

THE MULTIMEDIA 2004 REPORT

Antonio Laganà, University of Perugia

The Multimedia group has continued in this year to define a strategy for enhancing Europe based e-learning activities. In this respect the group has continued in developing a continuous basic level background activity and in refining an application to EU funds to carry on a more technologically advanced project.

THE E-LEARNING PROJECT

As to the advanced project, following the rejection of the EAC/61/03 IT032 EUHELMOG application whose guidelines have been published in the volume *Virtual Reality, Web and Grid Technologies for e-learning in Chemistry* edited by A. Laganà and A. Riganelli (Morlacchi Editore, Perugia, 2003, ISBN 88-88778-41-1) the teaching and learning project has been further revised. The new project based on the activities of the University of Perugia, the University of Helsinki, Technical University of Vienna and the Technology University of Dresden. The application named VLVC (Virtual Laboratories for Virtual Campuses) has been submitted as an Erasmus project and is aimed at assembling a virtual chemical laboratory combining molecular virtual reality with the more usual virtual reality at human dimension (as being experimented at the University of Perugia) using the organic chemistry laboratory protocols of the ICHEMLAB project of the Technical University of Vienna and the analytical chemistry software of the University of Dresden to be assembled within the virtual campus scheme being developed by the University of Helsinki

MUTALC-ELCHEM WORKING GROUP MEETING ECTN ANNUAL CONFERENCE 2004 (TOULOUSE)

In the meantime the background activity has continued. to develop along the lines typical of the Multimedia group by refining existing teaching and learning material and creating some new one. The work carried out has been reported at the annual ECTN meeting held in Toulouse

1. *Truls Gronneberg (Oslo University) Refurbishing existing materials for use in e.doc*

This project deals with the in refurbishing teaching materials for use in e-learning chemistry modules as an in-service education package aimed at science teachers in elementary and lower secondary school. At the moment this is still only concerned with the general chemistry and will be inserted in the planned repository of teaching and learning material. The work consists. To this end existing word and PowerPoint documents have been set in a form that can be easily used on the web. Occasionally movies and videos (with audio) have also been added.

2. *Gustavo Avitabile (Naples University) The mole concept.*

A methodological approach to chemistry basic concepts is being developed aimed at high school students. The mole concept is taken as case study to investigate the teaching methodologies in secondary schools (last two years) and what the students should know when entering the University. The choice of the mole concept is taken not only because of its central role in chemical studies but also it is a typical test case for the difficulties that the students can meet when tackling the study of chemistry in a more rigorous way. The materials developed within the project are available on the web.

3. *Kristiina Wahalla (Helsinki University) Virtual campuses: a progress report from Helsinki*

The virtual campus project of the University of Helsinki is progressing. Within this project there are libraries for various disciplines. One library is for chemistry and within this several advances have

been made. The structure of the virtual campus is such that there are administrative and monitoring functionalities and discipline projects

4. *Johannes Froehlich (Vienna Technical University) The application of new Media for teaching (IChemEdu) for spreading awareness of Science (KaS - the Kids and Science project)*

IChemEdu is a product that has been developed at the TU of Vienna. It is based on three pillars that deal with practice Lab (IChemLab), lecturing (IChemLecture) and self-testing (IChemExam). The three software, for which specific e-tools have been developed, and that are grafted on the same data base cooperate in the different aspects of student-teacher interaction. This product has been now extended for utilisation in the schools, pupils and teachers on the web. The objective is to make available to the school kids IChemEdu based approaches to chemistry

5. *Jana Copikova (Prague University) Technology of Cocoa liquor*

A web based set of 6 lectures on the technology of cocoa liquor has been prepared and made available to the students. Sheets illustrating the subject starting from the growing of the cocoa beans to the final production stages are made visible on the web together with self assessment tools.

6. *Antonio Riganelli (University of Perugia) VMSLab-G: virtual reality representation of Chemical Experiments*

A prototype portal devoted to the application of virtual reality approaches to molecular sciences has been assembled. This portal (<http://vmslab.org>) gives access to some virtual reality products assembling both meter-level (human) and nanometer-level (molecular) approaches. This is the result of the synergy of two COST in Chemistry groups (ELCHEM) and (SIMBEX) with the multimedia working group of ECTN. Students can access the practice laboratories in a virtual way (in a window on the world approach). The approach puts some requirements on the management of learning knowledge and the use of specific mark up language. Implications on the use of the semantic web are also illustrated.

