style="list-style-type: none">• EDIA (Mark Breuker)• Telecats (Arjan van Hessen)• Y.digital (Ian Fitzpatrick)	Oele Koornwinder (NOTaS)
16.25 uur	Vraag- en antwoordsessie en discussie	



EUROPEAN LANGUAGE GRID

European Language Grid: Broad Overview

Prof. Dr. Georg Rehm (DFKI GmbH, Germany) Coordinator
ELG, Co-coordinator ELE

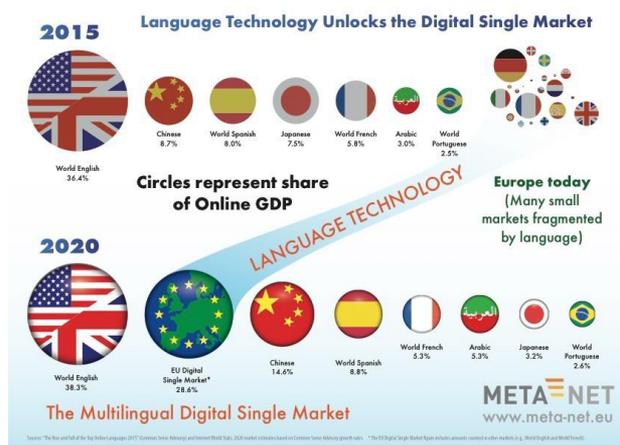
03-12-2021 ELG NCC Workshop Netherlands

<https://www.european-language-grid.eu>

<https://www.european-language-equality.eu>

Multilingualism in Europe

- Multilingualism is at the heart of the European idea
- 24 EU languages – they all have the same status
- Dozens of regional and minority languages as well as languages of immigrants and trade partners
- Many economic, social and technical challenges:
 - The Digital Single Market needs to be multilingual
 - Cross-border, cross-lingual, cross-cultural communication
 - Fragmentation of the LT market and landscape (including availability of LTs and LRs)





META FORUM 2010

T4ME

T4ME

EU-funded project (Seventh Framework Programme) working on technologies for the Multilingual European Information Society

META-NET

META-NET

Established in 2010, META-NET is a network of Excellence consisting of 60 research centres from 34 countries, building the technological foundations of a multilingual European information society

META-FORUM 2010

"Challenges for Multilingual Europe" (November 17/18, 2010)



META FORUM 2012

META-FORUM 2012

Conference "A Strategy for Multilingual Europe" (Brussels – June 20/21, 2012)

META-NET White Papers

Release of 32 volumes on 31 languages, revealing that there is a severe threat of digital extinction for at least 21 European languages (December 2012)

META FORUM 2015



CRACKER

EU-funded project CRACKER (Horizon2020) pushing towards an improvement of MT research in terms of efficiency and effectiveness (2015 – 2017)

Cracking the Language Barrier Federation

Founded in 2015, the federation has been assembling European research and innovation projects as well as all related community organisations working on multilingual technologies

META-FORUM 2015

Conference "Technologies for the Multilingual Digital Single Market" (Riga – April 27, 2015)

Strategic Agenda for the Multilingual Digital Single Market (Version 0.5)

Launch of the Strategic Agenda for the Multilingual Digital Single Market titled "Technologies for Overcoming Language Barriers towards a truly integrated European Online Market" (April 2015)

Riga Summit on the Multilingual Digital Single Market

Summit "Shape the future of the multilingual digital single market" (April 27–29, 2015)

META FORUM 2017

META FORUM 2019

"Language Equality in the Digital Age"

Workshop on "Language Equality in the Digital Age", commissioned by the EU Parliament's Science and Technology Options Assessment Committee (STOA) (January 2017)

"Language equality in the digital age: Towards a Human Language Project"

Launch of the study on "Language equality in the digital age: Towards a Human Language Project", commissioned by the EU Parliament (March 2017)

META-FORUM 2017

Conference "Towards a Human Language Project" (Brussels – November 13/14, 2017)

Strategic Research and Innovation Agenda (V1.0)

Launch of the Strategic Research and Innovation Agenda titled "Language Technologies for Multilingual Europe – Towards a Human Language Project" (December 2017)



EUROPEAN LANGUAGE EQUALITY 2021-2022

EUROPEAN LANGUAGE GRID 2019-2022

2010 2011 2012 2013 2014 2015 2016 2017 2018

META-NORD

META-NORD

EU-funded (ICT PSP) Project to establish an open linguistic infrastructure in the Baltic and Nordic countries (2011 – 2013)

METANET4U

METANET4U

EU-funded project (ICT PSP) to enhance the European Linguistic Infrastructure (2011 – 2013)



CESAR

EU-funded project (ICT PSP) functioning as a part of META-NET to standardise language resources and tools (2011 – 2013)

META-FORUM 2011

Conference "Solutions for Multilingual Europe" (Budapest – June 27/28, 2011)

"State of the Art of Machine Translation – Current Challenges and Future Opportunities"

Workshop on "State of the Art of Machine Translation", commissioned by the EU Parliament (December 2013)

META-SHARE

Initiated in 2013, META-SHARE has functioned as an open and secure network of repositories for sharing and exchanging language data, tools and services

Strategic Research Agenda for Multilingual Europe 2020

Launch of the Strategic Research Agenda for Multilingual Europe 2020 (January 2013)

META-FORUM 2013

Conference "Connecting Europe for New Horizons" (Berlin – September 19/20, 2013)

2014

Strategic Research and Innovation Agenda (Version 0.9)

Launch of the Strategic Research and Innovation Agenda titled "Language as a Data Type and Key Challenge for Big Data" (July 2016)

META-FORUM 2016

Conference "Beyond Multilingual Europe" (Lisbon – July 4/5, 2016)



2016

ELG Final Proposal Submission

Final submission on Feb. 20, 2018



2018



META FORUM 2011

META FORUM 2013

META FORUM 2016





EUROPEAN LANGUAGE GRID

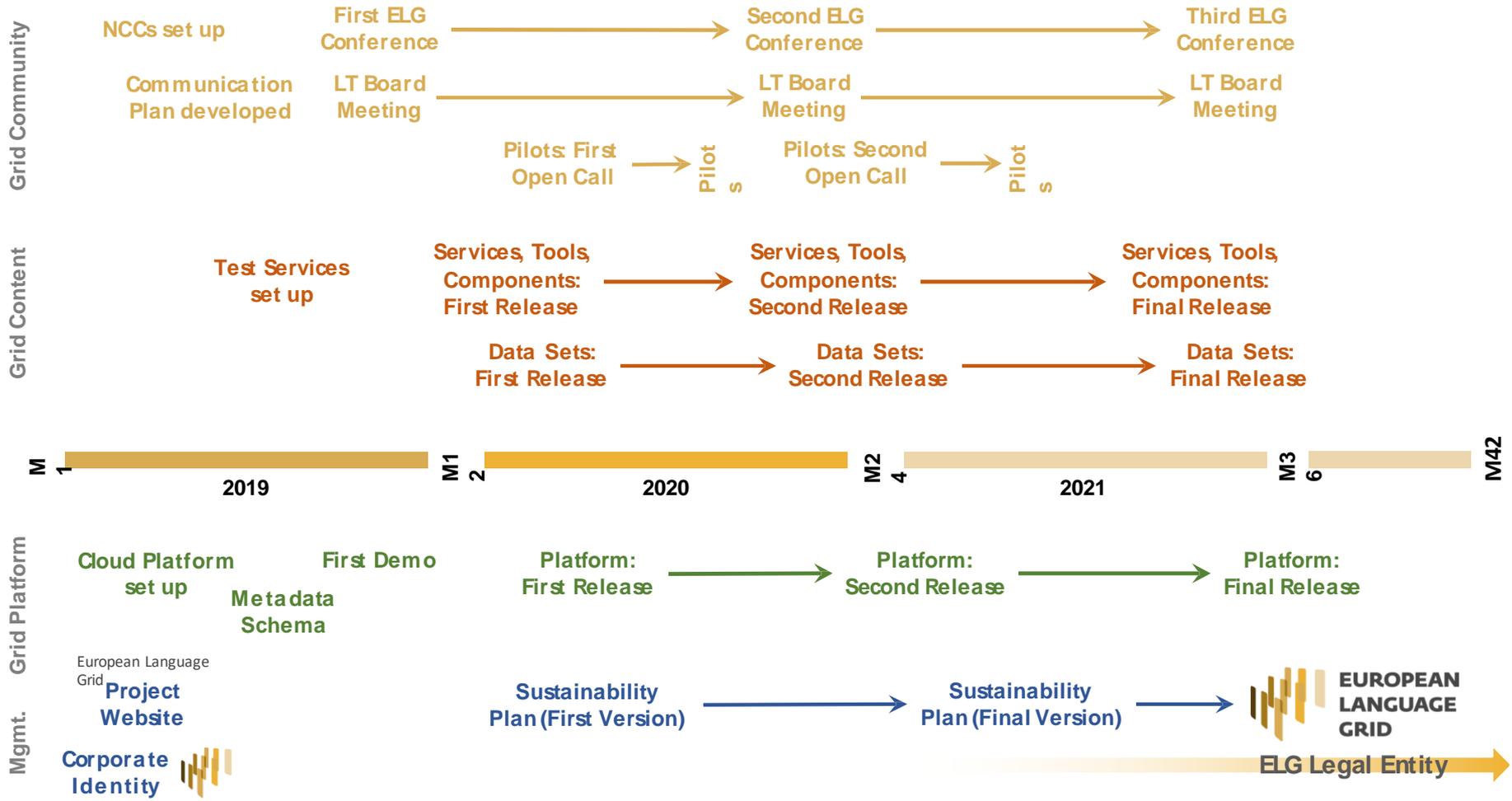
Objectives (Selection)

1. Establish the ELG as the primary Language Technology platform and market place in Europe to tackle the fragmentation of the European LT landscape.
2. ELG as a platform for commercial and non-commercial, industry-related LTs (functional and non-functional).
3. Enable the European LT community to upload services and data sets, to deploy them and to connect with, and make use of those resources made available by others.
4. Enable businesses to grow and benefit from scaling up.
5. Unleash enormous potential for innovation.



Kick-off meeting, 22/23 January 2019
Grid



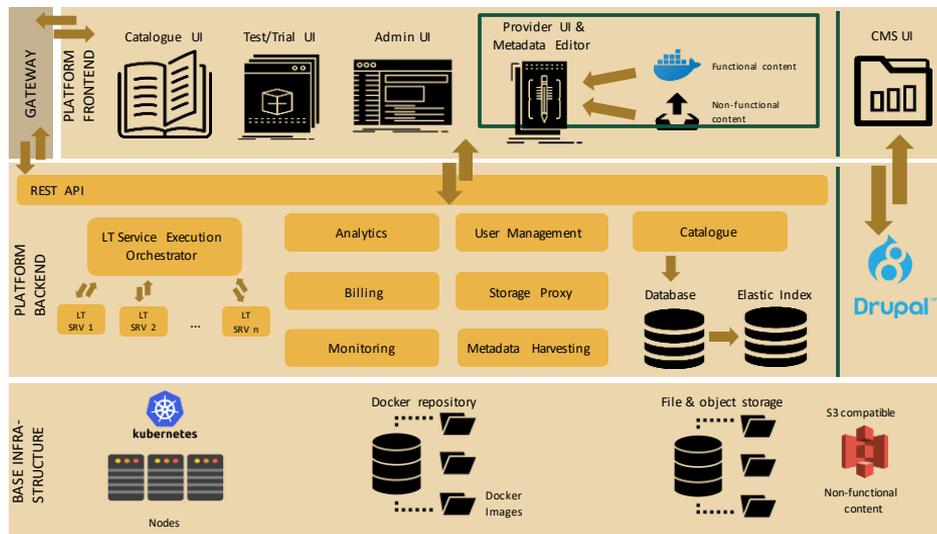


Current State of Play (December 2021)



Release 2 (Dec. 2021):

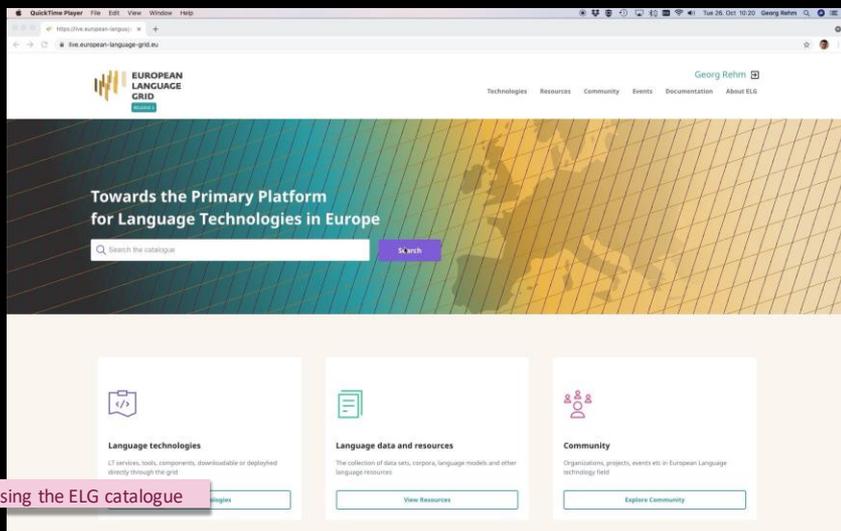
- 3626 corpora and data sets
- 477 functional services and tools
- 964 lexical/conceptual resources
- 27 lang. descriptions, grammars, models
- 1789 organisations (research organisations, companies)



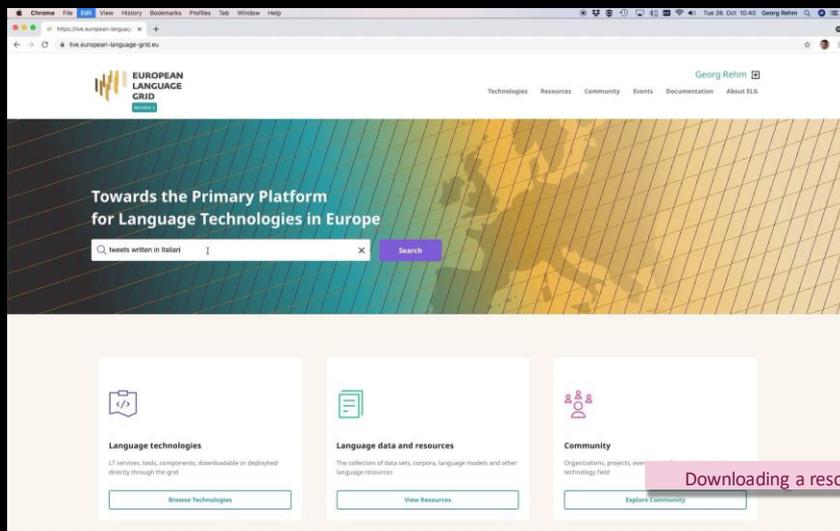
Users can connect to the ELG cloud platform via ELG APIs, remote APIs, ELG GUI, Python SDK, download of containers or source code.

