

Making Democratic Deliberation and Participation more Accessible: The iDEM Project

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Abstract

Deliberative and participatory processes currently don’t have full legitimacy due to the exclusion and marginalisation of several vulnerable communities from democratic spaces. It is well documented that people with limited language skills, such as people with cognitive disabilities, struggle to participate in democratic processes. This happens in spite of the advocacy work of organizations which promote human rights. The iDEM project aims at addressing the barriers in deliberative and participatory democratic practices through a thorough intersectional analysis of conditions under which current structures and systems limit participation of marginalised and vulnerable communities. Specially those with limited skills in reading, writing or understanding a fairly complex language, which is often required for deliberative and participatory processes. iDEM will lay the theoretical foundations for the analysis of current marginalisation from deliberative processes of diverse under-represented groups due to a lack of language skills. It will adopt a user-centred approach for making participatory processes more accessible and inclusive, developing advanced natural language processing technologies (NLP) and artificial intelligence (AI) to empower under-represented groups, with tools to facilitate communication and dialog in democratic spaces. iDEM will co-create the next-generation multilingual models aimed at: (1) detecting possible sources of problems in understanding messages for several European languages and audiences, (2) automatically adapting texts in those languages to be accessible and unbiased for these audiences, (3) providing AI tools for enhancing the generation of appropriate messages and discourses. iDEM aims to create more accessible democratic spaces in Italy and Spain with customised technology enhancing the participation and representation of marginalised groups by providing unbiased and inclusive technology.

Keywords

Deliberation, Participation, Democracy, Accessibility, Text Simplification, Text Generation, Easy to Read

1. Introduction

Deliberative and participatory processes [1] currently lack full legitimacy due to the exclusion and marginalisation of several vulnerable communities from democratic spaces [2]. When it comes to access to democratic and civic participation, no matter how inclusive deliberative and participatory processes and platforms are, people with language difficulties are left behind. The proper dynamics of participation and the language used by policy makers and institutions could exacerbate, rather than improve, the under representation of such marginalised groups. People must be able to understand the information and deliberate on an equal basis, which imposes obligations on institutions. The United Nations

Convention on the Rights of Persons with Disabilities (CRPD) includes accessibility as one of its rights¹. That is the ability of any product, service, content, environment, etc. to be used by people with the widest range of abilities. The CRPD also considers accessibility as an enabler for democratic participation rights, e.g., freedom of expression and self-determination. Consequently, a lack of accessibility in democratic spaces can be linked to a risk of exclusion for persons who cannot participate equally. Against this background we have proposed the iDEM project “Innovative and Inclusive Democratic Spaces for Deliberation and Participation” to address the accessibility limitations in democratic spaces.

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¹<https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-persons-disabilities>

Context	Original version	Easy to read version
Voting information in the UK	You'll be sent a poll card just before an election or referendum telling you when to vote and at which polling station.	Before the election day you will be sent a letter called a poll card. This will tell you the day of the election and where your local polling station is.
Spanish Constitution	España se constituye en un Estado social y democrático de Derecho, que propugna como valores superiores de su ordenamiento jurídico la libertad, la justicia, la igualdad y el pluralismo político.	España es un país democrático y respetuoso con los derechos de las personas. Los valores más importantes son la libertad, la justicia, la igualdad y el respeto de las distintas ideas políticas.
Law 11/2014 - Catalan Parliament	L'objectiu d'aquesta llei és desenvolupar i garantir els drets de lesbianes, gais, bisexuals, transgènere i intersexuals (LGBTI) i evitar-los situacions de discriminació i violència, per a assegurar que a Catalunya es pugui viure la diversitat sexual i afectiva en plena llibertat.	Per garantir el dret a la igualtat i a la no-discriminació per motius d'orientació sexual i identitat o expressió de gènere, i per assegurar que a Catalunya es pugui viure la diversitat sexual i afectiva en llibertat.
European Union information in Italian	Nel 2012 l'UE ha vinto il premio Nobel per la pace per aver contribuito alla pace, alla riconciliazione, alla democrazia e ai diritti umani in Europa.	Nel 2012 l'Unione europea ha vinto un premio importante, il "premio Nobel per la pace". Lo ha vinto per tutto quello che fa per mantenere la pace in Europa.