7. *Dimitra Lovala-Demertzi (University of Ioannina) Presentation of e-learning materials*

Materials from a national project on the assemblage of e-learning material for several topics of chemistry. The presentation has illustrated some of them which are accessible to the students at the web site <http://ultranet.lib.uoi.gr/digital/Default.asp>

THE MULTIMEDIA WORKSHOP

“Higher education in Chemistry in Europe” Conference (DRESDEN)

An important opportunity for the working group has been the possibility of presenting the VLVC project of the Multimedia group the mid of June at one of the workshops of the “Higher education in Chemistry in Europe” Conference held in Dresden. The presentations of the members of the projects were:

The presentation of the workshop (Antonio Laganà)

The development of Information Communication Technologies (ICT) has made it possible to offer ubiquitous web services that can be produced only by gathering together in some kind of virtual organization the necessary competences. This has become apparent in several commodity and service production. Such a trend has been channelled into the European research and teaching and learning (T&L) Higher Education activities by the COST in Chemistry initiative through the establishment of a specific Action (D23 or METACHEM: Metalaboratories for complex computational applications in chemistry) that has been launched at the end of 1999. These Metalaboratories are virtual organizations made of some real Laboratories collaborating in a fairly broad research area that could not be covered by a single Laboratory by sharing hardware, software

and know-how. One of the six Metalaboratories instituted by METACHEM is devoted to the design, development and implementation of e-learning technologies in chemistry T&L. This Metalaboratory (ELCHEM) has since its beginning strongly interacted and collaborated with the Multimedia working group of the European Chemistry Thematic Network (ECTN). The mission of the ECTN Multimedia working group is to foster the use of modern ICT in teaching and learning chemistry, use electronic tools to enrich the traditional ways of offering chemical education and develop contents for e-learning virtual environments. Therefore, a common task of the two working groups has become the building of a common repository of electronic T&L material, the design and implementation of web based didactic units to illustrate some chemical concepts and the assemblage of the basic components of virtual campuses.

IChemEdu (Johannes Froehlich)

The Faculty of Technical Chemistry of the Technical University of Vienna has since long implemented computer assisted tools for teaching and learning Chemistry by designing protocols and tools for an Organic Chemistry practice Laboratory. The computer aid is articulated into three components which are the three pillars on which IChemEdu rests. Each of the three components accomplishes a specific educational task. The most developed of them is IChemLab the component that guides the students to their personal paths to an Organic Laboratory practice. To this end several hundred practice Laboratory protocols have been restructured and organized in a way that the student has to interact with the computer to get instructions to proceed in the practice, to consult the relevant electronic data base and documentation, to store intermediate experimental information, to work out values and graphs necessary for the written report, etc. All this is assisted by graphical interfaces so as to make the student intervention easy and focused on the chemical content of the experience that is being carried out. The other two components are IChemLecture and IChemExam. IChemLecture is an ensemble of texts and hypertexts assembled to illustrate the chemical concepts and technologies on which the Laboratory is based. IChemLecture is made of several hypertexts specifically developed for IChemLab. However, it also includes several texts that have been turned into hypertexts by making use of a specific software developed by Springer Verlag to semi-automatically build into electronic copies of normal books the mark-up language specifications necessary to transform them into web hypertexts. The third component IChemExam is a self evaluation tools that allows the student to challenge him/herself to discover the weak points of his/her preparation.

VMSLab-G (Antonio Riganelli)

The Department of Chemistry and the Department of Mathematics and Informatics of the University of Perugia have jointly developed a prototype Virtual Molecular Science (VMS) Laboratory based on Grid computing (VMSLab-G) making use of virtual reality languages and tools at both human (meter) and molecular (nanometer) level.. The project has stemmed out of the interaction of the expertise of the ELCHEM (E-learning technologies for Chemistry) and SIMBEX (Simulation of molecular beam experiments) working groups of METACHEM with the know how of the ECTN Multimedia group. The project has developed a portal (<http://vmslab.org>) to manage some virtual Laboratory experiments. The portal makes use of Human Virtual Reality (HVR) representation to allow the student to navigate inside a Virtual Laboratory and use virtual apparatuses via the Web. The navigation is accompanied by Molecular Virtual Reality (MVR) sessions to see and rationalize in terms of molecular dynamics representations what is happening. The molecular dynamics engine of the MVR component is that of SIMBEX. At present, a Window on the World approach allowing the user to perform a mouse driven navigation has been implemented. A caveau devoted to full immersion interactive sessions is also being assembled. The HVR environment reproduces also, as close as possible, modern safety measures of real Laboratories. From a technical point of view the HVR components have been realized by using VRML, XML and Java where VRML has been used to model the virtual world of the Laboratory,

