



Executive Agency, Education, Audiovisual and Culture



## **Towards European Language Learning for MEDICAL professionals (TELL-ME)**

Final Report

Public Part

## Project information

Project acronym: TELL-ME  
Project title: Towards European Language Learning for MEditional professionals  
Project number: 517937-LLP-I-2011-I-UK-LEONARDO-LMP  
Sub-programme or KA: Leonardo da Vinci  
Project website: <http://tellme-project.eu>

Reporting period: From 1 January 2012  
To 31 December 2013

Report version: 1  
Date of preparation: 20.02.2014

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This project has been funded with support from the European Commission.

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## Executive Summary

The TELL-ME (Towards European Language Learning for MEdical professionals) is a project that began in January 2012. The consortium for this project, led by the Research Group in Computational Linguistics (RGCL), part of the Research Institute of Information and Language Processing (RIILP), a department at the University of Wolverhampton (WLV), comprises of 6 partners from 3 different countries, those being, United Kingdom, Germany, and Spain. The project aim was to help medical staff to learn a European language and improve communication with patients, thus removing the barriers of medical communication in multilingual and multicultural environments in the European Union.

The project was aimed at developing a set of learning materials and support tools for teaching vocationally relevant English, Spanish or German to health professionals, helping their communication. TELL-ME has been the first project to incorporate new language learning methodology into a coherent environment. It has provided users with access to personalised learning material in various forms including video, audio, corpora, and a dictionary, thanks to the interactive exercises that highlight gaps in learner knowledge. The exercises are, in turn, efficiently semi-automatically generated using pioneering exercise generation engines incorporating progressive NLP (Natural Language Processing) technology. The initiative has provided self-study material for English, Spanish and German which uses vocabulary specifically aimed at medics.

English, Spanish and German are amongst the most spoken languages in Europe. Thus it is likely that patients from one EU member state seeking medical treatment in another will speak or understand one of these. However, there is a lack of resources to teach efficient communication between patients and medics. To combat this we have provided an innovative language learning platform which includes learning materials for Medical English, Spanish and German aimed both at medical staff already in the other countries or undertaking cross-border mobility. The learning process was supported by computer-aided tools based on innovative Natural Language Processing techniques, which is a distinct novelty of the project proposed. The course features tools and resources which will in particular facilitate the language *communication* process of medical staff with colleagues and patients in real contexts.

The project therefore assisted with improving medical communications across Europe, supporting those medical professionals already working outside their home EU country and providing the tools for others to undertake such mobility for work.

TELL-ME project aimed to affect three groups:

- Medical professionals (MPs) wishing to learn a language in order to work abroad.
- MPs wishing to learn a language in order to treat foreign patients in their home country.
- Patients whose native language is not the language of country in which they are seeking treatment.

The consortium achieved these aims by collaboratively working together in developing learning situations, which were appropriate for the target users identified. In addition, the consortium actively involved learners and other potential end users in order to provide tools which facilitate effective solutions to engaging end users with languages and promote a better understanding between countries and culture.

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# 1. Project Objectives

The TELL-ME project aimed to improve medical communications across Europe, supporting those medical professionals already working outside their home EU country and providing the tools for others to undertake such mobility for work.

The ultimate aim of the project was to help prevent situations like the recent case of Dr. Ubani, a doctor who moved from Germany to provide locum services in the UK, and who incorrectly treated several patients, causing the unnecessary death of one, due largely to a breakdown in communication. We hope that the TELL ME project will improve treatment and the patient experience throughout the EU.

The project aims to affect three groups:

- Medical professionals (MPs) wishing to learn a language in order to work abroad.
- MPs wishing to learn a language in order to treat foreign patients in their home country.
- Patients whose native language is not the language of country in which they are seeking treatment.

This suggests that the project can have an influence through the EU. It will help not only English, German and Spanish native speakers working in their home countries, but also MPs from countries such as Poland, Sweden or Bulgaria who wish to work in another EU country. In addition, it can have an influence outside the EU as citizens improving their English or Spanish skills could work in North and South America and Oceania, and non-EU patients visiting the EU are likely to be able to use one of these languages if seeking treatment.

