

## **OVOTRAIN On-line Virtual Vocational Training System**

K Bako, K Lengyel

TP Technoplus Ltd, Hungary

### ***Abstract***

OVOTRAIN On-line Virtual Vocational Training System is based on the successfully implemented Leonardo project entitled “Metallurgical Expressions Translation System” (Metaltransys). OVOTRAIN focuses on content and language integrated learning (CLIL) by creating a 7-language-internet based expression dictionary system in metallurgy and mechanical engineering completed with virtual vocational training opportunities. Metaltransys project has developed an illustrated English-German-Hungarian-Swedish language expression dictionary in metallurgy with 11000 terms and their explanations. OVOTRAIN translates dictionary to Czech, Italian and Polish, and develops virtual reality based training systems. Products in virtual reality provide producers and operators of equipment and machines, students and apprentices the opportunity for effective training and short-term adjustment to operating, control and process operations. It can be used on-line on website [www.ovotrain.com](http://www.ovotrain.com).

***Key words*** metallurgy, seven language dictionary, virtual vocational training

### **Introduction**

OVOTRAIN (On-line Virtual Vocational Training System) is based on the successfully implemented Leonardo project entitled “Metallurgical Expressions Translation System” (Metaltransys), no. HU/00/B/F/LA-136107. During the test and dissemination of the Metaltransys project, a real demand has been explored to expand the illustrated dictionary toward up-to-date vocational training methods. Therefore the OVOTRAIN, Leonardo project-no. HU/05/B/F/PP-170101, focuses on content and language integrated learning (CLIL) by creating a 7-language-internet based expression dictionary system in metallurgy and mechanical engineering completed with virtual vocational training opportunities. Similar on-line language training tool isn't existing in the market. Metaltransys project has developed an illustrated English-German-Hungarian-Swedish language expression dictionary in metallurgy with 11000 terms and their explanations. It can be used on-line free on website [www.metallingua.com](http://www.metallingua.com) with search function from February 2004 without password.

The OVOTRAIN project ([www.ovotrain.com](http://www.ovotrain.com)) started on 1 October 2005 and will end on 30 September 2007, is based on recognised needs. OVOTRAIN will integrate possibilities like virtual constructing of equipment, machines, production shops with access of the 7 language expression dictionary in metallurgy and mechanical engineering. OVOTRAIN will translate the existing dictionary to Czech, Italian and Polish, and develop virtual reality based training systems. Products in virtual reality provide producers and operators of equipment and machines, students and apprentices the opportunity for effective training and short-term adjustment to operating, control and process operations.

### **OVOTRAIN: A summary**

The on-line dictionary with virtual vocational training tools gives opportunity for learners to put their language skills to immediate use. CLIL will be used by students in the vocational training and workers in lifelong learning. OVOTRAIN develops new ICT tools, which give opportunity to users to apply the system in their professional as well as language learning. Target group: workers at their work in the sector, apprentices, secondary school and university students, translators etc. OVOTRAIN users will exercise assembling through digital mock-ups equipment, running these equipment, production shops supported them by entries from the dictionary, respectively creating new terms with explanations and illustrations in order to enlarge the dictionary escorted by increasing it's value. OVOTRAIN enables them to construct machines and equipment in the framework of virtual reality. Additionally, OVOTRAIN develops an internet based translation-teaching e-learning system to improve the writing skill of users and enhance the application in language learning - teaching.

In OVOTRAIN project the Hungarian University of Miskolc secures professionals in metallurgy and mechanical engineering and language didactics, and will evaluate the translation-teaching e-learning system and

secures quality control.. The Fraunhofer Institute for Factory Operation and Automation (Fraunhofer IFF), Germany, will develop the learning software of constructing virtual machines, equipment, production shops with interactive virtual reality-based training, which is far superior to present training systems. The Institut will involve the Hochschule Harz, which has the task to accomplish with it's tutors and apprentices the practical realisation of the continuously developed virtual training methods with feedback to the software. The Italian partner Vemek s.r.l. will translate the dictionary to Italian which gives opportunity to students and workers to apply the internet tool in their professional as well as language learning, creating new, for the time being missing terms in the course of preparations of mission in life. The Czech Foundrymen Society has interest to train their members in the local chapters up to date at European level. The AGH University, Poland, will elaborate the Polish version to be used in vocational training in secondary schools, universities and factories. The TP Technoplus, Hungary, introduces OVOTRAIN to the professional language teaching and virtual equipment, machine and production shop constructing in the in-service, off-school further vocational training for workers in factories, to make the vocational activity with virtual reality possible.