XML has been used to deal with the chemical knowledge and Java has been used to handle the calculations.

Digital Prelab (Reiner Salzer)

The Institut für Analytische Chemie of the Technical University of Dresden has developed an internet based system of virtual instruments which are intended to drive the students in getting acquainted to the use of the real Laboratory instrumentation. The asynchronous and ubiquitous use of the virtual instrumentation offers a unique opportunity to students to familiarize with the Laboratory practice and safety rules. This not only turns out into a saving of analytical chemical substances but it also turns out to be more adaptable to the need of the students that can take a virtual session whenever they want with no need for accessing the real Laboratory. This approach has been found to be particularly useful for Analytical Chemistry Laboratories for which several protocols have been developed. A key issue faced during the implementation of the virtual experimental sessions has been the extent of idealization of the instrumentation since actual models change fairly rapidly and a representation of the apparatus too close to reality may become soon unsuitable and, after all, not show the key component of the instrument. On the other side, the students seem to be less motivated to work with “abstract” machines. In any event, regardless of the abstraction of the virtual instrumentation, virtual sessions have shown to be very useful to acquaint the students to standards, procedures and professional situations.

The virtual campus (Kristiina Wahala)

The University of Helsinki is implementing a interdisciplinary project of virtual Campus to which Chemistry is participating with its EChemikum subproject. The huge effort of the University of Helsinki planned for the years 2000-2004 is stressing the massive use of ICT in education (not only in T&L but also in management and administration) with several Universities developing independently their own facilities though tied together in a joint effort to build a Nationwide system. Within the virtual campus project virtual courses and support services of international level will be assembled. To this end ICT will be extensively used to make one third of the study courses be offered with virtual teaching supplementing face-to-face teaching. The key objective will be the training of staff, the development of study skills, the provision of study and learning environments, the administration of academic affairs and the organization of support services. As to the T&L itself several initiatives are being undertaken including pedagogical training, information handling, ICT equipment acquisition and maintenance, remote infrastructure for working group activities (functional and cost effective learning centres). The planning is left within the hands of each discipline faculty though the scheduling of the activities is coordinated centrally using ICT tools.

The pillars of the virtual campus are the learning centres and networking facilities (including mobile). In particular EChemikum has implemented

- a detailed faculty study guide with a list of all requirements, courses offered, laboratory availability, etc.
- a student personally tailored web page giving access to all the required information with a single login (registration for courses, booking for examination, access to test results, downloading of course material, interactive access to drills and tests) including, in some cases, exam taking.
- an analogous teacher personally tailored web page via which managing all academic activities including thesis, students feedback

EChemikum is also planning the implementation of a chemical virtual laboratory for organic syntheses, molecular interactions, molecular spectroscopy, green chemistry, chemical information, safe laboratory practice, history of chemistry.

Conclusions

An extended debate followed the presentations. In particular the need for ICT to supplement and not to substitute front teaching, for orienting education activities to learning needs rather than to teaching needs, for the necessity of increasingly developing lifelong education, for the costs associated with the adoption of ICT approaches. However, all the attendants convened that the trend of adopting ICT technologies is irreversible and that Europe cannot refuse to exert its leadership in Chemistry knowledge as a consequence of the fact that the Europe is world leader in Chemical research and manufacturing.

At the end of the debate the Vienna, Dresden, Helsinki and Perugia groups confirmed their willing to jointly apply for the next European call on e-learning by presenting a renovated project on e-learning to be called “Virtual Laboratory in Virtual Campus” (VLVC).