Table 1
Example of complex and simple sentences in the context of democracy.

1.1. Context: Information Access

Literacy is fundamental to human development as it enables people to contribute to their communities and to society. People who encounter difficulties making meaning out of content are a diverse group of individuals with varying ranges of reading, writing, and understanding abilities. This part of the population includes, for instance, those with low levels of literacy, intellectual disabilities, dyslexia, aphasia, temporary impairments, or with limited language skills (e.g. second-language learners, immigrants, and displaced populations). Finally, the elderly can also fall into this category, as they can be affected by a significant cognitive, physical, or sensory decline with age.

Challenges of including people with disabilities in deliberative or participatory processes are even bigger than those of including them in representative processes. An estimated 800,000 EU citizens from 16 Member States were not able to participate in the 2019 European Parliament elections due to barriers such as limited accessibility to polling stations or insufficiently accessible information about candidates and debates². But the number of people excluded from deliberative processes due to linguistic barriers, the focus of this project, is exponentially higher if we consider that 1% of the human population is affected by an intellectual disability³.

²<https://www.euractiv.com>

³<https://www.psychiatry.org/patients-families/intellectual-disability/what-is-intellectual-disability>

In order to face the barriers imposed by the way information is written, and from a methodological viewpoint, easy to read guidelines [3, 4] can be followed when preparing documentation for specific targets. Prior to scholarly research, two writing methods, Easy-to-Read and Plain Language, arose from the efforts undertaken by end-users, end-users associations and stakeholders, such as family members, support persons or national administrations. As a methodology, easy-to-read is an inclusive (e.g. takes into account a wide range of people), user-centred method: that is, it considers the inclusion and involvement of end-users throughout the content creation process and validation. Examples of easy to read texts in a democracy context are shown in Table 1. Examples are taken from the UK government voting information^{4 5}, the Spanish Constitution^{6 7}, the Catalan Parliament^{8 9}, and the European Union portal^{10 11}. From a computational viewpoint, transforming complex texts into easy to read and understand ones, has already

⁴<https://www.gov.uk/>

⁵<https://www.gov.uk/register-to-vote>

⁶<https://www.boe.es/buscar/act.php?id=BOE-A-1978-31229>

⁷<https://www.plenainclusion.org/publicaciones/buscar/la-constitucion-espanola-en-lectura-facil/>

⁸<https://cido.diba.cat/legislacio/1780501/lei-112014-del-10-d-octubre-per-a-garantir-els-drets-de-lesbianes-gais-bisexuals-transgeneres-i-intersexuals-i-per-a-eradicar-lhomofobia-la-bifobia-i-la-transfobia>

⁹<https://ajuntament.barcelona.cat/lgtbi/es/recursos-y-actualidad/documentacion?page=2>

¹⁰https://european-union.europa.eu/principles-countries-history/principles-and-values/aims-and-values_it

¹¹https://european-union.europa.eu/easy-read_it

been addressed in the field of *automatic text simplification* [5] which has usually concentrated on two different tasks: *lexical simplification* and *syntactic simplification*, each addressing different sub-problems. *Lexical simplification* will attempt to modify the vocabulary (e.g. target complex words) by choosing substitutes which are more appropriate for the reader [6]. Changing words in context is not an easy task because it may alter the meaning of the original text. *Syntactic simplification* will transform complex sentences into more readable or understandable equivalents. For example, relative or subordinate clauses or passive constructions, which may be more difficult to understand, could be transformed into simpler sentences or into active form. Although some non-English research has been produced in this area, it is fair to say most research and resources have been generated for the English language. Our project contributes with solutions also for Catalan, Italian, and Spanish.