European Language Grid

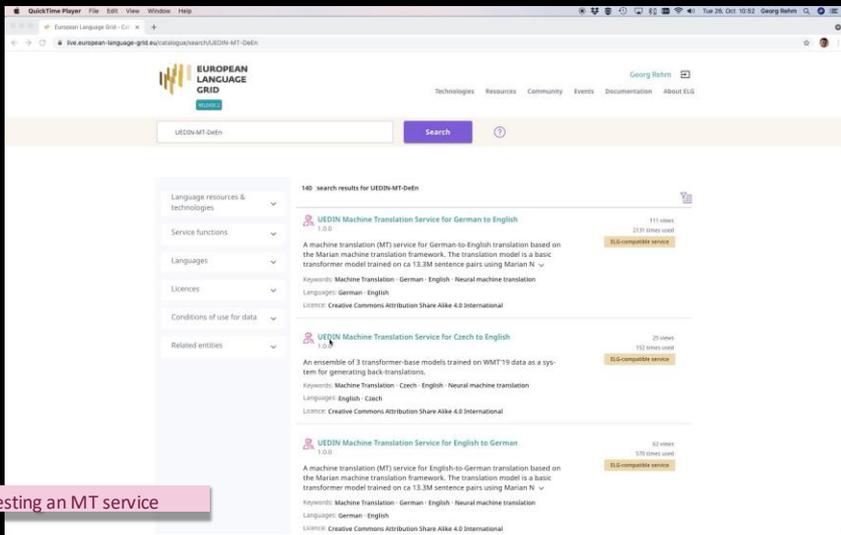
- All layers built with robust scalable, reliable, widely used technologies
- Docker containers for all services and applications which comprise the ELG platform
- Kubernetes for container orchestration – ability to scale with the growing demand and supply of resources
- Laying the foundations for interoperable data and services spaces



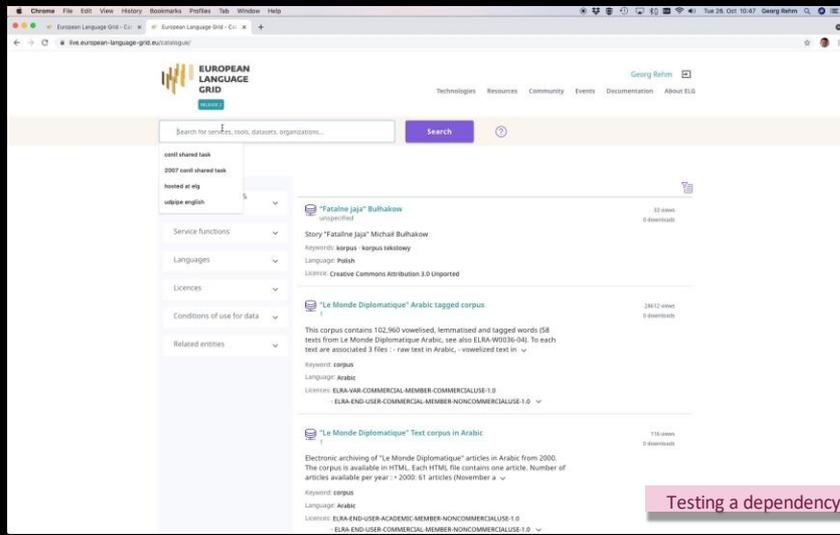
Browsing the ELG catalogue



Downloading a resource



Testing an MT service



Testing a dependency parser

Using ELG Services – it's really very simple!

Kommen Kulturgutscheine



Jugendliche in Spanien einen Kulturgutschein. Alle Gutscheine in Höhe von 400 Euro von der Regierung. Jüngere können damit keine Tickets für Stierkämpfe. European Language Grid

Maßnahmen, die die Regierung in den Kulturgutscheine sollen der Kultur- und Veranstaltungsbranche während der Corona-Lockdowns zu erholen. Nach dem Lockdown ihre 400 Euro halbenjahresweise für Kino- und

Glaubwürdigkeit-Score

Was ist das?

83%

Glaubwürdig

Unglaubwürdig

Grammatik	95%	?
Breites Vokabular	73%	?
Emotionalität	62%	?

+ Alle Scores

Diese Bewertung basiert auf den folgenden Komponenten

Infrastruktur

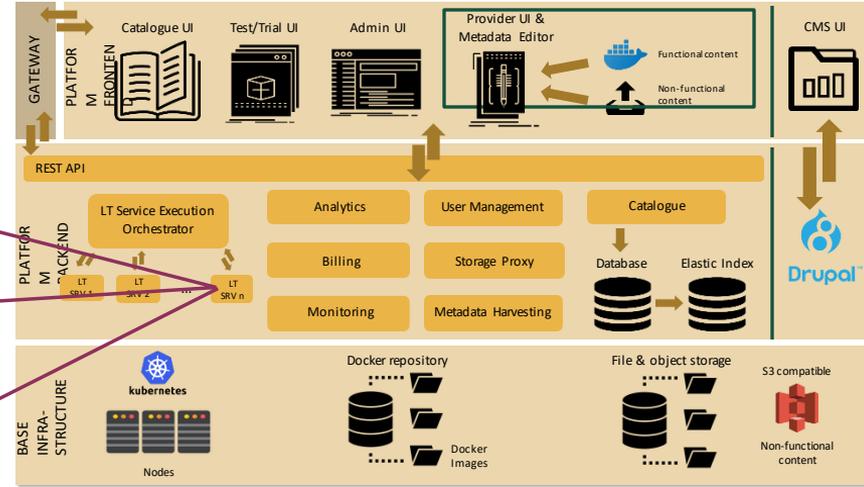
European Language Grid (ELG)
Serverstandort: Europa

Implementierung

Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI)

Konzeptionelle Grundlagen

Wissenschaftscommunity



- In the project PANQURA we perform automated credibility assessment of online content.
- The corresponding credibility assessment tool is hosted in ELG and can be called through the public ELG API.
- The service's response is exposed to the user – in this specific example clearly indicating the source of the service and also where the server is located, which is very important to users in the credibility assessment use case.

Stakeholders and Users

Companies that

- ... *develop* Language Technologies
- ... *integrate* Language Technologies
- ... *purchase* Language Technologies

Universities and research centres that

- ... *develop* Language Technologies
- ... *use* Language Technologies

Public administrations that *purchase* or *use* Language Technologies

Other organisations (e.g., NGOs) that *purchase* or *use* Language Technologies

Funding agencies that support the development of Language Technologies



META-FORUM 2019 (8/9 October) – Brussels, Belgium

Stakeholders and Users and Collaborators

ELG Open Calls: 15 pilot projects

ICT-29b research and innovation projects

ELE – European Language Equality

AI4EU – European AI on demand platform

Other related projects: Elexis, Lynx, MeMAD, CEF INEA projects (MAPA, NTEU etc.), OpenGPT-X, NFDI4DataScience etc.

Core networks: META-NET, LT Innovate

Additional initiatives: CLAIR, AI PPP, ELRC, ECSPM, EFNIL, BDVA, NPLD, CLARIN, W3C, NGI, RDA, EOSC, OpenAIRE etc.



Community: NCCs and LTC

32 National Competence Centres (NCCs)

- Strong international network of national networks to broaden ELG's reach, identify content for the ELG and interest companies in using the ELG.
- Main goal: *support the mission of the ELG project.*

European LT Council (LTC) (work in progress)

- A pan-European body, in which strategic LT-related matters can be discussed and coordinated.
- Main goal: *represent and support European LT community.*

European Language
Grid



**EUROPEAN
LANGUAGE
EQUALITY**



Austria



DAGMAR GROMANN

Centre for Translation Studies, University of Vienna

Belgium



WALTER DAELEMANS

Computational Linguistics and Psycholinguistics, University of Antwerp

Bulgaria



SVETLA KOEVA

Institute for Bulgarian Language, Bulgarian Academy of Sciences

Croatia



MARKO TADIĆ

Department of Linguistics, University of Zagreb

Cyprus



DORA LOIZIDOU

University of Cyprus

Czech Republic



JAN HAJIČ

Institute of Formal and Applied Linguistics, Charles University Prague

Denmark



BOLETTE SANDFORD PEDERSEN

Centre for Language Technology, Department of Nordic Studies and Linguistics, University of Copenhagen

1. **Austria:** Dagmar Gromann, Zentrum für Translationswissenschaft, Universität Wien
2. **Belgium:** Walter Daelemans, Comp. Ling. and Psycholing. Res. Centre (CLiPS), University of Antwerp
3. **Bulgaria:** Svetla Koeva, Bulgarian Academy of Sciences
4. **Croatia:** Marko Tadic, Inst. of Linguistics, Faculty of Hum. and Social Science, University of Zagreb
5. **Cyprus:** Dora Loizidou, University of Cyprus
6. **Czech Republic:** Jan Hajic, Inst. of Formal and Applied Linguistics, Charles University in Prague
7. **Denmark:** Bolette Sandford Pedersen, Centre for Lang. Technology, Department of Nordic Research, University of Copenhagen
8. **Estonia:** Kadri Vare, Department of Language, Estonian Ministry of Education and Research
9. **Finland:** Krister Linden, Department of Modern Languages, University of Helsinki
10. **France:** Francois Yvon, CNRS-LIMSI
European Language Grid
11. **Germany:** Georg Rehm, Speech and Language Technology Lab, DFKI
12. **Greece:** Maria Gavriilidou, ILSP, R.C. "Athena"
13. **Hungary:** Tamás Várádi, Research Institute for Linguistics, Hungarian Academy of Sciences
14. **Iceland:** Eiríkur Rögnvaldsson, School of Humanities, University of Iceland
15. **Ireland:** Andy Way, ADAPT Centre and School of Computing, Dublin City University
16. **Italy:** Bernardo Magnini, Human Language Technology, Fondazione Bruno Kessler (FBK)
17. **Latvia:** Inguna Skadina, Institute of Mathematics and Computer Science, University of Latvia
18. **Lithuania:** Albi na Auksoriūtė, Institute of the Lithuanian Language
19. **Luxembourg:** Dimitra Anastasiou, Luxembourg Institute of Science and Technology
20. **Malta:** Michael Rosner, Department Intelligent Computer Systems, University of Malta
21. **Netherlands:** Vincent Vandeghinste, Dutch Language Institute, Centre for Computational Linguistics, University of Leuven
22. **Norway:** Kristine Eide, The Language Council of Norway – Språkrådet
23. **Poland:** Maciej Ogrodniczuk, Institute of Computer Science, Polish Academy of Sciences
24. **Portugal:** António Branco, Department of Informatics, University of Lisbon
25. **Romania:** Dan Tufis, Research Institute for Artificial Intelligence, Romanian Academy of Sciences
26. **Serbia:** Cvetana Krstev, Faculty of Mathematics, Belgrade University (UBG)
27. **Slovakia:** Radovan Garabik, Ludovit Stur Institute of Linguistics, Slovak Academy of Sciences
28. **Slovenia:** Simon Krek, Jozef Stefan Institute
29. **Spain:** Marta Villegas, Barcelona Supercomputing
30. **Sweden:** Jens Edlund, Speech, Music & Hearing/Språkbanken Tal, KTH Royal Institute of Technology
31. **Switzerland:** Hervé Bourlard, Idiap Research Institute
32. **UK:** Kalina Bontcheva, Department of Computer Science, University of Sheffield



META-FORUM Conference Series

META-FORUM 2022 – June 08-10, Brussels, Belgium

Save the date!

META-FORUM 2021 – November 15-17, *virtual conference*

Using the European Language Grid

META-FORUM 2020 – December 01-03, *virtual conference*

Piloting the European Language Grid

META-FORUM 2019 – October 08/09, Brussels, Belgium

Introducing the European Language Grid

META-FORUM 2017 – November 13/14, Brussels, Belgium

Towards a Human Language Project

META-FORUM 2016 – July 04/05, Lisbon, Portugal

Beyond Multilingual Europe

META-FORUM 2015 – April 27, Riga, Latvia

Technologies for the Multilingual Digital Single Market

META-FORUM 2013 – September 19/20, Berlin, Germany

Connecting Europe for New Horizons

META-FORUM 2012 – June 20/21, Brussels, Belgium

A Strategy for Multilingual Europe

META-FORUM 2011 – June 27/28, Budapest, Hungary

Solutions for Multilingual Europe

META-FORUM 2010 – November 17/18, Brussels, Belgium

Challenges for Multilingual Europe



All META-FORUM 2020 and META-FORUM 2021 sessions are available on the European Language Grid YouTube channel:

<https://www.youtube.com/channel/UCarEHmsWT2JsIcqvWkbhL4A>

European Language Grid
61 subscribers

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21 views • Streamed 20 hours ago

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META-FORUM 2021 - Session 4: Language-centric AI in...
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META-FORUM 2021 - Session 3: European language...
59 views • Streamed 1 day ago

META-FORUM 2021 - Session 2: ELG Pilot Projects
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META-FORUM 2021 - Session 1: Opening
317 views • Streamed 2 days ago

3-Year-Old Moraima speaks Galician with Siri - European...
83 views • 2 days ago

Georg Rehm: The Role of the European Language Grid for...
21 views • 2 months ago

Browsing the ELG catalogue
159 views • 5 months ago

What is the European Language Grid?
107 views • 6 months ago

EUROPEAN LANGUAGE GRID
January 2021

Europe's "Digital Single Market" - 10 Years On

Europe's Digital Single Market - 10 Years On

Web Skills and Digitalisation

ONDEWO GmbH
Vision
Build the operating system for human ↔ machine communication
Product "Call Center AI Platform"

European LT Industry in the ELG

Clear all filters

Language resources & technologies

- + Corpus (7827)
 - + Lexical/Conceptual resource (728)
 - + Tool/Service (148)
 - + Language description (7)
- Service functions**
- + Part-of-Speech Tagging (72)
 - + Tokenization (57)
 - + Lemmatization (47)
 - + Dependency parsing (50)
 - + Morphological annotation (40)
- Show more

Languages

- Official EU Languages**
- + English (104)
 - + Spanish (503)
 - + German (389)
 - + French (374)
 - + Czech (284)
- Show more
- Other EU/European languages**
- + Russian (71)
 - + Turkish (28)
 - + Norwegian Bokmål (49)
 - + Catalan (42)
 - + Slovene (14)
- Show more

Other languages

- + Chinese (144)
 - + Arabic (118)
 - + Japanese (95)
 - + Korean (71)
 - + Persian (61)
- Show more
- Licenses**
- + Attribution-NonCommercial 3.0 Unported (13)
 - + CC BY-NC-ND 4.0 International (17)
 - + CC BY-NC-SA 4.0 International (17)
 - + CC BY-NC-SA 3.0 Unported (17)
 - + CC BY-NC-SA 4.0 International (17)
 - + CC BY-NC-SA 3.0 Unported (17)
- Show more

Related entities

- + Organization (927)
- + Project (23)

3710 search results

"Al wassit" Arabic dictionary

An XML-based file containing the electronic version of al wassit dictionary. An Arabic monolingual dictionary accomplished by the Academy of the Arabic Language in Cairo

Keyword: lexical semantics
Language: Arabic
Licence: Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)

"Al wassit" LMF Arabic dictionary

An LMF conformant XML-based file containing the electronic version of al wassit dictionary. An Arabic monolingual dictionary accomplished by the Academy of the Arabic Language in Cairo

Keyword: lexical semantics
Language: Arabic
Licence: Creative Commons - Attribution-NonCommercial 4.0 International (CC BY-NC 4.0)

"Le Monde Diplomatique" Arabic tagged corpus

This corpus contains 102,760 vowelised, lemmatised and tagged words (58 texts from Le Monde Diplomatique Arabic, see also ELBA-WO36-04). To each text are associated 3 files - raw text in Arabic, - vowelised text in ...