The project consortium is aware that a key priority of the European Union (EU) is to create conditions to aid its citizens' mobility [1]. This includes encouraging both medical professionals and patients to move freely to other EU states [1]. A further key priority under discussion in the EU parliament [2] is easy access to high quality healthcare and its enhancement across borders. To ensure more effective health services, the language barrier must be removed. We feel the best way to do this is to teach languages to medical professionals (i.e. doctors and nurses).

Figures provided to the projects medical partners suggest that the following estimated number of people could benefit from the educational resources developed in the TELL ME project:

- UK: 4,000 UK, 200 EEA and 1,300 non-EEA medical professionals
- Spain: 200 employees and 12,000 patients p.a. who are not native Spanish speakers (most of whom speak or understand English or German).
- Germany: 1,400 students interested in languages study as part of their training (15% of whom are not native German speakers).

In order to realise these objectives, by using NLP (Natural Language Processing) technology, the project developed a complete practical course for teaching Medical English

to health professionals, supported by self-study and self-assessment tools, thus making it a flexible learning tool to fit the multiplicity of work situations.

In addition, specific tools were developed as part of the platform to assist medical staff in language communication.

Changes from the current state-of-the-art are:

- One platform/portal is available which provides all of the features of the above resources, available in one place.
- The TELL ME resources have been accessible for free during the lifetime of the project and will continue to be freely available for at least two years after the end of the project.
- The TELL ME resource is aimed specifically at medical professionals and gives them an opportunity to make a lasting impact on their foreign language skills, rather than learning a few phrases or learning a language but not being able to apply it in real-life situations.

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## References

[1] Health-EU. The Public Health Portal of the European Union. Mobility in Europe.[Accessed 29th October 2010]. Available at: [http://ec.europa.eu/health-eu/care\\_for\\_me/mobility\\_in\\_europe/index\\_en.htm](http://ec.europa.eu/health-eu/care_for_me/mobility_in_europe/index_en.htm)

[2] European Parliament. Cross-border health care - Françoise Grossetête MEP explains ahead of vote. [online]. [Accessed 29th October 2010]. Available at: [http://www.europarl.europa.eu/news/public/story\\_page/066-89972-298-10-44-911-20101025STO89929-2010-25-10-2010/default\\_en.htm](http://www.europarl.europa.eu/news/public/story_page/066-89972-298-10-44-911-20101025STO89929-2010-25-10-2010/default_en.htm)

## 2. Project Approach

The project has specific long-term targets and the dissemination strategy employed by the consortium has the generic over-arching objective of assisting medical practitioners to improve their performance with other colleagues, their communication with patients, with knock-on effects for their general or specific medical expertise and future employability both within the EU and in the wider world. Through the dissemination activities undertaken the project aims to increase accessibility and visibility of the course produced.

In order to achieve the main project objectives, the consortium employed a robust project management plan that enabled the project to progress within the specific timeframe. The plan presented the partners with different stages to complete in order to meet the main aim highlighted above and to raise awareness of the project.

The project had two clear strands identified within the implementation plan:

1. Systematic project management.
2. Collaborative approach in developing the learning materials and the accompanying tools, including dissemination of the project activities and results.

The project employed a collaborative approach to its implementation and encouraged all partners to contribute and input across all aspects of the project and at all levels. At management level, it used a systematic approach for the execution of the project ensuring that planned activities within the project were realistic and achievable.

With regards to the development of the main results of the project, the consortium used a collaborative approach to develop materials, which have been used by learners in the medical field. The approaches used to develop the materials are innovative as the learning situation created encourages use of problem-solving skills combined with language learning and cultural understanding.

The consortium achieved the aims by collaboratively working together in developing learning situations which are appropriate for the target users identified. In addition the consortium actively involved learners and other potential end users in order to do this and promote a better understanding between countries and culture.

The project was split into six work packages (WPs):

- WP1 – Management
- WP2 – User requirements
- WP3 - Implementation
- WP4 – Quality
- WP5 – Exploitation
- WP6 – Dissemination

Each stage involved partners input and collaboration to maximise the quality of the project materials and results more generally.

