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# LITHME: Language in the Human–Machine Era

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## Abstract

The LITHME COST Action brings together researchers from various fields of study focusing on linguistics and technology. We present the overall goals of LITHME and the network’s working groups focusing on diverse questions related to language and technology. As an example of the work addressing machine translation within LITHME, we discuss the activities of the working group on language work and language professionals.

## 1 Introduction

Language in the Human–Machine Era (LITHME) is a research and innovation network funded by COST (European Cooperation in Science and Technology). It is coordinated by the University of Jyväskylä, Finland, and has more than 300 members from universities, research institutions and companies in 52 countries (all 27 EU states and 25 other countries worldwide).

The network brings together researchers, developers and other specialists with diverse backgrounds with the goal of sharing insights about how new and emerging technologies will impact interaction and language use. By “human–machine era”, we envision a time when humans will be interacting and conversing with artificial intelligence (AI) technology that is not confined only to mobile devices but integrated with our senses through virtual and augmented reality. Machine translation (MT) is one of the key technologies enabling communication across languages.

LITHME focuses on two aspects which are shaping human communication (Sayers et al., 2021). On the one hand, we will increasingly be speaking *through* technology, which can translate between languages in real time as well as alter voices and facial movements. On the other hand, we will also be speaking *to* technology, which will understand both the content and the context of natural language. This will lead to increasingly substantive and meaningful real-time conversations with devices like smart assistants. Enhanced virtual reality featuring lifelike characters will enable learning and even socialising among intelligent and responsive artificial partners.

Throughout its four-year duration (2020–2024), the LITHME network of researchers aims to explore the impact that various technologies, including MT, have on language and communication. We investigate the opportunities, the new ways to talk, to translate, to remember, and to learn, but also the uncertainties and potential inequalities or other adverse effects.

Deliverables consist of open-access forecast reports, the first of which was published in 2021 (Sayers et al., 2021), multimedia presentations, guidelines on ethics, safety, equality and accessibility for emerging language technologies, and interim reports of activities on the LITHME website.<sup>1</sup> LITHME organises an annual conference and a training school focusing on language and technology, workshops, short-term scientific missions<sup>2</sup> and invited talks. In addition to collaboration between researchers, LITHME aims to facilitate the involvement of stakeholders outside of academia, such as corporate and non-profit technology developers.

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<sup>1</sup><https://lithme.eu/>

<sup>2</sup><https://lithme.eu/short-term-scientific-missions/>

## 2 LITHME Working Groups

LITHME features eight working groups<sup>3</sup> (WGs) which focus on different areas of research related to language and technology.

- **WG1** Computational linguistics
- **WG2** Language and law
- **WG3** Language rights
- **WG4** Language diversity, vitality and endangerment
- **WG5** Language learning and teaching
- **WG6** Ideologies, beliefs, attitudes
- **WG7** Language work, language professionals
- **WG8** Language variation

At the centre of LITHME, WG1 aims to produce forecasts of various relevant technologies, and other WGs focus on how these technologies are influencing specific areas of language use. The development of MT is of course one of the issues closely followed in WG1, and MT can be seen to play a role in all of these areas covered by the working groups. The focus on MT, specifically, is perhaps clearest in WG7, as the work of language professionals such as translators is one area where the impacts of MT have been most pronounced. We next discuss the aims of this working group in more detail.

### 3 Language professionals in the human-machine era

The LITHME working group 7 brings together researchers and practitioners with expertise in diverse areas of interest from translation and interpreting to clinical linguistics, from terminology to copywriting and language technology to examine how the field is being shaped by MT as well as other technologies. As professionals involved in working with language have varied titles and profiles, one of the key tasks for WG7 is to map and conceptualise what “language work” is, who “language professionals” are, and how technology is changing their work.

For various types of language professionals, technology is already a significant part of their everyday work. A typical case might be that of translators interacting with MT, which is an increasingly common process and has had profound effects on the field. Professionals also communicate and interact through technology, for example, using remote interpreting solutions or collaborative platforms. In the future, the use of speech and touch interfaces, as well as augmented and virtual reality, also seems poised to take a larger role in the professionals’ interaction with their tools. While technology can be a useful tool, for example, for supporting wider accessibility, it may also bring potential adverse effects to working conditions or create new barriers. WG7 aims to form a deeper understanding of how MT and other technologies are used in language work, how they affect the future roles of professionals and machines in language work, and how the training of future language professionals can adapt to these changes.

Activities of WG7 include regular meetings and invited talks from various areas of language industry, conceptual mapping of language professionals, a meta-survey of the use of MT by translators, and a survey focusing on the use of MT by language professionals other than translators or interpreters. Based on this work, the working group aims to produce reports and forecasts on the implications of technology for theory, practice, ethics and training in the area of language work.

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<sup>3</sup>More detailed descriptions of the WGs and their activities: <https://lithme.eu/working-groups>