Keyword: corpus
Language: Arabic
Licence: ELBA-END-USER-ACADEMIC-MEMBER-NONCOMMERCIALISE-1.0
ELBA-END-USER-ACADEMIC-MEMBER-NONCOMMERCIALISE-1.0

"Le Monde Diplomatique" Text corpus in Arabic

Electronic archiving of "Le Monde Diplomatique" articles in Arabic from 2000. The corpus is available in HTML. Each HTML file contains one article. Number of articles available per year : * 2000: 61 articles (November a ...

Keyword: corpus
Language: Arabic
Licence: ELBA-END-USER-COMMERCIAL-MEMBER-NONCOMMERCIALISE-1.0
ELBA-END-USER-ACADEMIC-MEMBER-NONCOMMERCIALISE-1.0

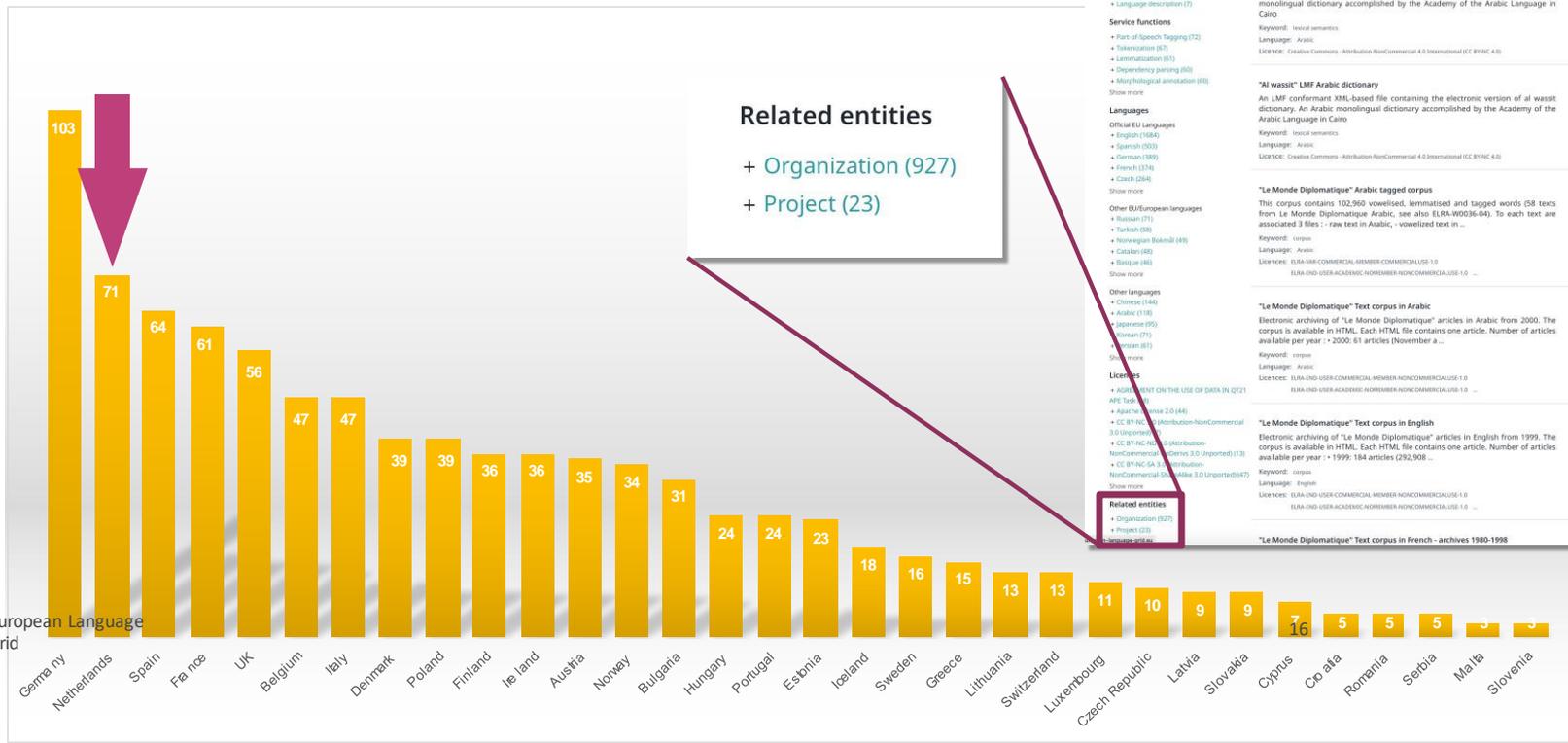
"Le Monde Diplomatique" Text corpus in English

Electronic archiving of "Le Monde Diplomatique" articles in English from 1999. The corpus is available in HTML. Each HTML file contains one article. Number of articles available per year : * 1999: 184 articles (292,908 ...

Keyword: corpus
Language: English
Licence: ELBA-END-USER-COMMERCIAL-MEMBER-NONCOMMERCIALISE-1.0
ELBA-END-USER-ACADEMIC-MEMBER-NONCOMMERCIALISE-1.0

"Le Monde Diplomatique" Text corpus in French - archives 1980-1998

Keyword: corpus



European Language Grid: Sustainable Operational Model & Legal Entity

- ELG is supposed to be a long-term, sustainable initiative – a legal entity is needed.
- The technical and operational requirements – high availability and performance, SLAs, billing, support etc. – create non-trivial costs: hosting; bandwidth; ELG team; legal; etc.
- We've identified several ways and approaches of covering the costs on a long-term basis.
- Establish consensus for a sustainable operational model.
- Options: a) for-profit or b) *not-for-profit company*, c) association, d) foundation
- Business Model Canvas prepared
- First set of approx. 20 products defined
- Next up: market validation of the product ideas
- Q1/Q2 2022: Establish legal entity



Open Calls for Pilot Projects

Two open calls for pilot projects

- **Open Call #1:** 03/04 2020
- **Open Call #2:** 10/11 2020

Pilot projects shall

- **Type A:** broaden ELG's portfolio or
- **Type B:** demonstrate usefulness of ELG

Up to €200,000 per project

Approx. €2,000,000 FSTP in total

Available in Open Call #1: 1.3M€

Available in Open Call #2: 585k€

Project duration: 9-12 months

Eligibility: SMEs, research organisations

Open Call #1 – StaTsTcs

110 project proposals evaluated

- **Type A:** 79 – **Type B:** 31 proposals

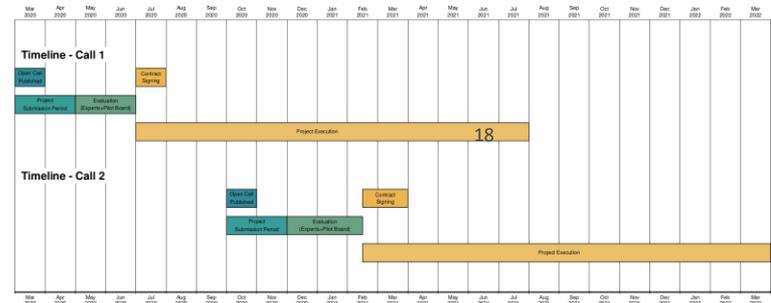
Total amount requested: 16.9M€

10 projects selected

Open Call #2 – Statistics

106 project proposals evaluated

5 projects selected



Open Call #1

Fondazione Bruno Kessler	European Clinical Case Corpus ✓	IT	139,370€
Lingsoft, Inc.	LingsoX SoluYons as Distributable Container ✓	FI	140,625€
Coreon GmbH	MKS as LinguisYc Linked Open Data ✓	DE	167,375€
Elhuyar Fundazioa	Basque-speaking smart speaker based on MycroX A ✓	ES	117,117€
Universita' Degli Studi di Torino	Italian EVALITA Benchmark LinguisYc Resources, NLP Services and Tools ✓	IT	126,125€
University of Helsinki	Open TranslaYon Models, Tools and Service ✓	FI	154,636€
University of Vienna	ExtracYng Terminological Concept Systems from Natural Language Text ✓	AT	132,977€
University of Turku	Textual paraphrase dataset for deep language modelling ✓	FI	166,085€
Weber Consulting KG	Virtual Personal Assistant Prototyp ✓	AT	87,445€
FZI Research Center for IT	Streaming Language Processing in Manufacturing ✓	DE	132,160€

Open Call #2

Institute for Bulgarian Language	Multilingual Image Corpus 2021	BG	110,960€
EDIA BV	CEFR Labelling and Assessment Services	NL	137,560€
European Language Grid University of West Bohemia	Motion Capture 3D Sign Language Resources	CZ	85,421€
Sapienza University of Rome	Universal Semantic Annotator	IT	113,228€
Sign Time GmbH	Sign language explanations for terms in a text	AT	137,227€

On the data consumer side

- Consumers can search and browse the ELG Catalogue
 - for different types of language processing services and data
 - related projects and organisations in Europe
 - using simple and advanced free text search
 - using facets for resource type, language, service function, intended application, conditions of use (for data resources), license, related entities
- View detailed information (metadata)
- View statistics of number of views and downloads (for ELG hosted resources)
- Download data (depending on access conditions)
- Export metadata records
- Check what is forthcoming in terms of data and services

The screenshot displays the European Language Grid (ELG) website interface. At the top, the ELG logo and navigation menu (Technologies, Resources, Community, Events, Documentation, About ELG) are visible. A search bar is present with the text "Search for services, tools, datasets, organizations...".

The main content area shows search results for "Bilingual documents Bulgarian-English in the field of transport (Processed)". The results are filtered by "Language resources & technologies" and "Service functions".

Key search results include:

- "Le Monde Diplomatique" Arabic tagged corpus (117 views): This corpus contains 102,960 vowelised, lemmatised and tagged words (58 texts from Le Monde Diplomatique Arabic, see also ELRA-W0036-04). To each text are associated 3 files: - raw text in Arabic, - vowelised text in ...
- "Le Monde Diplomatique" Text corpus in Arabic (79 views): Electronic archiving of "Le Monde Diplomatique" articles in Arabic from 2000. The corpus is available in HTML. Each HTML file contains one article. Number of articles available per year: • 2000: 61 articles (November a ...)
- "Le Monde Diplomatique" Text corpus in English (39 views): Electronic archiving of "Le Monde Diplomatique" articles in English from 1999. The corpus is available in HTML. Each HTML file contains one article. Number of articles available per year: • 1999: 184 articles (292,908 ...)

Each result includes details on keywords, language, and licenses. A sidebar on the right shows filters for "Languages" (Arabic, English), "Licenses", and "Conditions of use for data".

Below the search results, there is a section for "Universal Semantic Annotator" (1.0.0, automatically assigned) with 35 views. It is described as "work in progress" and "ELG-compatible service". The description states: "Universal Semantic Annotator produces annotations for Word Sense Disambiguation, Semantic Role Labelings and Semantic Parsing (Abstract Meaning Representation) in multiple languages." Keywords include "Semantic Parsing", "Semantic Role Labeling", and "Word Sense Disambiguation".

At the bottom right, there is a section for "Membership institution" (ELRA) and "Distribution rights holder" (ELRA Website) with a "Download" button.

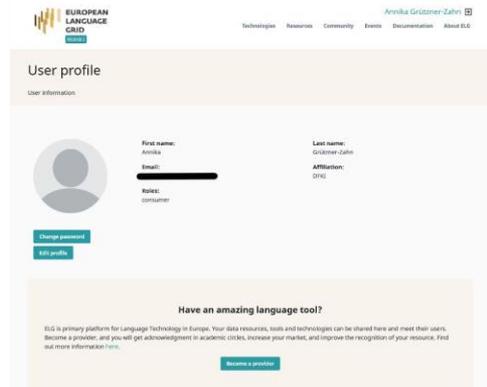
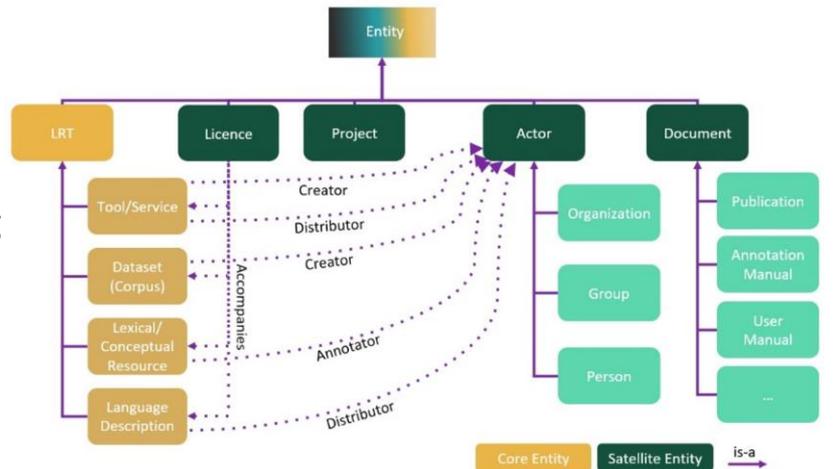
On the services consumer side

The screenshot shows the ELG search interface. The top navigation bar includes 'Technologies', 'Resources', 'Community', 'Events', 'Documentation', and 'About ELG'. A search bar is present with a search button. The left sidebar shows filters for 'Language resources & technologies', 'Service functions', 'Languages', 'Licences', and 'Conditions of use for data'. The main content area displays search results for 'Named Entity Recognition', including 'BERTNER English' and 'BERTNER German'. A detailed view of 'Cogito Discover Named Entity Recognizer' is shown, featuring a 'Try out' button and a sample text snippet about the G-20 Summit in Rome. Below the main interface, four panels illustrate the workflow: 1. 'Browse the catalogue' showing a Python code snippet to search the ELG catalog. 2. 'Call a service' showing a Python code snippet to call the 'Cogito_NER' service. 3. 'Download a corpus' showing a Python code snippet to download a corpus. 4. A panel for 'European Language Grid' providing installation instructions for the Python SDK.

- Consumers can **try out and test** language processing services
 - registration/authentication is required
 - daily quotas apply
- **Call a service** from the command line directly (via its common REST API) and integrate it in their own workflows
- Current APIs support
 - **machine translation**
 - **information extraction**
 - **text classification**
 - **speech recognition**
 - **speech synthesis**
- **Python-based API** for accessing the ELG catalogue, searching and directly fetching datasets to feed them into, e.g., their model training pipeline, running services, combining services in a pipeline, etc.

