EMITEL project: global educational resources in the field of medical engineering and physics

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The EMITEL (European Medical Imaging Technology e-Encyclopaedia for Lifelong Learning) Project and Consortia has developed an original e-learning tool to be used for lifelong/continuing learning of a wide range of specialists in Medical Physics and Medical Imaging Technology. EMITEL comprises an on-line Medical Physics Dictionary with cross-translations in more than 25 different languages and online Encyclopaedia with over 4000 explanatory articles. The on-line learning resource is available on-line under www.emitel2.eu.

Following the success of the first e-Learning projects in the profession (EMERALD and EMIT - now used in 70 countries), the core of the Consortia initiated the EU project EMITEL to widely spread its expert knowledge throughout various professional and geographical areas, thus turning EMITEL Dictionary and Encyclopaedia into a global Educational resource.

Keywords medical engineering; medical physics; encyclopaedia; dictionary; on-line; e-learning; EMITEL; EMIT; EMERALD

1. Introduction

The objective of the project European Medical Imaging Technology e-Encyclopaedia for Lifelong Learning (EMITEL) is to develop an original e-learning platform, to be used for lifelong/continuing learning of a wide range of specialists in Medical Physics and Medical Imaging Technology. The system is linked to the existing EMERALD and EMIT materials (developed by the core of the present Consortium) and additionally includes Radiation Protection, Hospital Safety and Radiotherapy terms, thus forming a one-stop knowledge database for those who want to acquire a specific competence and for those who want to refresh their knowledge and to learn about the new developments in the profession. The platform offers multilingual Digital Dictionary with cross-translations in more than 25 different languages, which will help its use in many countries all over the world.

2. The EMITEL Project and Consortium

Medical Physics is a very dynamic profession – the last 20 years have changed dramatically most of its areas, introducing new methods and equipment with speed, which requires constant update of one’s knowledge. EMITEL is an innovative e-Learning tool - a large searchable Web database, including multilingual Digital Dictionary of Terms with explanatory articles for each term. Figure 1 represents the web portal leading to the EMITEL Encyclopaedia and Dictionary. The total number of terms in English is over 4000. The Dictionary cross-translates to/from any two languages from its database. Each term is also covered by an explanatory article in English (or hyperlinked to an appropriate article). The length of the articles depends on the term. Most articles also include images, diagrams, and tables, as necessary.

The EMITEL project is developed and managed by an international consortium between the following institutions[1]:

- King’s College London, Dept. Medical Engineering and Physics, UK
- International Organisation for Medical Physics (IOMP)
- University of Florence, Italy
- Lund University Hospital, Sweden
- University of Lund, Sweden
- King’s Healthcare NHS Trust, UK
- AM Studio Ltd., Bulgaria

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The core of this partnership has worked previously in two successful Leonardo training projects EMERALD and EMIT – their materials are now used in 65 countries (EMIT Consortium received the Leonardo da Vinci Award in Maastricht 2004). Table 1 shows the close relation between the three major medical engineering and physics projects. The EMITEL Consortium will continue its function after the end of the project to assure constant update of the e-Encyclopaedia tool. The project additionally attracted new contributors - senior professionals from all over the world. These formed an International Network EMITEL (currently 250+ specialists from 35 countries), which will continue to support the EMITEL e-Encyclopaedia and Dictionary.

<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>EMERALD</td>
<td>e-Learning resources for training in Diagnostic Radiology, Nuclear Medicine and Radiotherapy</td>
</tr>
<tr>
<td></td>
<td>EMERALD2</td>
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</tr>
<tr>
<td>2002</td>
<td>EMIT</td>
<td>e-Learning resources for training in MRI and Ultrasound Imaging Technology</td>
</tr>
<tr>
<td>2006</td>
<td>EMITEL</td>
<td>European Medical Imaging Technology e-Encyclopaedia for Lifelong Learning</td>
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The EMITEL project was financially supported by the Partners above and the EU programme Leonardo da Vinci. Additionally, a number of distinguished colleagues generously agreed to support this important for our profession project by contributing to the translation of terms, development of articles, refereeing and dissemination of EMITEL.
The EMITEL Encyclopaedia has a wide audience, primarily amongst medical physicists at all levels, from trainees to senior members of the profession, but it is also used by members of related professions, such as clinical engineers, radiographers, doctors etc. Many users not having English as their first language access the encyclopaedia through the multi-language dictionary of terms.

The EMITEL website, encyclopaedia and dictionary can be reached on-line at the official EMITEL consortium website www.emitel2.eu or through the EMERALD/EMIT/EMITEL portal at www.emerald2.eu [2, 3]. The on-line EMITEL resource comprises 3 major sections – two of them acting as a stand-alone entities and advanced tool to combine all project features.

2.1 EMITEL encyclopaedia
The EMITEL encyclopaedia is the core of the EMITEL project and on-line resource. It offers access to the specialized knowledge database of medical engineering and physics terms and articles developed by the leading professionals, corresponding to the state-of-the-art knowledge in the area and acknowledged by various institutions and specialists around the world. This section acts as an encyclopaedia, search engine and a reference guide thus presenting the users the most accurate results matching their searches.

2.2 EMITEL dictionary
The EMITEL dictionary can be considered as a follow up of the EMIT project. This huge on-line resource can be considered as one of the world’s largest database of medical terms and the only one of its kind cross-translational platform in the area of medical engineering and physics. The use of the medical dictionary facilitates professionals around the world in their scientific and daily activities in exchanging their knowledge.

2.2.1 EMITEL combined/advanced features
The EMITEL combined feature offers the functionality of the encyclopaedia and the dictionary in one section. Search results generate both translational data and reference to articles in various areas of the medical engineering and physics. Figure 2 presents a sample search result generated by the EMITEL combined feature.
A dedicated Content Management System (CMS) has been developed to manage the EMITEL project on-line interface, dictionary and knowledge database and to allow future dynamic update the content of the e-Encyclopaedia over Internet.

3. Conclusion and future development

EMITEL project can be considered as one of the leading achievements in the area of practical application of e-learning in the area of medical engineering and physics. The dynamic real-time support of the electronic resource now provides professionals and communities throughout the world with a reliable source of knowledge in the field of medical engineering and physics.

At a later stage this material is planned to be additionally printed as a paper book. Following the success of the preceding e-Learning projects in the profession (EMERALD and EMIT - now used in 70 countries), the EU project EMITEL has spread widely its expert knowledge throughout various professional and geographical areas, thus turning EMITEL Dictionary and Encyclopaedia into a global Educational resource.

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References