THE VLVC PROJECT

The e-learning project “Virtual Laboratory in Virtual Campus” (VLVC) to be jointly presented by the Vienna, Dresden, Helsinki and Perugia groups will be aimed at implementing, starting from the ongoing experiences, advanced ICT technologies for a Europe-wide virtual chemical laboratory to teaching and learn Chemistry and related molecular applications to be integrated in a virtual campus.

VLVC will be based on the integration of the computer assisted chemistry laboratory protocols extensively tested in Vienna¹ and Dresden¹ with the tools of the virtual laboratory on molecular science designed and implemented in Perugia². More in detail, the computer assisted laboratory protocols will be integrated with sessions of the virtual laboratory (exploiting both HMR and MVR). The integrated real/virtual laboratory session will be then incorporated into the virtual campus framework being assembled in Helsinki.

The project implementation will be driven by the pedagogical and methodological expertise of the Vienna group that will ensure that the activities of the partner laboratories are developed in the proper educational context and perspectives. Other content and technology contributions will be delivered by the Dresden laboratory³ that is already collaborating with Vienna and Perugia in constructing e-learning tools for computer assisted Chemistry laboratories.

The joint effort will lead to the design and implementation of some prototypal teaching and learning units consisting of laboratory virtual sessions based on HVR and MVR techniques that will be made accessible on the Web. The virtual laboratory sessions will constitute the building blocks of a virtual (ubiquitous and asynchronous) experiential learning approach to chemistry studies designed for a virtual campus organization accessible on the web. The assemblage of the relevant parts of the virtual campus will be managed by the Helsinki group that will also take care of the linguistic (even if only an English version of the VLVC will be produced) and gender differences since the Helsinki laboratory has a specific experience in both aspects.

The short term target group of VLVC are the Universities belonging to the ECTN⁴ (European Chemistry Thematic Network) since they are already involved in the activities of the project through the multimedia group, and can constitute a suitable test bed.

The long term target group are all the public and private institutions providing Chemistry and Molecular Science education and training services (Universities, Schools, private companies, etc.). The use of the virtual laboratories and of the virtual campus makes the access to teaching and learning activities ubiquitous, more efficient and more fruitful and will produce a new price/benefit ratio.

1 <http://www.ichemlab.at>

2 <http://www.vs-c.de>

3 <http://www.vmslab.org>

ELCHEM: WORKING GROUP MEETING (HELSINKI)
12-13 November 2004

The activities of the group carried out at the workshop are described below. The program of the workshop has been:

November, Friday 12, 2004 (Aleksandria Centre)

15:00 – 16:00 S. Andberg, The Helsinki virtual campus project and the ICT Educational Centre

16:00 – 17:00 P. Virtanen, Intelligent virtual support system for advancing students' self regulated and collaborative learning

17:00 – 19:00 ELCHEM-Mutalc discussion on the Virtual Laboratory in Virtual Campus project

November, Saturday 13, 2004 (Department of Chemistry)

10:15 – 10:45 J. Froehlich, iChemExam: e-Self-assessment in Virtual Classrooms and Laboratories

10:50 – 11:20 K. Wahala, NetLab in virtual Campus

11:25 – 11:55 E. Varella, Presentation and evaluation of a Satellite Monitored Distance Course on Cultural Heritage

12:00 – 12:30 R. Salzer, Problem Based Learning in a Digital Prelab

12:35 – 13:45 Lunch

13:45 – 14:15 P. Yates, MathMI Based support Materials for use in a Chemistry Enhanced Course for Teachers

14:20 – 14:50 A. Riganelli, A Learning Management System based on Semantic Web Approach

14:50 - 15:00 Coffee break

15:00 – 15:30 H. Krebs, A Stockroom for chemical materials

15:30 – 16:00 J. Lundell, EChemicum

16:00 – 18:00 ELCHEM-Mutalc preparation of a joint paper

Sami Andberg, Alexandria Centre

THE HELSINKI VIRTUAL CAMPUS PROJECT AND THE ICT EDUCATIONAL CENTRE

The policy followed by the University of Helsinki has been that of creating a centre for ICT education so as to provide and develop high quality educational services. This centre allows the students and the teachers to use free facilities for producing and using e-learning products. It includes the use of virtual learning environments, learning management systems, digital educational material, videoconference (support service and training), managerial support and strategic planning. There is also a coordination structure (4 central experts) for the campus experts (1 expert per campus) who carry out local training and technical support activities.