2. The iDEM Project

The iDEM Project, which started in January 2024, has received funding from the Horizon Europe under call *HORIZON-CL2-2023-DEMOCRACY-01-07* in the area of intersectionality and equality in deliberative and participatory democratic spaces. iDEM aims at making information more accessible and inclusive in the context of democracy and in particular in deliberative and participatory processes. The concept is illustrated in Figure 1. In order to address this challenge, we will investigate, using a theoretical approach, current marginalisation from deliberative processes of diverse under-represented groups due to language skills in order to understand what are the linguistic barriers which hamper their participation. We will then create, following well defined guidelines and schemata (e.g. [7]), parallel domain-specific annotated datasets for simplification in Catalan, Spanish, and Italian. Data will be gathered from past participatory processes, democratic institutions, and the Web. The annotated corpus will be used to fine-tune natural language processing models to automatically identify and classify the source of text complexity and simplifying them accordingly. We will also assist our users with tools for the generation of coherent discourses adopting carefully fine-tuned Large Language Models. By working with associations for people with intellectual disabilities, iDEM will adopt a user-centred approach in use case design and corpus creation to ensure maximum impact in the community thus contributing to make democracy more accessible and inclusive. An iDEM innovative service will be created to deploy the developed language technologies: it will be open-source, and well documented. It will provide an architecture for communication, as well as the open iDEM API. More concretely, iDEM objectives

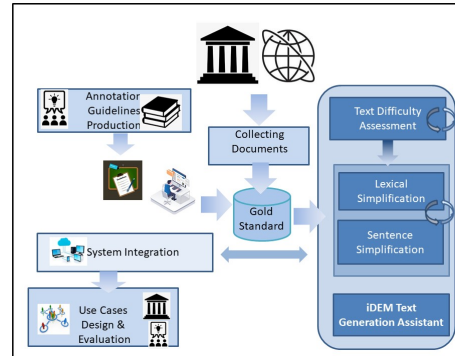


Figure 1: Illustration of the iDEM Concept

are:

- Understand the limitations of current deliberative and participatory democratic practices in terms of language comprehension and production and propose accessible and innovative solutions to remove inequalities to make democratic processes widely accessible
- Design a solution for making deliberative and participatory processes, at different levels of government, more inclusive, specially for marginalised and vulnerable communities
- Implement and evaluate state of the art natural language processing technology in the areas of text accessibility and argumentative discourse generation for deliberative processes to facilitate engagement and enhance participation of otherwise marginalised communities
- Pilot the solution with real users to evaluate the level of inclusiveness and accessibility of the novel proposed democratic spaces

3. The iDEM Consortium

The iDEM consortium is composed of research institutions, experts in text simplification, user organisations, citizens' representatives, non-profit organisations and software developers which form an interdisciplinary and complementary team from five EU countries (Austria, Germany, Ireland, Italy, and Spain) and one non-EU country (UK).

1. Universitat Pompeu Fabra (UPF, Spain)
 - (a) Dept. of Information & Communication Technologies (DTIC)
 - (b) Faculty of Law
2. University of Leeds (UOL, UK)

3. CFS GmbH (CAPITO, Austria)
4. NEXUS Institut für Kooperations Management und Interdisziplinäre Forschung GMBH (NEXUS, Germany)
5. Organización de entidades en favor de las personas con Discapacidad Intelectual de la Comunidad de Madrid (Plena Inclusión Madrid) (PIM, Spain)
6. The National Microelectronics Applications Centre Ltd (MAC, Ireland)
7. Anffas Nazionale (ANFFAS, Italy)
8. Fundación Cibervoluntarios (CIB, Spain)
9. ActionAid International Italia E.T.S. (AAIT, Italy)
10. Institut Municipal de Persones amb Discapacitat (IMPD, Spain)
11. Barcelona Ombudsman's Office (BOO, Spain)