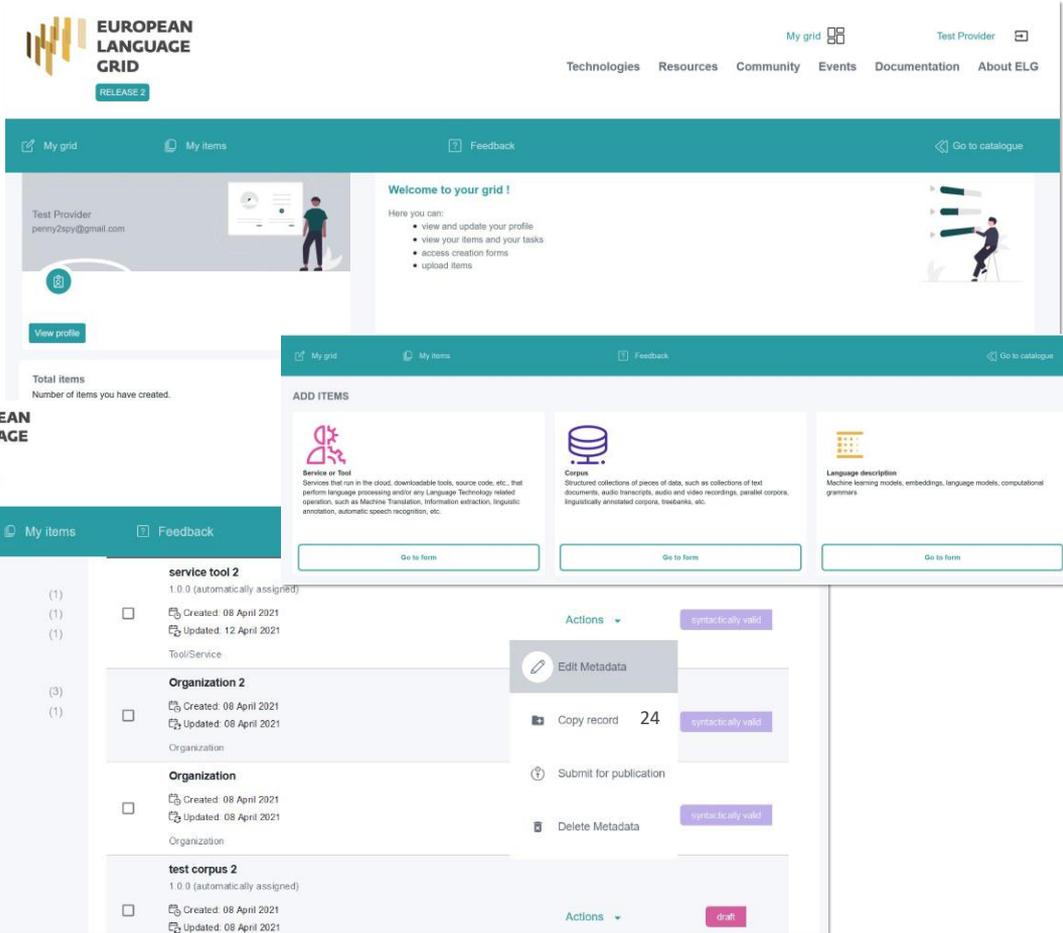
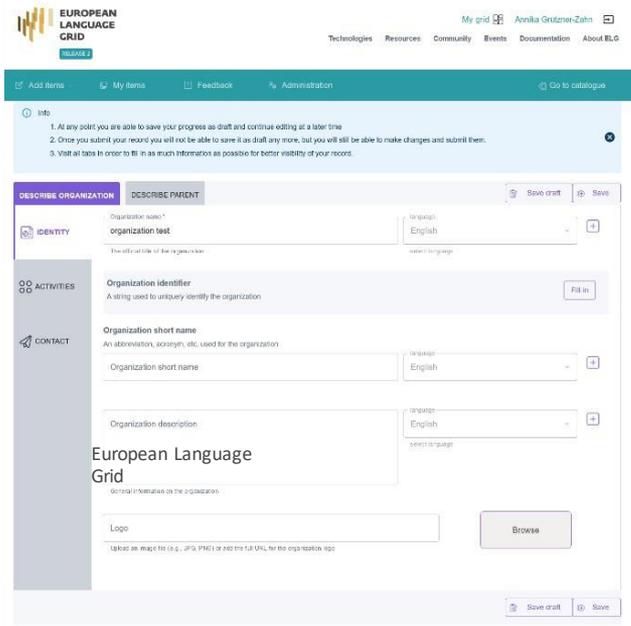
On the provider side

- LT community members
 - can **contribute** by providing formal descriptions compliant with a dedicated metadata schema
 - describe **organisations** (parents or divisions) & **projects**
 - describe & provide access (remote or integrated in ELG) **LRTs**
 - **linked with each other**
- must register and get authenticated as providers



European Language Grid: Provider's grid

- Providers can create new items
 - by validating and uploading a schema compliant metadata record (single or batch)
 - using an **interactive metadata editor**



ELG Python SDK – Overview

- Brings main ELG functionalities to Python.
- Integrate ELG services into pipelines.
- Repository available on Gitlab:

<https://gitlab.com/european-language-grid/platform/python-client>

- Currently available functionalities:

- Search the ELG catalogue
- Download ELG resources
- Call ELG services

◦  Compare multiple ELG services on various inputs (benchmarking)

```
from elg import Service # `pip install elg` to install the package

lt = Service.from_id(4800) # 4800 is the id of a Polish-English translation service

# At this step, the user will need to authenticate on the ELG.

result = lt("Pandemia powoduje, ze telepraca staje sie obowiazkowa dla wielu osob.") # it is also
possible to translate a text file by passing the path

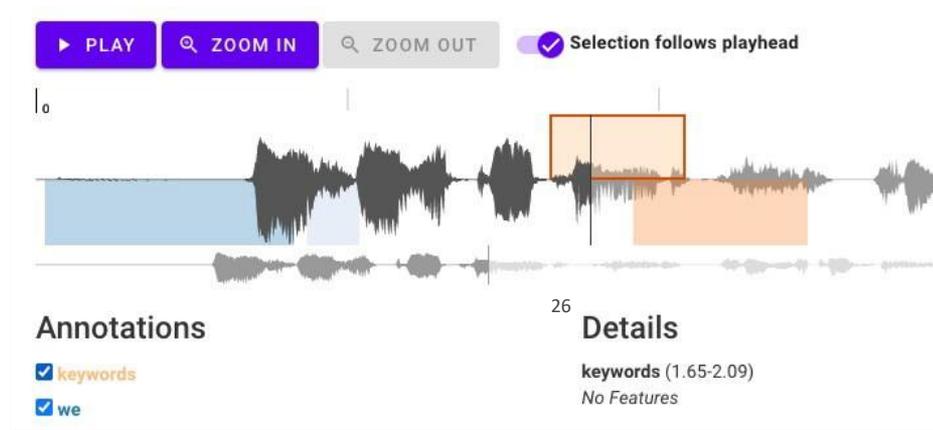
print(result)
# {'response': {'type': 'texts', 'texts': [{'content': 'The pandemic makes teleworking compulsory for
many people.', 'score': 0}]}}
```

- Coming up:

- Contribute resources/services to ELG using Python through automated deployment
- Enable running ELG services locally (by running Docker images locally)
- Improve search experience
- Many additional features ...

LT Services: From the consortium

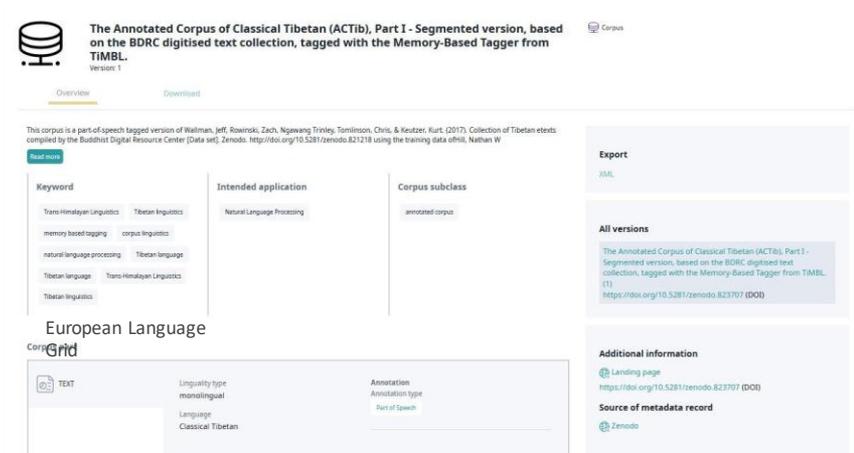
- ELG Release 1 in April 2020 finalized APIs for major classes of services (ASR, IE, MT, TTS)
- Concentrated on a subset of EU languages – Czech, English, French, German, Greek, Latvian, Spanish (native languages of the ELG consortium)
 - 9 ASR services, approx. 150 distinct services for IE & Text Analytics, 24 MT, 2 TTS
- ELG Release 2 (early 2021) added support for more EU and related languages
 - 8 further ASR services, approx. 300 IE & Text Analytics, 24 MT, 17 TTS
- ... and APIs for additional service types
 - 12 services doing keyword spotting in audio
- Release 3 (2022) will add more languages beyond the EU (13 ASR, approx. 150 IE, 9 MT), and new service types including OCR
- More services from pilot projects and others



Language Resources: Metadata Description and Harvesting

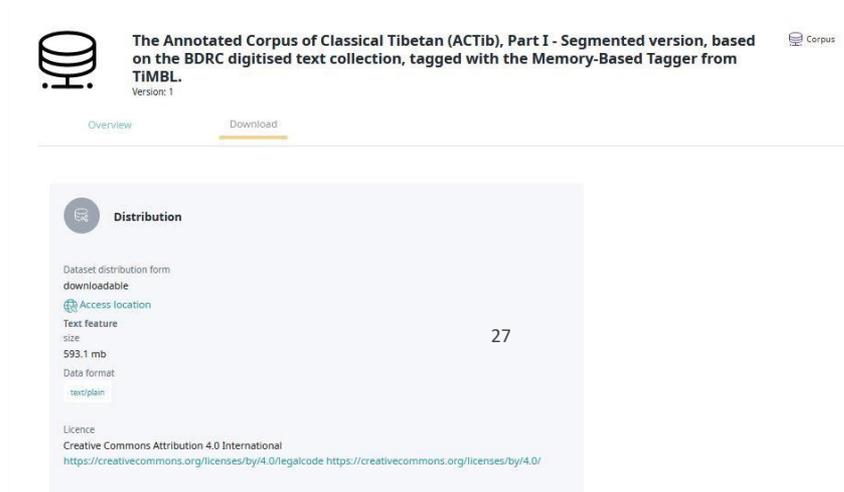
ELG has imported metadata from many other repositories:

- ELRA Catalogue, ELRC-SHARE, ELRA-SHARE-LRs, LINDAT/CLARIAH-CZ, CLARIN PL repository, CLARIN Slovenia repository, META-SHARE-DFKI, META-SHARE-ELDA and META-SHARE-ILSP, Hugging Face, Quantum Stat, Zenodo
- Some metadata can be imported automatically, some need manual correction



The screenshot shows the Zenodo page for 'The Annotated Corpus of Classical Tibetan (ACTib), Part I - Segmented version, based on the BDRC digitised text collection, tagged with the Memory-Based Tagger from TIMBL'. The page includes a title, version (1), and a 'Download' button. A description states: 'This corpus is a part-of-speech tagged version of Walman, Jeff, Rowinski, Zach, Ngawang Trinley, Tomlinson, Chris, & Kreuzer, Kurt. (2017). Collection of Tibetan texts compiled by the Buddhist Digital Resource Center [Data set]. Zenodo. <https://doi.org/10.5281/zenodo.823707> (DOI)'. The 'Export' section offers an XML download. The 'All versions' section lists the current version with its DOI. The 'Additional information' section provides a landing page and a metadata record on Zenodo. A table at the bottom details the dataset's characteristics:

Property	Value
Keyword	Tibetan linguistics, Trans-Himalayan Languages, memory based tagging, corpus linguistics, natural language processing, Tibetan language, Tibetan language, Trans-Himalayan Languages, Tibetan linguistics
Intended application	Natural Language Processing
Corpus subclass	annotated corpus
European Language	Corpus
Language	Classical Tibetan
Linguistic type	monolingual
Annotation	Part of Speech
Annotation type	Part of Speech
Source of metadata record	Zenodo



The screenshot shows the 'Distribution' section of the Zenodo page for the ACTib dataset. It includes a 'Distribution' icon, the title, and version (1). The 'Dataset distribution form' is 'downloadable'. The 'Access location' is provided as a link. The 'Text feature' section lists: 'size: 593.1 mb', 'Data format: text/plain', and a 'view plan' button. The 'Licence' is 'Creative Commons Attribution 4.0 International', with a link to the license: <https://creativecommons.org/licenses/by/4.0/>. A large number '27' is visible on the right side of the page.

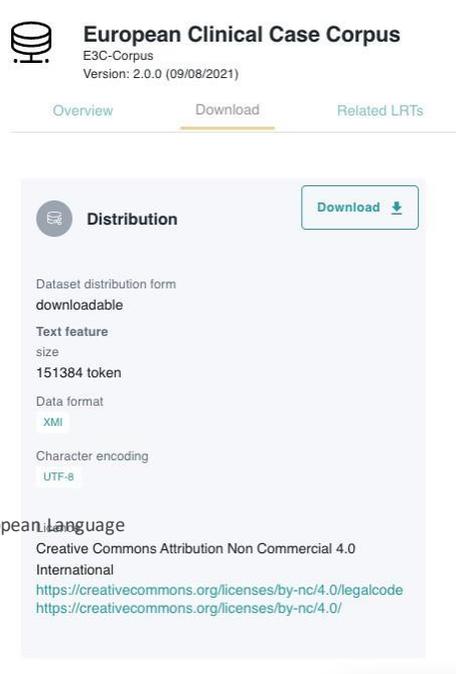
Language Resources in ELG (only those that are publicly visible)

Repository	Corpora	Lexical/Conceptual Resources	Models & Computational grammars	Total
ELRA	635	545	–	1180
ELRC-SHARE	1249	50	–	1299
META-SHARE	52	12	7	71
ELRA-SHARE-LRs	92	33	1	126
LINDAT/CLARIAH-CZ	274	79	–	353
CLARIN.SI	140	78	–	218
CLARIN.PL	239	15	–	254
Quantum Stat	255	5	–	260
Zenodo	137	99	24	*260
European Language Grid Tudatalib	1	–	–	1
HuggingFace	385	–	–	385
Others	72	28	5	105
TOTAL	3531	944	37	4512

*approx. 400 ingested resources are still under validation

Language Resources: Hosted Datasets

Data resources can be hosted in ELG for direct download



European Clinical Case Corpus
E3C-Corpus
Version: 2.0.0 (09/08/2021)

Overview Download Related LRTs

Distribution Download

Dataset distribution form **downloadable**

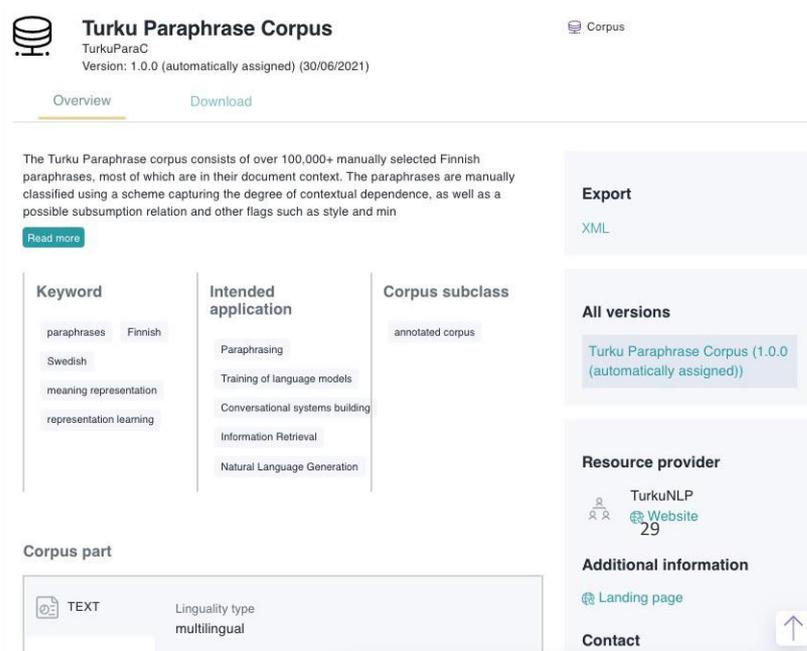
Text feature size
151384 token

Data format
XML

Character encoding
UTF-8

Language
European Language Grid

Creative Commons Attribution Non Commercial 4.0 International
<https://creativecommons.org/licenses/by-nc/4.0/legalcode>
<https://creativecommons.org/licenses/by-nc/4.0/>