An important initiative of Finland is the Finnish Virtual University (FVU) aimed at offering selected e-learning products from the various universities (including courses and laboratories). The product used is VISION i/3 that spreads electronic courses over the 20 Finnish universities. The main goals are to harmonize university information systems, develop compatible practices, provide shared services for university students and teachers, researchers and administrators, design national support and databases for on online courses, counselling service for the national JOOPAS (flexible study rights scheme).

Patvi Virtanen

INTELLIGENT VIRTUAL SUPPORT SYSTEM FOR ADVANCING STUDENTS SELF REGULATED AND COLLABORATIVE LEARNING

The IQ (Intelligent Questionnaire) is a project to support through intelligent ICT tools individual learners and groups. These tools are IQ learn (a tool for assessing and developing learners individual qualities and learning skills based on self regulating theory (Pintrich & Ruohotie)) and IQ team (a tool for assessing and developing group processes for collaborative learning and knowledge creation). The components of these tools are:

- The interactive test bank with three questionnaire sets for students' self-evaluation
- The tutoring set with a hypertext structure for each subcomponent containing tutoring students towards self-regulation and additional guidelines for teachers
- A learning diary with a collection of learners' experience and test profiles

DISCUSSION

The discussion has been focused on two main items

1. The future of the collaboration with the COST ELCHEM working group. The action D23 (Metachem) is going to end its activity by the end of the year 2005. The interaction of ELCHEM and MUTALC has been very fruitful and the outcomes of this collaboration will be evaluated during the final evaluation workshop. Following the conclusions of the midterm workshop the emphasis is shifting towards grid based approaches. The members of D23 are considering the possibility of launching a new action "GRIDCHEM" with a specific mission on the creation of infrastructures and grid applications. It has been concluded that for the time being the group will plan to assemble the continuation of ELCHEM in the new action. In the meantime the possibility of launching a specific action for e-learning technologies will also be examined including the use of multi-scale modelling and virtual reality. Advances along the opening of a Molecular science VO, has been positively commented.
2. The future of the research project in virtual laboratories in virtual campuses. The basic idea is to combine the projects of Dresden (Analytical Instrumentation Laboratory), Vienna (Computer assisted laboratory, exams and lectures), Perugia (Molecular virtual reality laboratory), Thessaloniki (Satellite based distance courses) with the Helsinki Virtual University approach and the more basic research on semantic web and mark-up languages carried out in Perugia and Keele. For this reason the material developed for preparing previous applications to FP6 on virtual laboratories in virtual campuses has been handed over from the Perugia group to Kristiina. She will take care of writing a new project for the next FP6 call. At the same time A. Laganà stresses the fact that it should be discussed in detail the perspective of involving some SMEs (especially those born as academic spin-offs). This problem should be discussed at the next ECTN meeting.

Johannes Froehlich

ICHEMEXAM E-SELFASSSESSMENT IN VIRTUAL CLASSROOMS AND LABORATORIES

In the Organic Chemistry Laboratory of the Technical University of it has been developed a three component software that has a common data base.. The three components deal, respectively, with practice Lab (IChemLab), self-testing (IChemExam) and lecturing (IChemLecture). The most developed component is IChemLab that drives the students to the Organic Laboratory practice. To enhance the functionalities of the second component IChemExam, that allows the student to carry out self assessment sessions, it has been necessary to develop an algorithm capable to perform an automatic recognition of complex molecules. This algorithm, called SEICO (Spherical Environment

based Integer Code), has been achieved by combining in a single integer code the various integer codes defining the distance of a given atom in a molecule from the centre, the type of the bond, the stereochemical properties (like R/S and E/Z) and other minor molecular features. The third component IChemLecture builds on a new technology to (semi-automatically) convert ordinary printed texts in (full text indexed and hyperlinked) hypertexts using optical character recognition (PixLibris, <http://www.pixlibris.com>) and create e-books using again innovative products (like TeachMe, <http://teachme.tuwien.ac.at>) having an appropriate authoring system (Coimbra, <http://www.coimbra.at>).

