

# InterTrans - CONCEPT AND IMPLEMENTATION OF THE FIRST VIRTUAL UNIVERSITY IN YUGOSLAVIA

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**Abstract** – INTERNET based Virtual Universities are the future of distance education, and, because being less expensive, especially important for the future of education in less developed countries. Subject of this paper are the concept and elements we have developed for the implementation of the first Virtual University in Yugoslavia. Paper describes the concept, the structure and the main functions of our *General Purpose Intelligent INTERNET Based Knowledge Transfer System*, named InterTrans(c)

**Key words** – InterTrans, InterCons, InterLab, MultiMentor, Virtual University, AI, CAL

## INTRODUCTION

In approaching the Computer Assisted Learning (CAL), we have started from the assumption that there exists a natural, inherent, born given human capability for learning which is a complex one and not well understood. Over the centuries, many different systems for learning enhancement have been invented. Just to mention traditional one-to-one mentor teaching, modern mass schooling system, CAL, INTERNET based distance learning, etc.

Each of these have advantages and disadvantages, but attempt is always made to discover, simulate and stimulate natural learning. Many scientific disciplines support these efforts: cognitive physiology, pedagogy, artificial intelligence, etc.

Along this way of thinking, we made an effort to extract a couple of powerful, productive, natural learning processes, that can be formalized, implemented in software and in hardware, and placed on the INTERNET, in order to support INTERNET based knowledge transfer and INTERNET based learning. Main attempt was made to add to the potentials of INTERNET and information technology, not only to simply and trivially implement it.

Having all that in mind, we have designed, produced and tested a system aimed for *General Purpose Intelligent INTERNET Based Knowledge Transfer*, named InterTrans(c)

## InterTrans(c) DESCRIPTION

**InterTrans** system is a fully integrated system designed for knowledge transfer over the INTERNET. It is interactive, adaptive to personal pace and preference in learning. Some of the **InterTrans** components have Artificial Intelligence properties, like automated knowledge acquisition (learning), adaptive tutoring, virtual dynamic objects with self monitoring and computerized speech, etc. [Spasić 1989, 1991b, 1993a, 1998b, 2000a, 2000b ].

Here we only briefly describe the main concepts, building blocks and functions of the **InterTrans** system.

In the *Table 1* below (the left column), we present the **Cognitive Approach**, which describes the learning process, and (in the right column) the corresponding **InterTrans** functional implementation of that learning process.

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<b>Ex-cathedra</b>	↔	<b>Virtual multimedia course content</b>
<b>Consultative learning</b>	↔	<b>InterCons<sub>(c)</sub> Intelligent Virtual Consultant</b>
<b>Consultative learning</b>	↔	<b>Several multipurpose INTERNET connections with the real professor</b>
<b>Experiment based learning</b>	↔	<b>InterLab<sub>(c)</sub> Virtual Laboratory with Intelligent Tutor</b>
<b>Discussion based learning</b>	↔	<b>Discussion forum</b>
<b>Task based learning</b>	↔	<b>Seminar papers, Assignments, Library</b>
<b>Other general InterTrans<sub>(c)</sub> supportive functions: Bulletin Board, Help, News, Online Guest Book, Basic Administration .....</b>		

*Table 1.*

- **Virtual multimedia course content** presents integrated text, figures, sounds, possibly some media clips, and similar multimedia elements appropriate for the course lessons [Spasiæ 1993a].
- **InterCons - Intelligent Virtual Consultant** (fully described in other papers) supports consultative learning. Consultations are based on freely formulated student questions, answers from the Virtual Consultant knowledge base, and the capability of the **InterCons** for a further knowledge acquisition [Spasiæ 2000b].
- **Several multipurpose INTERNET connections with the real professor** are open for questions, answers, advises, transfer of seminars, announcements, forum participation, but also, for the communication between the real professor and Virtual Consultant professor.
- **InterLab - Virtual Laboratory with Intelligent Tutor** supports for the laboratory experiments with the virtual objects (mathematically modeled, or given in some other formal representation). Monitoring system and speaking tutor; support for guided discovery learning [Spasiæ 1991b, 1993a, 1998a, 2000a, 2000b].
- **Discussion forum** is implemented for discussion based learning. It represents an online forum open for students and professors.
- **Seminar papers, Assignments, Library** support task based online learning.

**WHAT IS MultiMentor<sub>(c)</sub> ?**

**MultiMentor** is the main building block in **InterTrans** system. For each of the course, it is necessary to construct the new **MultiMentor** [Spasiæ 2000b]. The structure of the **MultiMentor** is presented in *Table2*.

COMPONENTS OF THE VIRTUAL MULTIFUNCTIONAL MENTOR		
<b>MultiMentor</b> <sub>(c)</sub>		
Virtual multimedia course content	InterCons <sub>(c)</sub> Intelligent Virtual Consultant	InterLab <sub>(c)</sub> Virtual Laboratory with Intelligent Tutor
Discussion forum	Seminar papers, Assignments, Library	

*Table 2.*

Constructing **MultiMentor** for the course (using precisely defined procedures and protocols) is not an easy and direct process. On the contrary, it requires understanding of the subject matter, programming skills, and also, mathematical modeling and Artificial Intelligence knowledge [Spasiæ 1989, 1991b, 1998a, 2000a]. But once it is constructed, **MultiMentor**, as the main part of the whole **InterTrans**, functions fully integrated in the INTERNET knowledge transfer system.

## CONCLUSION

Currently, we are implementing **InterTrans** in building of the first **Virtual University** in Yugoslavia.

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