Turku Paraphrase Corpus
TurkuParaC
Version: 1.0.0 (automatically assigned) (30/06/2021)

Overview Download Corpus

The Turku Paraphrase corpus consists of over 100,000+ manually selected Finnish paraphrases, most of which are in their document context. The paraphrases are manually classified using a scheme capturing the degree of contextual dependence, as well as a possible subsumption relation and other flags such as style and min

Read more

Keyword
paraphrases Finnish
Swedish
meaning representation
representation learning

Intended application
Paraphrasing
Training of language models
Conversational systems building
Information Retrieval
Natural Language Generation

Corpus subclass
annotated corpus

Export
XML

All versions
Turku Paraphrase Corpus (1.0.0 (automatically assigned))

Resource provider
TurkuNLP
Website 29

Additional information
Landing page

Contact

Corpus part
TEXT
Linguage type multilingual

ELG in the wider LT and AI Ecosystem

- ELG is **building bridges** to existing platforms and infrastructures
 - Mainly in terms of metadata-based descriptions of resources
 - Based on **open protocols** (OAI-PMH), or **APIs** offered by the platform or infrastructure providers
- ELG is also used for and within ELE
 - Using a mixture of automatic and collaborative population of the ELG catalogue

European Language
catalogue



European Language
Resource Coordination
Connecting Europe Facility
ELRC-SHARE



META SHARE



EUROPEAN
LANGUAGE
GRID



CLARIN.SI



Hugging Face

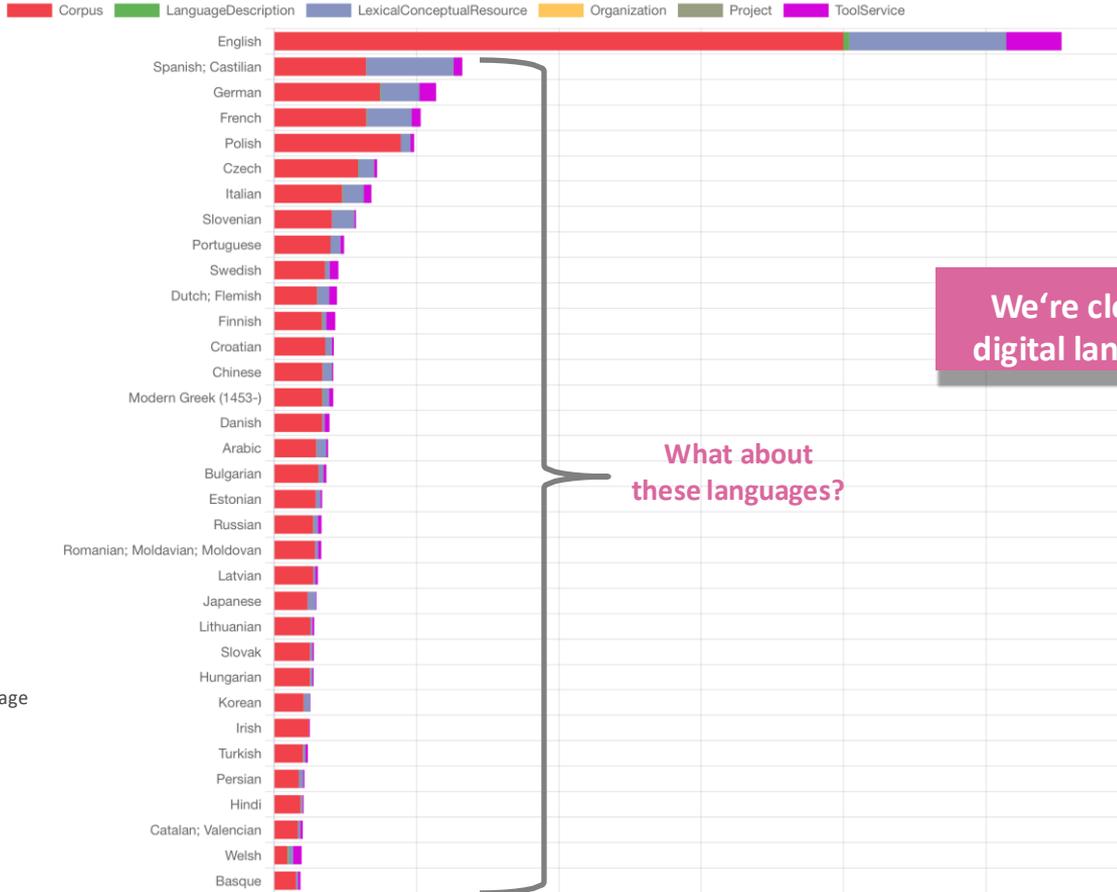
CLARIN



EUROPEAN
LANGUAGE
EQUALITY

30

Languages of the Resources



We're clearly very far away from digital language equality in Europe.

What about these languages?

European Language Grid



EUROPEAN LANGUAGE EQUALITY

Consortium: 52 partners from all over Europe

Coordinator: ADAPT Centre (Dublin City University)

Co-Coordinator: DFKI

Objective: *development of a strategic research, innovation and deployment agenda to achieve digital language equality in Europe by 2030*

Runtime: 18 months – ELE & ELG will both finish in June 2022

Start on 1 January 2021

PP/PA (*not* Horizon 2020) – Pilot Project/Preparatory Action

Budget: 1,8M€ (Coordination and Support Action)

Nov. 2021: more than halfway through ...



Current State of Play in the Project

- **Digital Language Equality:** concept defined, dozens of *technological* and *contextual* factors longlisted, currently working on the selection of factors and the DLE formula
- **Surveys** conducted, now in the analysis phase – **Citizen survey** currently prepared for launch
- **Update of META-NET White Papers**, especially regarding the overview and qualitative analysis of technology support for Europe’s languages – plus: *dynamic and fully empirical dashboard*
- **Collection of LRs/LTs:** with the whole ELE consortium we collected 6000+ additional records
- **ELG:** these 6000+ records will be included in ELG, arriving at approx. *11,000 resources* in total
- **Dynamic DLE computation:** based on these 11,000 metadata records we can compute and visualise the DLE metric for all European languages *through a dedicated dashboard in ELG*
- **Continuously:** this approach enables us to monitor the development of DLE in Europe over time
- **ELG:** Making a new resource available through ELG will increase the DLE metric for that language
- Almost all analyses to be ready in approx. April 2022 – ELE book to be published in mid 2022

Resource Types



	01/12/2020	
	01/12/2021	
Corpora	1851	3626
Tools/Services	173	477
Language Descriptions	7	34
Lexical Conceptual Resources	728	964
Total	2759	5101
Additional resources collected by ELE	–	approx. 6000
Total (online soon)	–	11101



European Language Grid: An Overview

Georg Rehm¹, Maria Berger¹, Ella Ekhola¹, Stefanie Heggie¹, Florian Kitzler¹, Katrin Marheinecke¹, Sotiris Pappadimitriou¹, Mihos Deligiannis¹, Dimitrios Galanis¹, Katerina Gkirtzoou¹, Pramy Labropoulou¹, Kalina Bontcheva¹, David Jones¹, Ian Roberts¹, Jan Hajic¹, Hans Bock¹, Lukas Kelenc¹, Khalid Choukri¹, Victoria Arranz², Andrej Vasiljevs³, Oriana Amara⁴, Anelis Lagodou⁵, Julija Melnikova⁶, Gerhard Backfried⁷, Eric Diller⁸, Miralena Janacek⁹, Katja Pflanz¹⁰, Christoph Pflanz¹⁰, Severina Stangier¹⁰, Dorothea Thomas-Anderl¹⁰, Josef Manuel Gomez Pérez¹⁰, Andres Garcia Sba¹⁰, Christian Berner¹⁰, Dittmar Geramov¹⁰, Stevan Renak¹⁰, Ondrej Kijak¹⁰

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Abstract

With 24 established or were status, and this figure in areas, tools and IT course offer review jobs and Comput

Making Metadata Fit for Next Generation Language Technology Platforms: The Metadata Schema of the European Language Grid

Penny Labropoulou¹, Katerina Gkirtzoou¹, Maria Gavrilidou¹, Mihos Deligiannis¹, Dimitrios Galanis¹, Sotiris Pappadimitriou¹, Georg Rehm¹, Maria Berger¹, Vukle Maripol¹, Mirkka Ritkanen¹, Victoria Arranz², Khalid Choukri¹, Gerhard Backfried⁷, Josef Manuel Gomez Pérez¹⁰, Andres Garcia Sba¹⁰

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Abstract

The current scientific and technological landscape is characterized by the increasing availability of data resources and processing tools and services. In this setting, metadata have emerged as a key factor facilitating management, sharing and access of such digital assets. In this paper we present ELG2MARE, a rich metadata schema for the description of language resources and technologies (processing and operations services and tools, models, corpora or term lists, etc.), as well as related entities (e.g., organizations, projects, supporting documents, etc.). This schema forms the European Language Grid platform that aims to be the primary hub and marketplace for industry relevant Language Technology in Europe. ELG2MARE has been based on various metadata schemes, vocabularies, and ontologies, as well as related recommendations and guidelines.

Keywords: metadata, language technology, language technology services, language resources

1. Introduction

The rise of data-driven approaches that use Machine Learning (ML), and especially the breakthroughs in the Deep Learning field, has put data into a central place in all scientific and technological areas. Natural Language Processing (NLP) being no exception. Datasets and NLP tools and services are made available through various repositories (institutional, disciplinary, general purpose, etc.), which makes it hard to find the appropriate resources for one's purposes. Even if they are brought together in one catalogue, such as the European Project Science Cloud¹ or the Google dataset search service², the difficulty of spotting the right resources and services among those still remains. Metadata plays an instrumental role in solving this puzzle, as it becomes the intermediary between consumers (humans and machines) and digital resources.

cloud platform, providing in an easy-to-integrate way, access to hundreds of commercial and non-commercial LTs for all European languages, including training tools and services as well as data resources. Discovery of and access to these resources can only be achieved through appropriate metadata schemes. We present here the ELG2MARE schema, which is used for the description of LT-related resources shared through the ELG platform and its contribution to the project goals.

2. Objectives

The ELG project (Rehm et al., 2020a) aims to foster European LT by addressing the fragmentation that hinders its development, see individually (Rehm and Heggie, 2018; Rehm et al., 2016). To this end, it builds a platform dedicated to the *distribution and deployment of Language Resources and Technologies (ELG)*, supporting established it as the primary platform and marketplace for industry-relevant LT in Europe. The *Promotion of LT Researchers and Activities* and growth of their visibility and outreach is also one of its goals. Together with complementary material in the portal (e.g., training material, information on events, job offerings, etc.) ELG offers a comprehensive picture of the European LT scene.

The ELG platform³ will offer access to hundreds of commercial and non-commercial LTs and auxiliary tools (to be for all European languages and more; these include processing and generation services, tools, applications for written and spoken language, corpora, lexicons, ontologies, term lists, models, etc.). All resources are accessed through their descriptions in the ELG catalogue. LTs providers can describe, upload, and integrate their assets in ELG, and LTU

European Language Grid

¹<https://europe.ecosystem.eu>
²<https://toolbox.google.com/datasetsearch>
³<https://www.europeanlanguagegrid.eu>
⁴<https://www.europeanlanguagegrid.eu>

⁵The ELG platform has just been launched (detailed below) and will continue to be updated with new content and functionalities (official release autumn on April 2020, 2020 and 2022).

The European Language Technology Landscape in 2020: Language-Centric and Human-Centric AI for Cross-Cultural Communication in Multilingual Europe

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A Joint Platform for the European Language Technology Community

Georg Rehm¹, Sotiris Pappadimitriou¹, Jan Hajic¹, Victoria Arranz², Andrej Vasiljevs³, Gerhard Backfried⁷, Josef Manuel Gomez Pérez¹⁰, Ulrich Germann¹⁰, Rami Calzavara¹⁰, Nils Feldhus¹⁰, Stefanie Heggie¹, Florian Kitzler¹, Katrin Marheinecke¹, Julkin Moreno-Schneider¹, Dimitrios Galanis¹, Penny Labropoulou¹, Mihos Deligiannis¹, Katerina Gkirtzoou¹, Athanasia Kolov¹, Dimitris Gkounas¹, Leon Voukoutsis¹, Ian Roberts¹, Jana Hamrova¹, Desira Varvi¹, Lukáš Kalena¹, Khalid Choukri¹, Vukle Maripol¹, Mirkka Ritkanen¹, Julija Melnikova¹, Miralena Janacek¹, Katja Pflanz¹⁰, Andres Garcia Sba¹⁰, Cristian Berrio¹⁰, Ondrej Kijak¹⁰, Steve Renak¹⁰

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Abstract

Europe is a multilingual society, in which dozens of languages are spoken. The only option to enable and hence to benefit from multilingualism is through Language Technologies (LT), i.e., Natural Language Processing and Speech Technologies. We describe the European Language Grid (ELG), which is targeted to evolve into the primary platform and marketplace for LT in Europe by providing one umbrella platform for the European LT landscape, including high research and industry, enabling all stakeholders to upload, share and distribute their services, products and resources. At the end of our 180+ projects, which will establish a legal on-premise ELG platform, which will establish a legal on-premise ELG project for all European languages as well as thousands of data sets.

1. Introduction

Europe is a multilingual society with 24 EU Member State languages and dozens of additional languages including regional and minority languages and languages spoken by immigrants, trade partners and tourists. The only option to enable and benefit from multilingualism is through Language Technologies (LT) including Natural Language Processing (NLP) and Speech Technologies (ST). The current landscape is fragmented (Rehm, 2017). While the European LT landscape had predominance of LTs for English, most other languages are only marginally supported and, thus, in danger of digital language extinction (Rehm and Udozore, 2012; Koris, 2013; Rehm et al., 2014; ELRC, 2019).

We describe Release 2 of the European Language Grid (ELG) cloud platform¹. This scalable system is targeted to evolve into the primary

¹<https://www.europeanlanguagegrid.eu>. We provide a research demo video at <https://youtu.be/D6Qz0t0M>.

Towards an Interoperable Ecosystem of AI and LT Platforms: A Roadmap for the Implementation of Different Levels of Interoperability

Georg Rehm¹, Dimitrios Galanis¹, Pramy Labropoulou¹, Sotiris Pappadimitriou¹, Martin Weß¹, Ricardo Usbeck¹, Joachim Kibler¹, Mihos Deligiannis¹, Katerina Gkirtzoou¹, Johannes Heßberg¹, Christian Chareon¹, Nils Feldhus¹, Julkin Moreno-Schneider¹, Florian Kitzler¹, Ekma Mouton¹, Victor Rodriguez Doreste¹, John P. McCrae¹, David Laguna¹, Irina Dierckx Thiele¹, Christian Dimmer¹, Kalina Bontcheva¹, Ian Roberts¹, Andrej Vasiljevs³, Anelis Lagodou⁵

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LREC 2020 Workshop Language Resources and Evaluation Conference 11–16 May 2020

IWITP 2020 – 1st International Workshop on Language Technology Platforms

PROCEEDINGS

Coming up:

- European Language Grid book (2022)
- European Language Equality book (2022)
- Plus: ELG Online Documentation

Edited by:
Georg Rehm, Kalina Bontcheva, Khalid Choukri,
Jan Hajic¹, Sotiris Pappadimitriou, Andrej Vasi Jjers




EUROPEAN LANGUAGE TECHNOLOGY
ELE ELG

European Language Technology

Fostering the European Language Technology community towards digital language equality in Europe by 2030!
Research · Brussels · 408 followers

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About

This is the combined channel of the EU projects European Language Equality (ELE) and European Language Grid (ELG) – together working towards a joint network of language technology for Europe's languages and digital language equality by 2030. Follow us for project updates, events and news from the European artificial... see more

See all details

<https://www.linkedin.com/company/european-language-technology>

<https://twitter.com/EuroLangTech>

<https://www.european-language-technology.eu>

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European Language Technology



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74 Tweets



EUROPEAN LANGUAGE TECHNOLOGY
ELE ELG

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European Language Technology

@EuroLangTech

The channel of the EU projects European Language Equality and European Language Grid, fostering the LT community towards digital language equality by 2030!