### ***Development of virtual reality based training system***

In the OVOTRAIN project new possibilities in supporting the learning process will be developed. The user of the dictionary can use interactive 3D-scenarios to get information about machines and processes, their functionalities and their behaviour. By the help of virtual reality methods the user can interact with the object of learning and is supported in learning in a new way.

Training scenarios as innovations contain the virtual representation of an equipment. Based on CAD-data the virtual models allow not only to illustrate the geometrical structure but also the functionality and behaviour of a machine. The user can interact with the models like with the real machine.

A virtual reality (VR) platform for the development and the usage of virtual training scenarios created at the Fraunhofer IFF is the basis for the learning modules. In the training environment the scenarios are used for learning purposes.

Learning contents can be rapidly transmitted on user's demand via modern communication systems such as the internet. Here, totally new possibilities are opening with the linkage of common hypertext documents with virtual training scenarios when the contents need to be transmitted via the internet. Besides using the scenarios via the net, they can also be worked on at local PC's.

The on-line virtual vocational training method will help modeling technological processes parallel to teaching the students in foreign languages. Tutors will be trained how to integrate it to lessons. OVOTRAIN will enhance the existing database of terms.

OVOTRAIN will integrate possibilities for virtual reality based training systems. With 3D interactive models of a melting furnace, a portal milling machine, power generator and other examples the user can perform the process operations of the equipment interactively and learn the parts of these in 7 languages and so combine technical and language learning. The models are created in an internet-based form, for example in VRML or X3D and are integrated into the dictionary.

The process of model creation using the VR Platform of Fraunhofer IFF is performed in two steps:

1. Create interactive 3D scenarios of technical processes, machines and systems and their functionality (Figure 1)
2. Transfer important functions in a web-based format (Figure 2)

### **Conclusions**

OVOTRAIN integrates widely and less widely used languages on the base of their interest in metallurgy and mechanical engineering. Parallel to this OVOTRAIN secures innovative teaching methods tailored to specific needs of vocational training and for learners in their lifelong learning efforts. OVOTRAIN enables that personnel with different levels of qualification can be effectively trained in their operation.

The Czech-English-German-Hungarian-Italian-Polish-Swedish language illustrated explanation dictionary with most modern, on virtual reality based vocational training system will be an unique language learning tool in metallurgy and mechanical engineering. Since there is no similar internet-based language-learning possibility, dissemination on this way can create a special network for professional language learning. Target group with medium or advanced level language knowledge can use the system on-line individually in their life long learning or in the frame of vocational training in vocational training schools and at universities. OVOTRAIN gives modern tool for test the knowledge by individuals or institutional level. Metallurgical and mechanical engineering professionals can use the system in both professional and language learning & teaching. New dimension opens by OVOTRAIN because it elaborates a new ICT tool to create equipment and supply with different language terms. The developed internet based translation system promotes the writing skill improvement of trainees.