WP1 and WP4 ran from month 1 to month 24, allowing the consortium to monitor the project and maintain quality throughout. WP6 also started in month 1, allowing the consortium to disseminate information from the start of the project. The Promotion of the projects concept from an early stage helped underpin project longevity after the project ends. WP2 started in month 2, giving the consortium a concentrated period to ascertain user requirements before WP3, which ran from month 5, giving ample time to develop the learning materials and make changes based on user feedback before the final version was produced. WP5 started in month 12, allowing enough time to act on feedback after trialling the project prototype with users.

The project's major milestones were as follows:

- Month 1 – information meeting for project co-ordinator in Brussels
- Month 3 – first project meeting
- Month 4 – user requirements investigated
- Month 6 – completed quality plan, completed dissemination plan
- Month 13 – completed exploitation plan, first prototype of platform completed
- Month 15 – user feedback based on first prototype
- Month 21 – amended prototype of platform based on user feedback completed
- Month 23 – final dissemination event in Brussels.

Measurable indicators for the above were:-

- Months 1+2 – Project co-ordinator attended meeting in Brussels. All practical, financial and administrative aspects of the project and reporting requirements were fully understood by the contracting institution. Minuted meetings between project co-ordinator and all internal WLV teams took place to confirm this.
- Month 3 – All partners attended a first Management meeting and fully understood their roles, timelines for completion of WPs, reporting duties, financial regulations and supply details. Arrangements were confirmed in documentation received by all. Logo and website produced.
- Month 4 – Each medical partner participated in the user requirement analysis by contacting medical students via questionnaire Month 6 - Quality and dissemination plans were completed.
- Month 13 – Exploitation plan completed. Following completion of first prototype, software prototypes with proven functionality available (tested internally and externally).
- Month 18 - Following completion of second prototype, software prototypes with proven functionality available (tested internally and externally).
- Month 19 – User feedback report completed.

- Month 23 – All project deliverables complete. Self-assessment materials put into practice in relevant medical institutions in all partner countries. Full dissemination at regional, national and European level. Partners agreed deadlines to supply the required documentation and financial details for the final report well in advance of its deadline.

Alongside the development activities, the approach used for maximising the project impact, was that of engaging short and long term target groups in the testing of the materials. This was achieved through the dissemination of activities using various methods as described in the 'Project Outcomes and Results.'

The activities identified in both the dissemination and exploitation plan aimed at reaching the widest possible audience to maximise project visibility and future impact. The main strategy for reaching the short term targets have included targeted resonance within own institutions, news releases, specific project literature, links to own institution websites, and the project website (<http://tellme-project.eu/>) which have reached a wider number of groups from those envisaged.

The screenshot shows the TELLme project website. The header features the TELLme logo, navigation links (HOME, ABOUT, PARTNERS, OUTPUTS, NEWS, EVENTS, BLOG, LINKS), social media icons, a search bar, and a Google Translator widget. The main content area includes a large banner with 'COMMUNITY', 'PROFESSIONALS', and 'KNOWLEDGE' icons, and a photo of a man. Below the banner are sections for 'Welcome to TELL-ME', 'News' (with a post from 15 JAN in Dusseldorf), 'Events' (with a post from 05 NOV in Brussels), 'PRIVATE AREA', 'OUTPUTS', 'BLOG', and 'SURVEYS'.

The project website acts as an information hub for the project and is available in all the languages of the consortium. It has been regularly updated by the project partners and contains all the information about the project, the consortium, project activities, achieved outcomes such as leaflets, newsletters etc.

The project has specific long-terms targets and the dissemination strategy employed by the consortium has the generic over-arching objective of assisting medical practitioners to improve their performance with other colleagues, their communication with patients, with knock-on effects for their general or specific medical expertise and future employability both within the EU and in the wider world. Through the dissemination activities undertaken the project has increased accessibility and visibility of the course produced.

### 3. Project Outcomes & Results

The project has been presented using the literature developed during the first year followed by demonstrations of its resources in the second year. These methods have helped to generate further interest. The consortium have finalised the resources for the demonstration prototype which has been put through rigorous internal testing. The end users selected have also been directly involved in the evaluation, which has also enabled the project to reach a wide short term audience.