Europe european-language-technology.eu Joined June 2021

902 Following 303 Followers

More than 14k visitors on and more than 65k impressions already!



Welcome to European Language Technology!
ELLELT

Follow ELT on Twitter
Follow ELT on LinkedIn

European Language Technology is the combined communication channel for the sister projects European Language Grid (ELG) and European Language Equality (ELE) – funded by the European Commission.

For further information about either project – their goals, consortium partners, and contact details etc. – please click below:

EUROPEAN LANGUAGE GRID

TUTORIAL

ELG Tutorial - Export 1 - 11.11.21.mp4

00:10 / 14:35

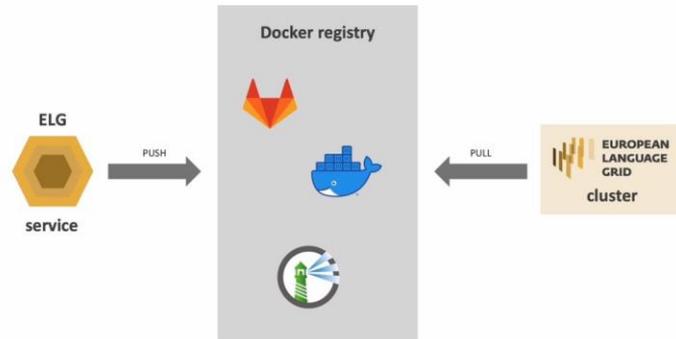
```
File Edit View Insert Cell Kernel Widgets Help Not Tuned Python 3.8.10 64-bit (x64; conda)
jupyter Demo Last checkpoint a few seconds ago. [refresh changed]
LanguageResource
Entity type Description
Freshly available large dataset, manually annotated for German NER. Includes nested spans annotations. Source text from German Wikipedia and news. This data set does not contain the test data, which is used for the German 2018 NER task on RACE. Test data will be available from September 2014.
Licence [Creative Commons Attribution 4.0 International]
Languages [German]
Status None

In [1]: from elg import Corpus
Corpus = Corpus.from_id(187)
Corpus.download()
print("Size")
!ls | grep -gs
Downloading:
[187] Notta-Di German NER Dataset Train/Dev
Downloading the corpus distribution to Notta_Di_German_NER_Dataset_Train_Dev.gs:
100% [#####] 2.92M/2.92M [80:02<00:00, 1.32MiB/s]

In [2]: from elg import Service
Service = Service.from_id(678)
Response = Service["Did MikkoLauhe live in Berlin?"]
print(Response, response.annotations)
```

ELG Tutorial - Export 1 - 11.11.21.mp4

05:51 / 14:35



ELG Tutorial - Export 1 - 11.11.21.mp4

13:06 / 14:35

EUROPEAN LANGUAGE GRID

Search for services, tools, datasets, organizations

Search

- European Clinical Case Corpus**
ESC aims to collect and annotate a multilingual corpus of clinical narratives, enabling to become a reference European resource. A clinical narrative is a statement of a clinical practice, presenting the reason for a...
Keywords: Clinical notes, Clinical entities, Temporal information, Fatality
- European Language Grid**
We'll be adding 20 and many more additional languages, multilingualism in Europe and an inclusive Digital Single Market can only be enabled through Language Technologies (LT). European LT services is described by...
Keywords: Language technology services, Multi-lingual, Low-resource languages
- European Language Resource Coordination 2.0**
The Action on European Language Resource Coordination (ELRC2.0) is a service oriented performance in support of the Connecting Europe Facility Automated Translation (CEF AT) of the European Commission. CEF AT aims at...
Keywords: CEF, Connecting Europe Facility, web-based translation

Coming soon: ELG tutorial video that explains how to make resources and tools available.

Summary and Next Steps



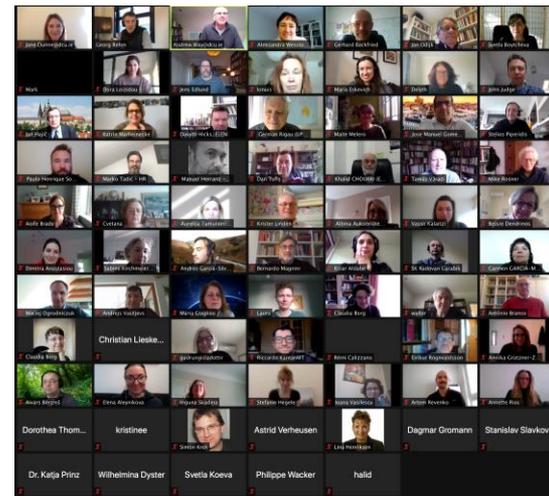
- Establish ELG as the **primary platform and marketplace** for Language Technology in Europe.
- An initiative *from* the European LT community *for* the European LT community.
- European LT landscape is **highly fragmented**: ELG aims to provide just the right **umbrella platform**.
- Global market size by 2025 is enormous: we want the European LT community to be a **key player**.
- We want to **increase the visibility and reach of all members of the European LT landscape**.
- ELG is a long-term initiative: we will establish a **legal entity** for sustainability, which will operate and maintain the technology platform for the whole LT community as a joint marketplace.
- Contribute to **Digital Language Equality** in Europe by giving all our languages one virtual home and umbrella platform that collects **all** services and resources (ELE). The logo for European Language Equality, consisting of two horizontal teal bars above the text "EUROPEAN LANGUAGE EQUALITY" in a bold, black, sans-serif font.
- **Next up**: attach more **data repositories**; include ELG in **various infrastructures** (e.g., NFDI, GAIA-X); **raise awareness** of LT for Europe; organise **META-FORUM 2022**; develop **ELG Release 3** (early 2022); establish the **ELG legal entity** (2022); contribute to the **Language Data Space** (2022/2023).



European Language Grid

With many thanks to all
colleagues in the ELG and
ELE teams and consortia!

Thank you!



The European Language Grid has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement № 825627 (ELG).

Prof. Dr. Georg Rehm (DFKI GmbH, Germany)
Coordinator ELG, Co-coordinator ELE

03-12-2021 ELG NCC Workshop Netherlands
<http://www.european-language-grid.eu>
<http://www.european-language-equality.eu>

14.00 uur	Welkom	Vincent Vandeghinste (INT)
14.05 uur	Introducing the European Language Grid	Georg Rehm (DFKI)
14.35 uur	Demonstratie van de ELG, met focus op het Nederlands	Vincent Vandeghinste (INT)
15.00 uur	Vraag- en antwoordsessie en discussie	
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Demonstratie van de European Language Grid

met focus op (het) Nederland(s)

Vincent Vandeghinste

Waarom organiseert het Instituut voor de Nederlandse Taal deze workshop?

National Competence Centre Nederland

De European Language Grid heeft een sterk netwerk van 32 National Competence Centres (NCCs). De NCCs fungeren als lokale en nationale brug naar het ELG consortium en de European Language Grid.

Vincent Vandeghinste is NCC lead voor Nederland.

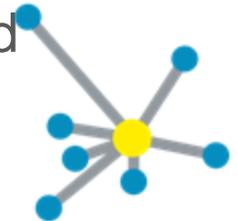
Als u verdere vragen heeft:

vincent.vandeghinste@ivdnt.org



INT en internationale infrastructuur

- CLARIN
 - Technisch centrum voor Nederland en Vlaanderen
 - [tools en services](#)
 - nationale coördinatie voor [CLARIN-België](#)
 - consortiumpartner in [CLARIN-VL](#)
 - consortiumpartner in [CLARIAH-VL](#)
 - [K-Dutch](#): CLARIN kenniscentrum voor het Nederlands
- Consortium partner in [European Language Equality](#) project
- national anchor point voor [ELRC](#) voor Nederland



ELG vs CLARIN



The ELG develops and deploys a **scalable cloud platform**, providing, in an **easy-to-integrate** way, access to hundreds of **commercial** and non-commercial **Language Technologies** for **all European languages**, including running tools and services as well as data sets and resources.



It is a research infrastructure that was initiated from the vision that **all digital language resources and tools** from all over Europe and beyond are accessible through a **single sign-on** online environment for the **support of researchers** in the humanities and social sciences.

ELG vs Nederlandse AI voor het Nederlands (NAIN)

NAIN is een use case van de Nederlandse AI Coalitie

Het doel van het project is **spraaktechnologie** beschikbaar te maken voor iedereen die Nederlands spreekt en daarvoor niet afhankelijk te zijn van de willekeur van grote buitenlandse commerciële partijen. De ambitie is de krachten te bundelen en **als Nederland zelf** een grote verbeterslag maken in spraaktechnologie, met name omdat het **verzamelen en transcriberen van relevant trainingsmateriaal** niet voor iedere individuele Nederlandse organisatie haalbaar is.

Wat is er al beschikbaar in de ELG voor het Nederlands



[Technologies](#) [Resources](#) [Community](#) [Events](#) [Documentation](#) [About ELG](#)

Towards the Primary Platform for Language Technologies in Europe

Search



Language technologies

LT services, tools, components, downloadable or deployed directly through the grid

[Browse Technologies](#)



Language data and resources

The collection of data sets, corpora, language models and other language resources

[View Resources](#)



Community

Organizations, projects, events etc in European language technology field

[Explore Community](#)

ELG voor het Nederlands

Taal: Nederlands: 222
zoekresultaten (26.11.2021)

- corpora: 152
- lexical resources: 41
- tools / services: 28
- machine learning model: 1

The screenshot shows the European Language Grid (ELG) search results page for the Dutch language. The page features a search bar at the top with the text "Search for services, tools, datasets, organizations...". Below the search bar, there are several filter categories:

- Language resources & technologies** (highlighted with a red box):
 - Corpus (152)
 - Lexical/Conceptual resource (41)
 - Tool/Service (28)
 - ML Model (1)
- Service functions
- Intended LT applications
- Languages
 - Official EU languages
 - Bulgarian (88)
 - Croatian (78)
 - Czech (90)
 - Danish (89)
 - Dutch (222)
 - Other EU/European languages
 - Abkhazian (1)

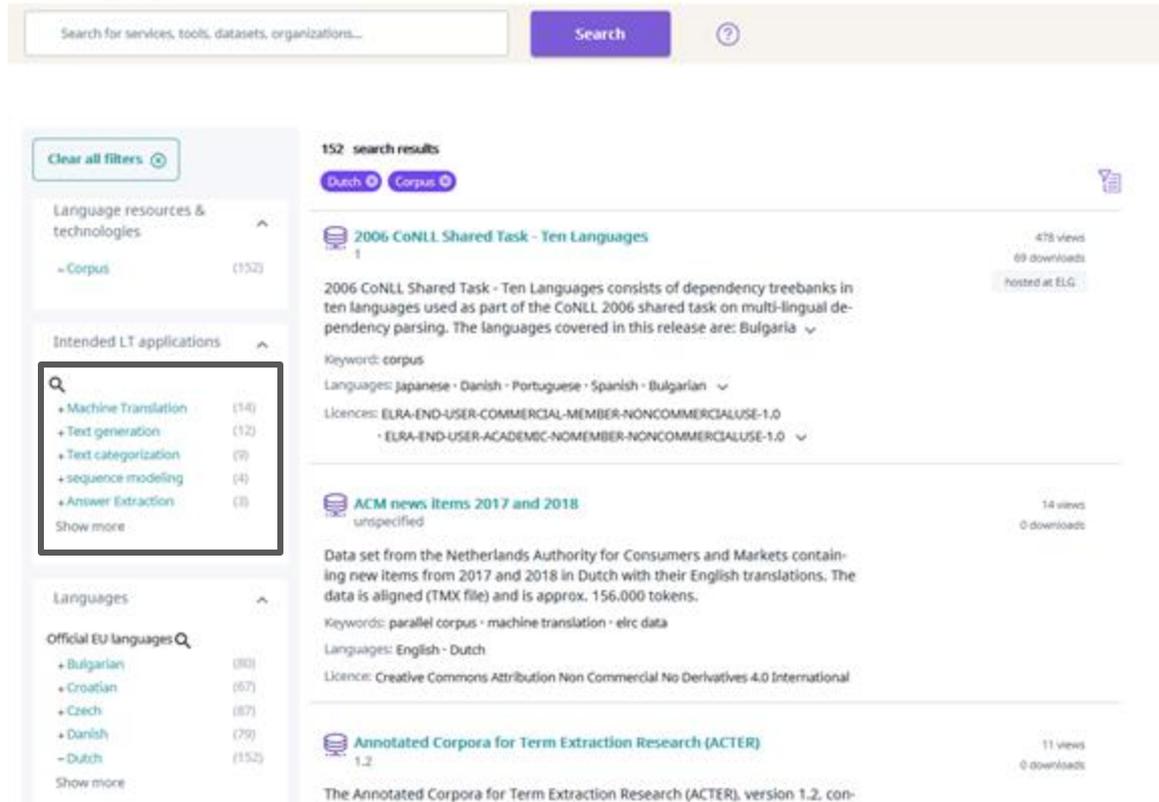
The search results section displays 222 results for Dutch. The top results are:

- 2006 CoNLL Shared Task - Ten Languages** (1 result): 477 views, 69 downloads, hosted at ELG. Description: "2006 CoNLL Shared Task - Ten Languages consists of dependency treebanks in ten languages used as part of the CoNLL 2006 shared task on multi-lingual dependency parsing. The languages covered in this release are: Bulgaria." Keyword: corpus. Languages: Bulgarian, Turkish, Spanish, Japanese, Dutch. Licences: ELRA-END-USER-COMMERCIAL-NOMEMBER-NONCOMMERCIALUSE-1.0, ELRA-END-USER-COMMERCIAL-MEMBER-NONCOMMERCIALUSE-1.0.
- ACM news items 2017 and 2018** (unspecified): 14 views, 0 downloads. Description: "Data set from the Netherlands Authority for Consumers and Markets containing new items from 2017 and 2018 in Dutch with their English translations. The data is aligned (TMX file) and is approx. 156.000 tokens." Keywords: parallel corpus, machine translation, elrc data. Languages: English - Dutch. Licence: Creative Commons Attribution Non Commercial No Derivatives 4.0 International.
- Annotated Corpora for Term Extraction Research (ACTER)** (1.2): 11 views, 0 downloads. Description: "The Annotated Corpora for Term Extraction Research (ACTER), version 1.2, con-

Corpora

Intended applications:

- Machine Translation: 14
- Text generation: 12
- Text categorization: 9
- Sequence modeling: 4
- Answer extraction: 3
- ...



Search for services, tools, datasets, organizations...