The consortium's interdisciplinary expertise enables to achieve the iDEM objectives:

UPF covers two key areas of research: theory of deliberative democracy and new technologies at the service of citizen participation, and from a technological perspective, experts in automatic text simplification. NEXUS brings experience in the design of deliberative and participative processes at national and international levels applying user-centred design to promote collaboration and sustainable consensus in designing our solution, from a practical social science perspective, CAPITO brings its industrial expertise in text simplification and easy-to-read annotation technology, involving users in creating and annotating corpora for natural language processing. UOL has substantial expertise in translation, text classification, and developing algorithms for low-resources domains and languages. MAC, an Irish innovation company, will deliver leading-edge products and services in software, electronics and wireless communications to implement the solution with the technical experts. User organisations engage users: PIM federates around 120 associations and foundations that work with our target group, ANFFAS federates around 200 associations and foundations for people with disabilities, while IMPD works for the rights of the persons with disability to be included in all aspects of society in the City of Barcelona. CIB in Spain and AAIT in Italy, are ONGs working in social issues engaging the civil society in civic participation, resiliency, responsibility and democratic quality, which are key to engage participation and drive testing of the solution with citizens. Finally, BOO brings the human rights perspective by engaging underrepresented citizens in democratic processes.

4. Text Simplification and Generation

Early research on text simplification applied rule-based methods for syntactic simplification and corpus-based unsupervised techniques for lexical simplifications [8, 9].

Where parallel complex-simple sentences are available (e.g. English Wikipedia and Simple English Wikipedia pairs) text simplification can be addressed as monolingual Statistical Machine Translation (SMT) [10, 11]. In recent years, Neural Machine Translation based system (NMT) have been applied in text simplification [12], outperforming SMT models in terms of simplicity, adequacy, and content preservation of the output. After the release of the Transformer architecture in NLP [13], an approach based on it was applied to simplification, obtaining state of the art performance by including, in addition to the parallel complex-simple training data, a paraphrase database. More recently, there has been increased interest in conditional training sequence-to-sequence models (e.g. embedding control tokens during training), being applied for example to control summarization output or to control the style of the generated text (e.g. politeness). In text simplification, this method was used to control the "grade level" of the simplified text, its length, or its syntactic complexity, achieving very promising results. Recent research has shown that adding control tokens [14] does help improve the performance of sentence simplification models quite significantly, achieving state of the art in English and Spanish [15] using large pre-trained language models [16] (e.g. T5/mT5 from Google or mBART from Facebook). Concerning lexical simplification, several past approaches used traditional raw count vectors word-vectors and available dictionaries for modelling word semantics and to select simple word replacement for complex words [17]; these traditional vector models have recently been substituted in simplification approaches by word embedding, which are learned from huge text collections. Nowadays, large-scale language models such as BERT and its variations have been applied to predict substitution candidates for complex words. For example, LS-BERT uses the masked language model (MLM) of BERT to predict a set of candidate substitution words and their associated probability [18, 19]. In this context, the MLM predicts substitute words which are ranked for simplicity using: probabilities, a language model, a paraphrase database, word frequency and word semantic similarity with the target word. These models, however, have clearly neglected bias-related aspects when proposing simplifications. Generative AI, such as ChatGPT – based on Generative Pre-trained Transformers (GPT) [20], show the possibilities of In-Context Learning. However, at the moment they have been outperformed by specialised training [21].