The user requirements study was carried out via questionnaire and received positive responses from the project's target groups. It also reached a larger number of people than had originally been anticipated. As many people had shown their interest in participating in the evaluation of the prototype, the clinical partners were able to select a wide range of individuals from the main targets groups for testing purposes, therefore increasing interest and usage of the final product. Feedback received was incorporated, where possible, in the final version of the learning materials and tools.

All public presentation tools such as project leaflets and newsletters have been made available on the website: [www.tellme-project.eu](http://www.tellme-project.eu). All dissemination materials have been produced in all languages represented in the consortium so as to reach the wider community within the short-term targets of the project. The website is also available in all 3 languages and viewers can easily switch from one language to another.

Now we have reached the end of the project the following outcomes have been completed:

- Project meetings 1 (UK), 2 (ES), 3 (DE), 4 (UK) and 5 (BE) have taken place
- Attendance at dissemination event in Brussels
- Questionnaire developed and distributed to potential end users
- User requirement report produced as a result of the questionnaire survey
- Development plan implemented
- Project logo developed
- Project web site live
- Promotional materials in English, Spanish and German
- Press releases in English, Spanish and German

The strategies employed to ensure high visibility of the project was:

- Dissemination through own institutions and existing networks.
- Liaison with key stakeholders and potential end users.
- Representations at key events such as conferences and seminars/workshops.
- External evaluation of the project.
- Press/news releases in all the languages of the consortium.
- Leaflets, cards and newsletters in all the languages of the consortium.

The main tools used to increase the visibility of the project have been the project website, and the project leaflet.

The project work packages mainly ran as scheduled. Most of the work packages ran throughout the duration of the project.

Apart from the educational resources themselves, a novel approach for language courses was pioneered in the TELL ME project. This was necessary because of the wide range of communication scenarios that medical professionals need to practice, related to interactions both with patients and with other medical staff. In addition to this, each medical specialisation has typical scenarios which vary significantly or do not occur at all in other specialisations.

This diversity poses a difficulty to creating language courses for medical professionals: either make a generic course for the most common scenarios (covering the basics for a wide audience), or develop a novel course for each separate speciality (more expensive process, addresses a smaller audience).

The platform developed in TELL ME tackles these difficulties by providing a single course environment which combines the resources of several specialised courses. All resources are linked to language skills, enabling progression to the next level in multiple ways: the users choose are the learning units most relevant to their speciality using the categorisation system and practice their language skills to progress.

A novelty for an e-Learning platform is the personalised self-assessment framework which automatically links each learning units to any available exercises that are relevant to its content and to the user language level. In this way, the user does not have to follow a rigid, pre-defined succession of lessons. Instead he can focus on those communication scenarios relevant to them, while the platform links suitable exercises and learning materials to each learning unit to ensure that language learning objectives are met.

Instead of attending 'virtual classes' as is common in most e-learning courses, medical practitioners engage with the course similarly to the way they read news or the way they read medical literature: the more resources they engage with, the more they will learn. Medical practitioners do not have to follow an entire course to benefit from only a fraction of materials, instead all learning materials are matched to his level.

## 4. Partnerships

All partners within the consortium held experience of major transnational projects and have been used to working within a varied language and cultural context. This benefitted the project development as it impacted directly on their ability to develop appropriate learning situations, which encourage language and cultural understanding. Many of the partners have long-standing relationships in working together which has also been a great benefit to the project development and the effective integration of new partners. This understanding formed the basis of the organisation of the work plans and tasks.

The six partners of the consortium all worked well together. While the three academic partners had already worked together in the past, the three medical partners were new contacts. This enabled new partnerships to be formed between the academic and medical partners in the three project countries, and between the three medical partners.

The consortium spreads across a large geographical area in Europe (UK, Germany, and Spain) providing a good representation and impact, and it also represents a varied cross-sectorial area. This large geographical area and cross-sector working provides added value to the project objectives in terms of achieving its targets.