### **Figures**

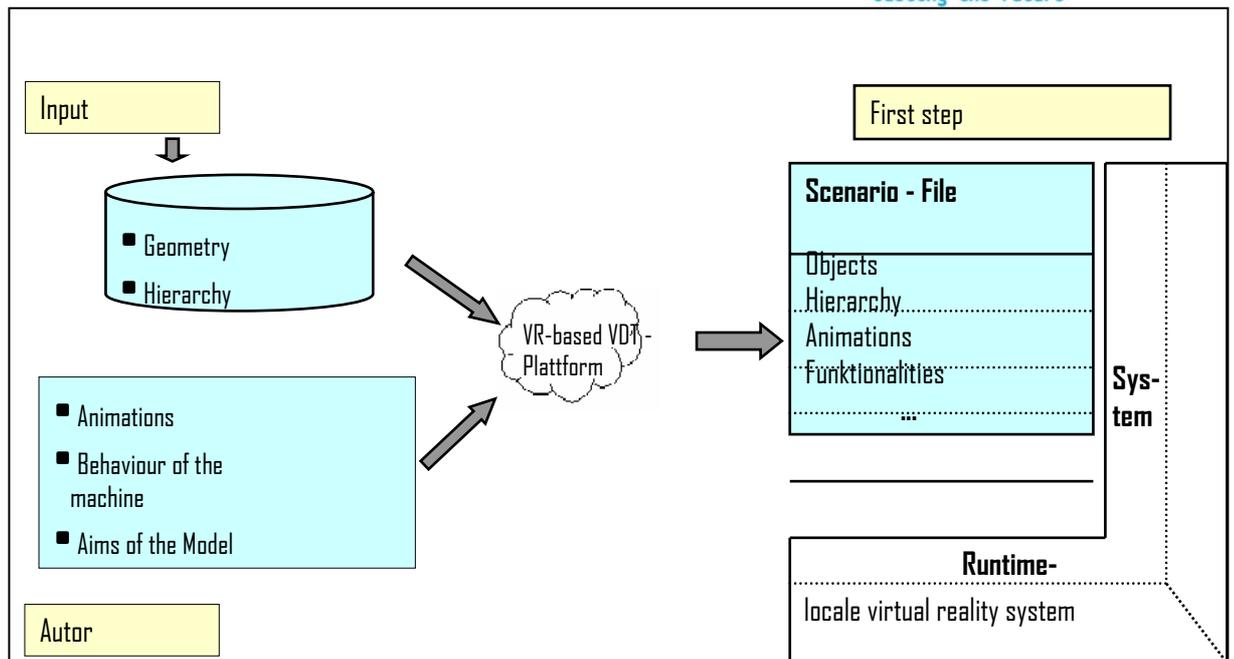


Figure 1 Work of the author of a scenario

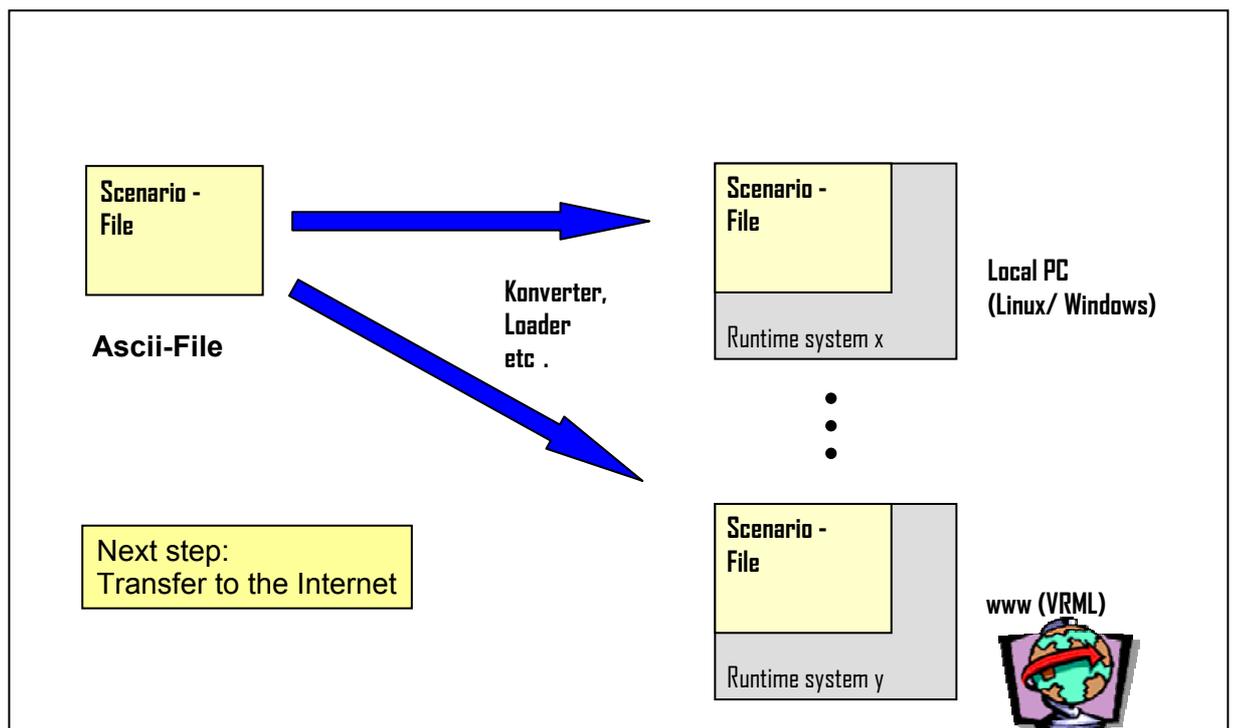


Figure 2 Presentation in the internet