5. Democratic Participation Platforms on the Web

E-democracy refers to the use of information and communications technology (ICT) to create channels for public

consultation and participation, for example for elections, consultations or referendums, and over the years several online platforms have been introduced. These platforms are the object of study of iDEM since they will be assessed to implement our digital deliberative spaces. Our analysis so far has identified the following tools which could benefit from the technology to be developed in iDEM: (i) Bang the Table¹² is a digital engagement platform that enables communities to participate in decision-making. It provides tools for online discussions, surveys, and feedback that help decision-makers gather feedback and make informed decisions. (ii) ChangeAView¹³ is a platform that facilitates respectful, evidence-based discussions. It encourages users to change their views on a topic after considering different perspectives, facts, and arguments. (iii) CitizenLab¹⁴ is a platform that empowers citizens to participate in local democracy. It enables users to propose ideas, vote on proposals, and engage in discussions with local officials and community members. (iv) Decidim¹⁵ is an open-source participatory democracy platform that enables citizens to co-create policies and make collective decisions. It provides tools for deliberation, voting, and proposal creation. (v) Consul¹⁶ is an open-source platform for citizen participation and engagement in government. It provides tools for proposal creation, voting, and deliberation, as well as open data and analytics for decision-makers. And (vi) Reflect!¹⁷ is a platform for online deliberation that enables participants to share their opinions, discuss ideas, and propose solutions through moderated discussions. Some of the above tools are well established such as Decidim, some are open-source, and only a few offer accessibility functionalities (e.g. CitizenLab). An example of the use of on-line platforms for deliberation and participation is the Conference of the Future of Europe, which, empowered by the European Decidim ecosystem, enabled citizens from all over the EU to share their ideas and points of view via online events. However, in spite of its accessibility to information in multiple languages of the EU, there was no support for engaging underrepresented groups such as people with reading and writing disabilities. Most platforms do not provide support, such as easy-to-read and text generation capabilities, for people with special needs, iDEM will contribute to fulfil this need. We aim at making iDEM services available to a wide range of platforms' providers.

¹²<https://engage.bangthetable.com/>

¹³<https://www.bbc.com/news/blogs-trending-48579597>

¹⁴<https://www.citizenlab.co/>

¹⁵<https://www.decidim.barcelona/>

¹⁶<http://www.consulproject.org/en>

¹⁷<https://reflect.gatech.edu/>

6. The iDEM Use Cases

In order to test the new iDEM democratic spaces we will develop and implement three use cases each concerned with a different language (Catalan, Italian or Spanish), intersectionality (people with disabilities, migrants, the elderly), and deliberative approach (citizen's assembly, mini-public, consultation). The use cases follow a very detailed prototyping process which will focus on collecting requirements from users and institutions, text simplification functionalities, tools and formats such as questionnaires, for engaging hard to reach groups and vulnerable populations, always considering a gender perspective. Facilitators of the deliberative and participatory processes will be interviewed in order to understand the challenges of marginalized groups in processes of political participation. The three use cases will be run in sequence to allow feedback to be integrated into the iDEM solution (technological and methodological) – See Figure 1. A thorough evaluation of the use cases by external experts will be carried out to assess the inclusiveness and the accessibility of the proposed solution.

7. Outlook

To be able to make informed decisions and actively get involved in society, people need to understand written information, especially information to participate in democratic processes which affect their lives. Unfortunately information used by policy-makers and democratic institutions require high literacy levels. Although several organizations offer accessible information in many countries, they depend on well-trained human editors who can only produce a handful of documents at the time and at a high cost. The iDEM project will help improve the accessibility to information in democracy by creating novel participatory spaces in which text simplification technology and natural language generation will be used to adapt texts or generate new ones thus facilitating participation in democratic processes.

8. Lay Summary

There are silenced voices in democratic spaces as millions of people struggle with language barriers, and are excluded from key deliberative processes. In the European Union (EU) alone, around 6 million individuals, and globally over 90 million, have difficulties to read, write, and comprehend language, which restricts their full participation in democracy. In this context, the EU-funded iDEM project aims to break these linguistic barriers and begin a new era of inclusive and participatory democratic spaces for marginalised communities. Specifically, the project will create next-generation multilingual models,

automatically adapting texts to the needs of the people, and provide Artificial Intelligence tools for unbiased communication. iDEM's overall goal is to promote inclusivity and representation for marginalised groups.

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