Search

Clear all filters

Language resources & technologies

- Corpus (152)

Intended LT applications

- + Machine Translation (14)
- + Text generation (12)
- + Text categorization (9)
- + sequence modeling (4)
- + Answer Extraction (3)
- Show more

Languages

Official EU languages

- + Bulgarian (80)
- + Croatian (67)
- + Czech (87)
- + Danish (79)
- Dutch (152)
- Show more

152 search results

Dutch Corpus

2006 CoNLL Shared Task - Ten Languages

475 views
69 downloads
hosted at ELG

2006 CoNLL Shared Task - Ten Languages consists of dependency treebanks in ten languages used as part of the CoNLL 2006 shared task on multi-lingual dependency parsing. The languages covered in this release are: Bulgaria

Keyword: corpus

Languages: japanese · Danish · Portuguese · Spanish · Bulgarian

Licences: ELRA-END-USER-COMMERCIAL-MEMBER-NONCOMMERCIALUSE-1.0
ELRA-END-USER-ACADEMIC-NOMEMBER-NONCOMMERCIALUSE-1.0

ACM news items 2017 and 2018

14 views
0 downloads

Data set from the Netherlands Authority for Consumers and Markets containing new items from 2017 and 2018 in Dutch with their English translations. The data is aligned (TMX file) and is approx. 156.000 tokens.

Keywords: parallel corpus · machine translation · elrc data

Languages: English · Dutch

Licence: Creative Commons Attribution Non Commercial No Derivatives 4.0 International

Annotated Corpora for Term Extraction Research (ACTER)

1.2

11 views
0 downloads

The Annotated Corpora for Term Extraction Research (ACTER), version 1.2, con-

Tools voor het Nederlands

- Automatische vertaling: 9
- Named Entity Recognition: 6
- POS tagging: 4
- Taalidentificatie: 2
- Termextractie: 2
- ...

The screenshot shows the European Language Grid website interface. At the top, the logo for 'EUROPEAN LANGUAGE GRID' is visible, along with user information 'My grid Vincent Vandeghinste' and navigation links for 'Technologies', 'Resources', 'Community', 'Events', 'Documentation', and 'About ELG'. A search bar contains the text 'Search for services, tools, datasets, organizations...' and a 'Search' button. Below the search bar, a filter sidebar on the left shows 'Clear all filters' and categories like 'Language resources & technologies' (20), 'Service functions', and 'Intended LT applications'. The 'Intended LT applications' list includes 'Machine Translation (9)', 'Named Entity Recognition (6)', 'Part-of-Speech Tagging (4)', 'Language Identification (3)', and 'Term extraction (2)'. The main content area displays '28 search results' for 'Dutch' and 'Tool/Service'. Three results are visible: 'CEFR Readability Analysis Service' (1.0.0), 'Cogito Discover Language Detection' (1.0.0), and 'Cogito Discover Named Entity Recognizer' (14.3.0). Each result includes a brief description, keywords, supported languages, and license information.

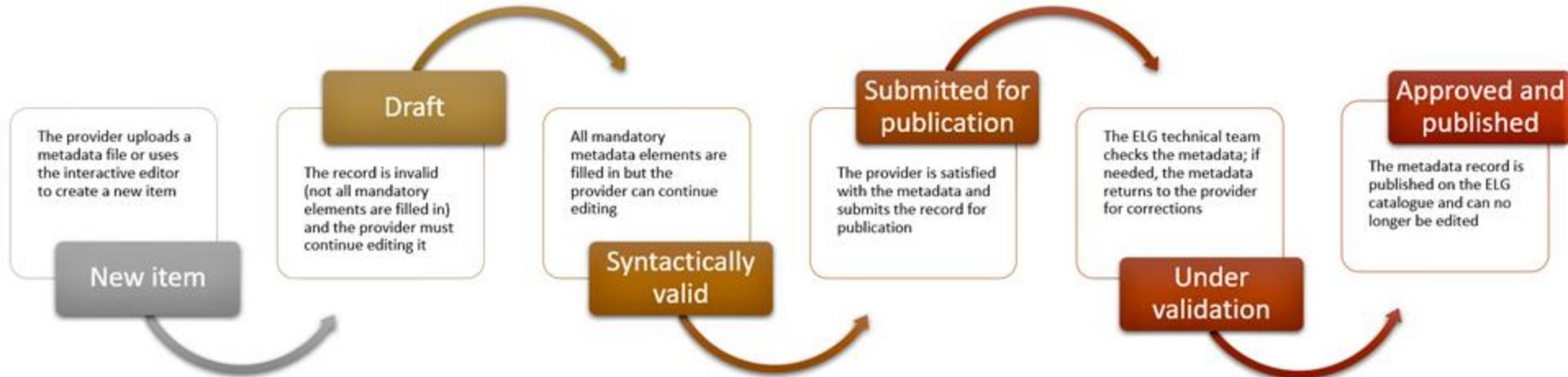
Tools voor het Nederlands -- uitproberen

- Taalidentificatie <https://live.european-language-grid.eu/catalogue/tool-service/473>
- Parsing <https://live.european-language-grid.eu/catalogue/tool-service/451>
- Spraakherkenning: <https://live.european-language-grid.eu/catalogue/tool-service/8154>
- Keyword spotting: <https://live.european-language-grid.eu/catalogue/tool-service/8166>
- Summarization / keyword extraction: <https://live.european-language-grid.eu/catalogue/tool-service/478>
- Named Entity Recognition: <https://live.european-language-grid.eu/catalogue/tool-service/8134>

Hoe kan je zelf tools en data beschikbaar maken?

Registreer als provider: https://european-language-grid.readthedocs.io/en/stable/all/3_Contributing/Contributing.html

Publicatiecyclus:



Een corpus / dataset bijdragen

https://european-language-grid.readthedocs.io/en/stable/all/3_Contributing/Corpus.html

- Gehost door ELG: maak er een zip file van
- Beschrijf het corpus (metadata) volgens metadata schema
- Registreer het corpus bij ELG
 - uploaden metadata
 - interactieve editor
- Dien in voor publicatie

Een ELG-compatibele service bijdragen

https://european-language-grid.readthedocs.io/en/stable/all/3_Contributing/Service.html

Momenteel ondersteunt ELG de integratie van tools/diensten in deze categorieën:

- **Informatie-extractie** (IE) : Diensten die tekst annoteren met metadata over specifieke segmenten, zoals **Named Entity Recognition** (NER), de taak om personen, locaties en organisaties uit een bepaalde tekst te extraheren.
- **Tekstclassificatie** (TC) : Diensten die tekst classificeren volgens een eindige reeks klassen, b.v. Tekstcategorisatie, de taak om tekst te categoriseren in (meestal gelabelde) georganiseerde categorieën.
- **Machinevertaling** (MT) : Diensten die tekst vertalen naar een andere taal, mogelijk met aanvullende metadata die aan elk segment zijn gekoppeld (zin, woordgroep, enz.).
- **Automatische spraakherkenning** (ASR): services die audio als invoer gebruiken en tekst (bijvoorbeeld een transcriptie) als uitvoer produceren, mogelijk met metagegevens die aan elk segment zijn gekoppeld.
- **Text-to-Speech** synthese (TTS) : Diensten die tekst omzetten naar audio

Een ELG-compatibele service bijdragen

1. Dockerize je service

voorbeelden zijn beschikbaar op de website

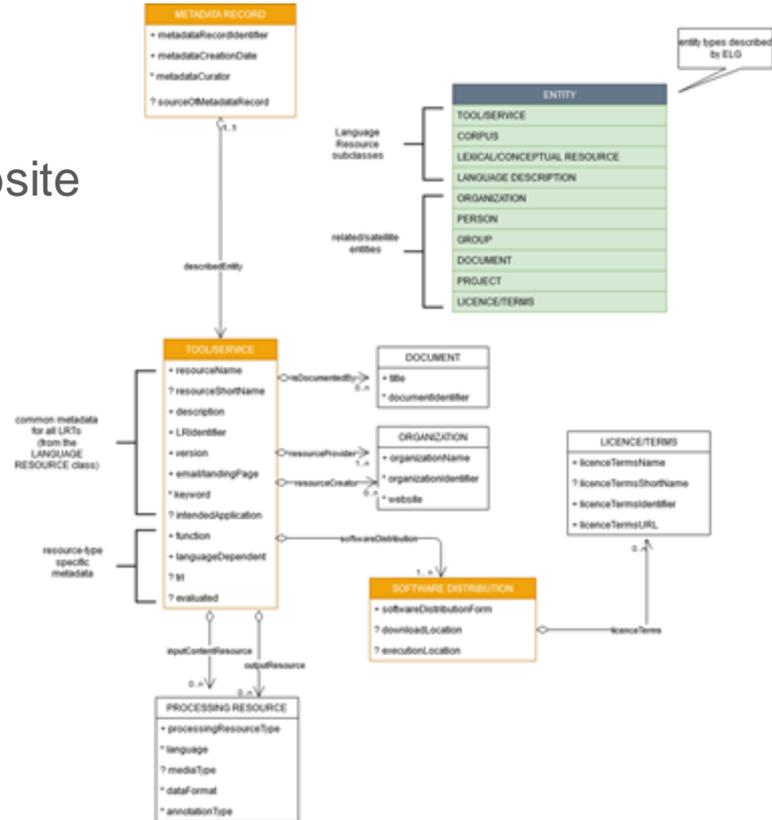
1. Beschrijf de service

volgens [metadata](#) schema

1. Registreer de service bij ELG

- via interactieve ELG editor
- het uploaden van een metadatabestand

2. Dien de service in bij ELG voor publicatie



Demonstratie van de *Interactive Editor*

The screenshot displays the user interface of the European Language Grid website. At the top left is the logo for the European Language Grid, which includes the text 'EUROPEAN LANGUAGE GRID' and a 'RELEASE 3' badge. To the right of the logo, the user's profile is shown as 'My grid Vincent Vandeghinste' with a dropdown arrow. Below this, a navigation menu lists 'Technologies', 'Resources', 'Community', 'Events', 'Documentation', and 'About E.L.G.'. A teal header bar contains navigation links: 'My grid', 'My items', 'Feedback', and 'Go to catalogue'. The main content area is titled 'ADD ITEMS' and features six cards, each representing a different category of resource:

- Service or Tool**: Services that run in the cloud, downloadable tools, source code, etc., that perform language processing and/or any Language Technology related operation, such as Machine Translation, Information extraction, linguistic annotation, automatic speech recognition, etc. (Teal 'Go to form' button)
- Corpus**: Structured collections of pieces of data, such as collections of text documents, audio transcripts, audio and video recordings, parallel corpora, linguistically annotated corpora, treebanks, etc. (White 'Go to form' button)
- Language description**: Machine learning models, embeddings, language models, computational grammars. (White 'Go to form' button)
- Lexical/Conceptual resource**: Computational lexica, terminological lexica, glossaries, thesauri, ontologies, gazeteers, word or phrase lists, etc. (White 'Go to form' button)
- Project**: Projects that have funded the development or used language resources and technologies. (White 'Go to form' button)
- Organization**: Companies, research organizations, academic organizations, etc. active in Language Technology in Europe. (White 'Go to form' button)

Conclusie

- Als je tools of datasets zoekt ivm taal- of spraaktechnologie, kijk dan eens in de ELG
- Ook voor het Nederlands is al heel wat beschikbaar
- Als je zelf tools of datasets ontwikkelt of ontwikkeld hebt, kan je die publiek bekendmaken, al dan niet met demo
- Contacteer je NCC-lead vincent.vandeghinste@ivdnt.org als iets niet helemaal duidelijk is

15u00 Vragen & Antwoorden

15u10 Pauze

14.00 uur	Welkom	Vincent Vandeghinste (INT)
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16.25 uur	Vraag- en antwoordsessie en discussie	

CEFR Readability Labelling and Assessment Services

European Language Grid pilot project

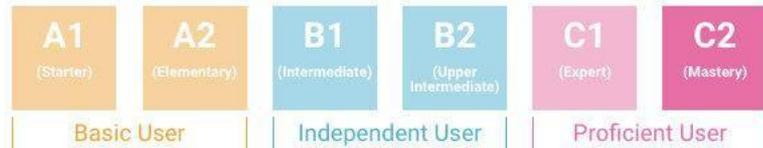
Presenter: Mark Breuker (EDIA)

Selected projects

Organisation	Project Title	Country	Funding awarded
Institute for Bulgarian Language "Prof. Lyubomir Andreychin"	Multilingual Image Corpus 2021	Bulgaria	EUR 110,960
EDIA BV	CEFR Labelling and Assessment Services	Netherlands	EUR 137,560
University of West Bohemia	Motion Capture 3D Sign Language Resources	Czechia	EUR 85,421
Sapienza University of Rome	Universal Semantic Annotator: A Unified API for Multilingual WSD, SRL and AMR annotations	Italy	EUR 113,228
Sign Time GmbH	Sign language explanations for terms in a text	Austria	EUR 137,227

Common European Framework of Reference (CEFR)

The CEFR describes foreign language proficiency at six levels:



- to establish learning and teaching objectives
- to review curricula
- to design teaching materials
- to provide a basis for recognising language qualifications thus facilitating educational and occupational mobility.

Project objectives

Problem

Manual assessment of reading materials on CEFR readability levels depends on human experts: inconsistent and not scalable.

Our solution

Develop a set of tools, datasets and services (infrastructure) to enable automatic classification of CEFR reading difficulty



Applications

Personalised learning

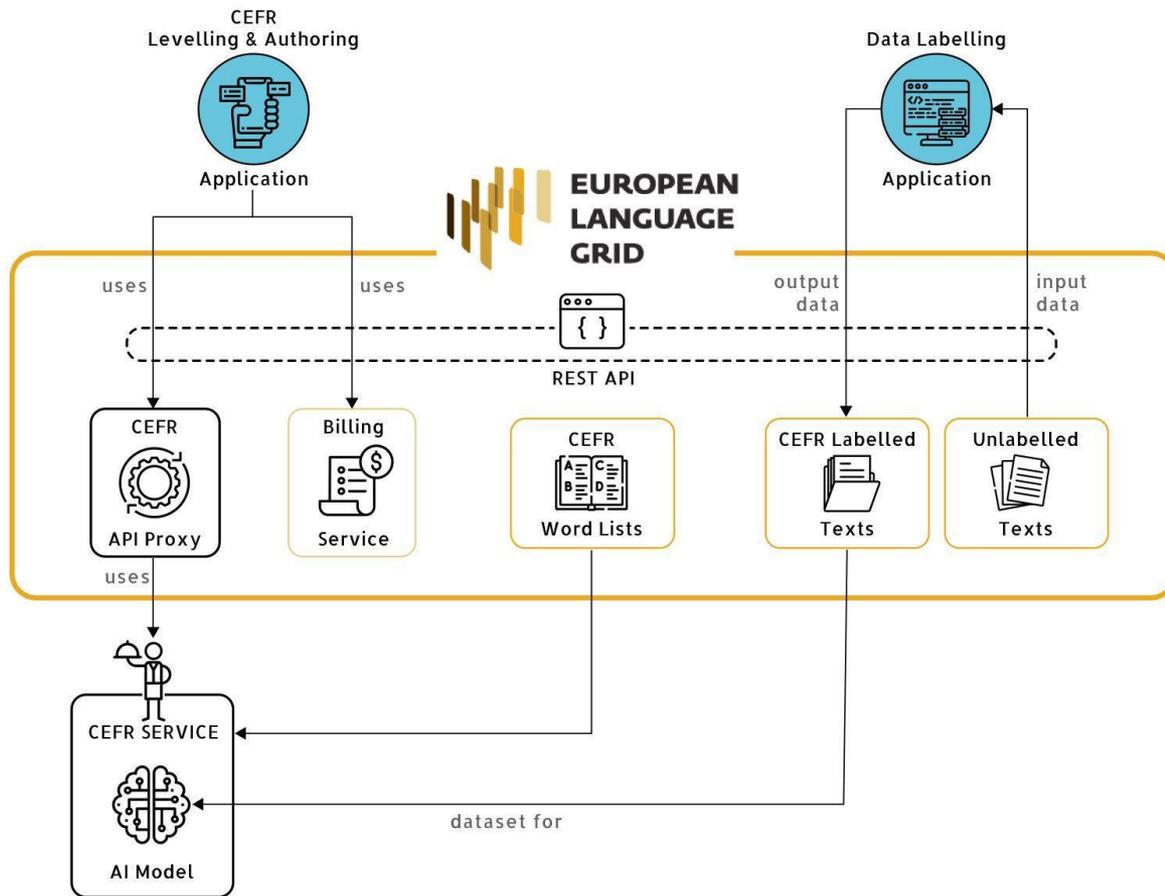
Teachers want to use authentic and current content in class to boost student engagement.