The Consortium is comprised of a coordinator (Partner 1) who has extensive expertise in Computational Linguistics and Information and Language Processing. Partner 2 an academic institute in Spain, active in many European funded projects and is the international leader in the field of corpus-based Translation Studies. The academic institute based in Germany is known for its expertise in developing technology-based services such as terminology databases, ontologies, translation memory systems, etc. Of the medical partners, the partner based in the West Midlands, UK, trains 5,100 doctors and dentists each year in 12 faculties covering 65 specialities, with the training lasting from six to eight years. The medical partner based in Malaga, Spain has received its seal of quality from the regional health authority. Most of its 40,000 annual patients come from the public health service. There are about 220 employees dealing with a very wide range of medical conditions. A very large 30% of its patients are non-Spanish nationals from, in particular, the UK, Germany, Scandinavia and North Africa - their most common first languages or languages of communication being English and German. The final medical partner is based in Germany and is responsible for academic and clinical training of medical students, including supporting them to study and participate in internships abroad. Being linked to the University Hospital, it also has access to an experienced health care provider and large employer.

The project consortium was carefully planned to obtain the best possible partner balance. The three academic partners, each speaking a target language of the project, have collaborated both together and in other consortia on many European projects in the past.

Medical partners were sought in the countries of the academic partners. They all had some responsibility for local training, providing valuable access to potential end users to whom the project could contact to get user feedback on deliverables. Crucially, these organisations are in a position to extend TELL ME's life after project end, by making it a part of continuing professional development (CPD) within their training departments and by offering it to users. All partners deal with a number of trainees, employees and patients each year.

## 5. Plans for the Future

The partnership achieved a number of key results and outcomes as specified in the 'Project Outcomes and Results' section.

Following the production of the project prototype, it was distributed to a number of medical professionals in the three project countries, who were asked to provide feedback. The consortium made full use of the feedback provided by users and improved the language learning platform, tailored according to the user feedback in order to be as relevant as possible to their needs. This final version was introduced to users and policy makers throughout the European Union through a project showcase event in Brussels. This event was the key deliverable of the Dissemination work package. Press releases were also sent out to mark the launch of the prototype and final versions of the product, while interested parties were also informed through e-marketing and newsletters. Promotional materials continued to be distributed at relevant conferences and events.

An exploitation plan and an IPR agreement were created as part of the Exploitation work package. These looked at how the project web site and the language learning platform will continue to be accessible following the end of the project.

During the final months of the project the consortium continued to engage with end users and the wider community by disseminating project information and activities. This has taken the form of updating information on the project website, producing subsequent editions of the e-newsletter and project publicity materials, organising local events for dissemination purposes and continuing to engage with stakeholders in order to achieve the goal of maximising the impact of the project results and outcomes. The final dissemination activity culminated in the Conference held in Brussels at the end of October 2013. The conference not only gave the opportunity to present the project and its results, but also provided opportunities for professional development and an opportunity to use the platform.

## 6. Contribution to EU policies

This project meets several European objectives. Notably, in accordance with the “New skills for New Jobs” document (SEC(2008) 3058, 16.12.2008), the project will impact directly on health care workers, whose sector is identified as one of the “best prospects of job creation up to 2015” and thus influencing long-term trends in job creation and labour supply. Furthermore, our focus on language learning meets with the Council of Europe’s commitments to promote linguistic diversity and language learning in the field of education, as per the framework of the European Cultural Convention, (1954). By improving the language abilities of health care workers, our project promotes mobility and will enable gaps in the labour market not only to be filled, but to be filled specifically by EU citizens rather than third country medical professionals (perhaps currently advantaged by having English, Spanish or German as a national language in their country). Of course, this will go towards the employment targets set in the “Europe 2020” growth strategy (and improved employment targets should affect the poverty/social exclusion targets).

Through the promotion of mobility, our project helps with the personal development of EU medical professionals, who can pick up valuable skills and experience by working in health systems outside of their own country. Enabling EU citizens to work outside their own country also benefits equality and diversity, by allowing citizens to get to know people from other countries, thus breaking down stereotypes.

In terms of competitiveness, EU medical professionals who wish to work outside the EU, e.g., in North or South America or Oceania, will find themselves at an advantage if able to use English and/or Spanish effectively in the workplace. Additionally, those medical professionals not planning to move may still be deployed overseas for disaster relief or other international crises thanks to their linguistic proficiency.