Automatic CEFR classification supports easy discovery and assessment of texts that match individual student's reading proficiency.

Inclusiveness in society

News and information from governmental organisations is often too difficult to read for people with low literacy skills

Automatic CEFR classification helps to identify difficult texts and make them more readable.

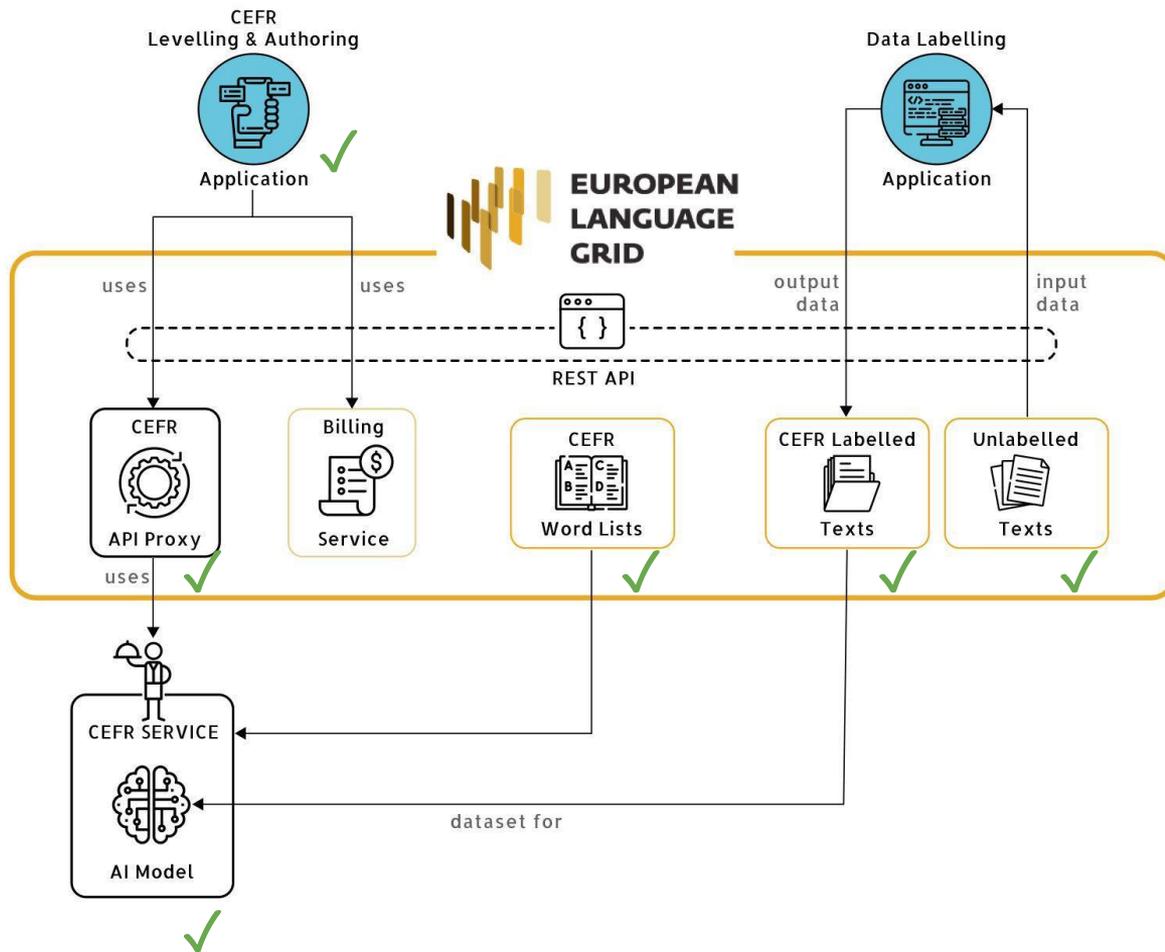


Approach

1. Collect unlabelled texts
2. Label texts on CEFR level using human experts (teachers)
3. Train AI model on dataset
4. Expose model as service (REST API) on ELG
5. Integrate API in end-user applications

Languages

- English, German (available)
- Dutch, Spanish (in development)



Approach

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Languages

- English, German (available)
- Dutch, Spanish (in development)

Select text to change

ADD TEXT +



Search

Action: ----- Go 0 of 3 selected

<input type="checkbox"/>	ID	TITLE	TEXT TYPE	SOURCE	LANGUAGE	CEFR LEVEL
<input type="checkbox"/>	3	Aantal positieve tests vorige week gestabiliseerd, R-waarde zakt richting de 1	News article	NU.nl	Dutch (NL)	-
<input type="checkbox"/>	2	Gommers roept op tot harde lockdown, code zwart dreigt binnen tien dagen	News article	NU.nl	Dutch (NL)	-
<input type="checkbox"/>	1	Kamala Harris eerste vrouw die (tijdelijk) presidentiële macht in VS krijgt	News article	NU.nl	Dutch (NL)	-

3 texts

FILTER

By language

All
English (UK)
Dutch (NL)
French (FR)
German (DE)
Spanish (ES)

By text type

All
News article
-

By source

All
NU.nl
-

By cefr level

All
A1
A2
B1
B2
C1
C2

Step 1: Collect unlabelled texts

Annotate task

Text

Kamala Harris eerste vrouw die (tijdelijk) presidentiële macht in VS krijgt

De Amerikaanse vicepresident Kamala Harris wordt vrijdag de eerste vrouw die presidentiële macht krijgt in de Verenigde Staten. President Joe Biden draagt tijdelijk de macht over aan Harris omdat hij een darmonderzoek ondergaat.

Biden moet voor de operatie onder verdoving en kan dus geen belangrijke beslissingen nemen in noodsituaties. Daarom krijgt Harris tijdelijk de macht over bijvoorbeeld het leger en kernwapens.

Harris is al de eerste vrouwelijke vicepresident van de Verenigde Staten. Daarnaast is zij de eerste zwarte vicepresident én de eerste vicepresident met een Aziatische achtergrond.

Het is niet duidelijk wanneer de presidentiële macht weer bij Biden ligt. Het Witte Huis heeft benadrukt dat hij maar kort zal worden verdoofd.

Biden ondergaat een routineonderzoek van de dikke darm, een zogeheten colonoscopie. De president wordt zaterdag 79 jaar en het onderzoek valt samen met zijn jaarlijkse gezondheidscheck. Bij zijn laatste onderzoek in december 2019 werden geen ernstige problemen ontdekt.

Annotations

- Created: Nov. 24, 2021, 11:21 a.m., Updated: Nov. 24, 2021, 11:21 a.m.
- Created: Nov. 24, 2021, 11:33 a.m., Updated: Nov. 24, 2021, 11:33 a.m.
- Created: Nov. 30, 2021, 1:20 p.m., Updated: Nov. 30, 2021, 1:20 p.m.
- Created: Nov. 30, 2021, 3:43 p.m., Updated: Nov. 30, 2021, 3:43 p.m.

Annotation

Vocabulary level:

Mostly Frequent (A2-B1) ▾

The complexity of the vocabulary

Grammar level:

Only frequent (A1-A2) ▾

The complexity of the grammar

Nature level:

Only concrete (A1-A2) ▾

The nature of the text

Cefr level:

C2+ ▾

Save annotation



CEFR Readability Classification Service (EN)

Version: 0.2.0 (10/06/2021)

ELG-compatible service (service running on the provider's side)

ToolService

Overview Download/Run Try out Code samples

With this service the CEFR readability level can be automatically analysed. Given a text, the service will return the CEFR level of the text (A1 to C2) and words in the text that are above or below the target level.

Keyword

cefr readability

Intended application

Authoring support Content curation

Input content resource

Language

English

Processing resource type

user input text

Data format

JSON

Media type

text

Function

Function

Readability annotation

Language dependent

true

Output resource

Language

English

Processing resource type

output text

Data format

JSON

Media type

text

Annotation type

Readability

Export

XML

All versions

CEFR Readability Classification Service (EN)
(0.2.0)

Resource



Additional

Contact



Text

The Prince of Wales has told the BBC he understands why campaigners from organisations like Extinction Rebellion take to the streets to demand action on climate change. In the interview at his home in Balmoral, Prince Charles said action such as blocking roads "isn't helpful". But he said he totally understood the "frustration" climate campaigners felt. And he warned of a "catastrophic" impact if more ambitious action isn't taken on climate change. Speaking in the gardens of his house on the Balmoral estate in Aberdeenshire, the prince said it had taken too long for the world to wake up to the risks of climate change. And he worried that world leaders would "just talk" when they meet in Glasgow in November for a crucial UN climate conference.

Classification

B2

Step 4: Expose AI models as services (REST API) on ELG

Fonto START Hi, Mark

Quality check (on)

MAP

CEFR check

TOPIC

The Prince of Wales

The Prince of Wales has told the BBC he understands w: Extinction Rebellion take to the streets to demand action

In the interview at his home in Balmoral, Prince Charles said action such as blocking roads "isn't helpful". But he said he totally understood the "frustration" climate campaigners felt. And he warned of a "catastrophic" impact if more ambitious action isn't taken on climate change. Speaking in the gardens of his house on the Balmoral estate in Aberdeenshire, the prince said it had taken too long for the world to wake up to the risks of climate change. And he worried that world leaders would "just talk" when they meet in Glasgow in November for a crucial UN climate conference.

Difficult words

understands (A2)

Target Level
A1

Suggested alternatives

knows (A1)
is (A1)
thinks (A1)
wants (A1)
sees (A1)
speaks (A1)

CEFR Analysis

Document language

GERMAN **ENGLISH**

Document target level

A1 A2 A... B1 B... B2 B... C1 C2

Analyze your text

CEFR B2

Outcome:

A1 A2 A2+ B1 B1+ B2 B2+ C1 C2

Why ELG

1. Opportunity for extending our language coverage
2. Additional go-to-market channel
 - a. Exposure and discoverability (marketplace)
 - b. Lower adoption barrier for external developers (e.g. using ELG SDK)

Experiences so far

- Required metadata for publishing resources and services quite extensive / complex
- Very supportive ELG technical team
 - Help understand metadata scheme
 - Build and deploy services (by example)
 - Incorporated feedback into ELG platform
- Standardization and improvement of API design (both ways)
- Commercial services (eg customer registration, metering, billing) not yet available

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15.35 uur	Presentaties van verschillende bedrijven (3) <ul style="list-style-type: none">• EDIA (Mark Breuker)• Telecats (Arjan van Hessen)• Y.digital (Ian Fitzpatrick)	Oele Koornwinder (NOTaS)
16.25 uur	Vraag- en antwoordsessie en discussie	



Telecats

THE SEARCH FOR
SUITABLE DATA

About Telecats

- An innovative “customer contact provider” with HLT (language and speech technology) and AI (artificial intelligence) that empower customer service.
- Part of Webhelp (France) since 1-1-2020
- Automation of “as much as possible/desirable” calls

About Telecats

We **facilitate the contact centre** by identifying the customer, classifying the customer's question and routing the call.

We **support employees** by delivering all relevant information to them and showing them suggestions for answers.

We **assist the customer** intelligently routing the call to the most suitable employee or by offering self-service

We **identify trends, opportunities and problems** based on conversation characteristics and choice of words.

Speech Routing

Routing your customer contact with speech recognition

- Speech recognition provides customers with the opportunity to ask their question using their own words.
- 90% of all questions can be properly classified by using speech recognition which means fewer questions have to be put through to another advisor.
- Routing with speech recognition and CTI can result in an average time gain of 45 seconds for each conversation.

Recording & Transcription

Insight into your customer contact with speech technology

- Why do your customers call?
- What are the conversations about?
- What are customers (not) satisfied about?

This is valuable information for the entire organization. Because of recording and transcription this information becomes available. Phone calls are recorded in high quality and are transcribed, sometimes in real time. When added to the Call-Detail-Record this information can be the basis for extensive analysis.

Old situation

Recording (telephony) data

Recognising the spoken data

Asking customer experts to label the data

Train the machine with recognition results AND the label(s)

What we miss

- There is more information in the speech than we can extract now. Tone of voice, hesitations, etc.
- We do not know anything about the background of an individual caller.
- We cannot extract “emotion”.

Pro's and Con's

- Works well as long as people speak “normally”
- You need a lot of data, time (and money)
- Once trained, it is stable
but changing the content needs a lot of work
- It is AI, but...

What we need

- We need a lot of labelled, spoken (and eventually transcribed) data, handling all kind of company-customer dialogs.
- We need, besides HQ ASR, additional algorithms like emotion-recognition, meaning extraction and identification algorithms.

What we need

- We need the data from various sources (telephony, broadband, with/without background noise, etc.)
- We are NOT interested in the person-related content, but modern GDPR...
- We need this data for Dutch, English, French and other languages

What can we do?

- Collect, recognise, and label our own data
- Use data from “other parties” but GDPR...
- Train with other data without access to the speech and transcripts (via a data vault)
- Nothing...

Thanks

AND... QUESTIONS?

14.00 uur	Welkom	Vincent Vandeghinste (INT)
14.05 uur	Introducing the European Language Grid	Georg Rehm (DFKI)
14.35 uur	Demonstratie van de ELG, met focus op het Nederlands	Vincent Vandeghinste (INT)
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/instituut voor
de Nederlandse
taal/

Taalmaterialen

Dutch Language Resources
Service

Bob Boelhouwer
Bob.boelhouwer@ivdnt.org

Wat kunnen we bieden?

- Hergebruik van taalmaterialen
- Archivering
- Permanente verwijzingen (incl. PID's)
- Onderhoud
- Ondersteuning

Geschiedenis van Taalmaterialen

- Opgericht in 2004 door de NTU, als onderdeel van STEVIN; een groot onderzoeks-programma.
- Oorspronkelijke naam: TST-Centrale, uitgevoerd door het INT (toen INL).
- STEVIN data is nog steeds de kern van de catalogus, maar veel andere organisaties, commercieel and niet-commercieel hebben data bijgedragen.

Voor wie is het bedoeld?

- Academics (CLARIN B-Centre)
- Commerciële ondernemingen
- Algemene publiek

Een paar statistieken

- 129 producten in de catalogus
- Mirror voor een aantal Zuid-Afrikaanse talen

Aantal downloads in 2020:

- 1360 downloads niet-commercieel
- 45 commercieel

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