Kristiina Wähälä
NETLAB IN VIRTUAL CAMPUS

The key idea of NetLab is to guide the student to an autonomous and personal learning path in the laboratory through an ad hoc web interface that provides instructions to carry out syntheses (including animations for molecular processes), to safely deal with equipments and materials, to write reports, etc. NetLab provides 3D models for synthesis problems together with an electronic feedback. Other possibilities of NetLab are: activate teaching supports for e-learning processes, personal study plans, motivation of the students; visualization of the microscopic processes; interaction between lectures and practical work; illustration of the laboratory procedures (including physical aspects of instrumentations and spaces), safety measures and economic implications; planning the personal schedule and resources; search for chemical information. This help is particularly useful for practice laboratory since they are often taken far from the corresponding theoretical courses. The project tries as much as possible to use English as a lingua franca.

Evangelia Varella
**PRESENTATION AND EVALUATION OF A SATELLITE MONITORED DISTANCE COURSE
ON CULTURAL HERITAGE**

The Thessaloniki Laboratory is particularly active in safeguarding Mediterranean cultural heritage by means of networked distance education nodes. In particular, the project IKONOS (funded as part of the EUROMED HERITAGE II initiative) tries to build cooperation between European countries and Mediterranean partners in networking technologies. Within this project of particular relevance for education is the assemblage of a satellite based system to distribute e-learning material and tools. This infrastructure can be used for more general e-learning use and is of great help for those countries which do not have a significant internet infrastructure. The broadcasting centre of the project is Malta to which 4 European countries are wire connected to deliver the material to be disseminated.

Reiner Salzer
PROBLEM BASED LEARNING IN A DIGITAL PRELAB

The activity of the Dresden Laboratory focuses on the definition of the European analytical chemistry curriculum for which the chemistry part is complete while still need to be completed the mathematics and physics parts. As a part of this activity internet tools capable to handle virtually analytic instruments have been developed. Using these tools the student can deal with all the analytical aspects of a particular subject.

Among the three subjects developed so far within a project funded by the German Government, the case of the vitamin C is considered in detail. In particular, using the developed tools a qualitative analysis of a sample is carried out on the web using various techniques. Spectra collected on the virtual instruments are stored locally and then analysed and results evaluated using common graphical interfaces.

Paul Yates

MATHML BASED SUPPORT MATERIALS FOR USE IN A CHEMISTRY ENHANCEMENT COURSE FOR TEACHERS

To integrate the knowledge in chemistry principals for chemistry teachers who have a background in chemistry related disciplines such as Chemical Engineering or Forensic Sciences or who have graduated in Chemistry but have not practiced chemistry for a number of years the University of Keele is launching a course, due to start on January 2005, teaching to prospective chemistry teachers the fundamentals. Students progressing on from this course are expected to be able to teach to A2 level (immediate pre-university) standard. The aim of the mathematics module considered here is to present mathematics in a Chemistry context. For this purpose web based tools which take care of converting existing published material into a suitable hyper-textual form have been developed. The provision is to transform in this way entire books to make them scalable and efficient to use. A great difficulty associated with this project is the enormous time consumption of the transformation and the rapid obsolescence of the used platforms. This, in fact, makes it difficult to involve the students.

Antonio Riganelli

A LEARNING MANAGEMENT SYSTEM BASED ON a SEMANTIC WEB APPROACH

The integration of Semantic web and e-learning technologies allows the development of a new generation of Learning Management Systems (LMS). This work outlines our approach that makes use of RDF statements to describe learning resources. The metadata generated in this way can be easily understood by programs and machines. This approach has been adopted also to develop an intelligent self assessment system generating personalized tests taking into account the learning path followed by the user. The score obtained during the self assessment phase can be used to the end of optimizing the final evaluation when using specific on-line assessment software.

Heinz A. Krebs

A STOCKROOM SYSTEM FOR STORING AND CHARGING CHEMICALS AND MATERIALS

A web based stockroom system has been developed for use at the Organic Chemistry Department of the Technical University of Vienna and the University of Helsinki. To overcome licensing problems the LAMPF architecture has been adopted. The first part of the interface is for the scientific staff. To find out which chemicals are available a web interface provides the search functionalities per compound names, alternative names, CAS, structure and research group. From the resulting hit-lists the user can select his/her compound of choice to display detailed information like quality, vendor, amount in stocks, price, location, owner and some safety information and then, finally, putting it into a shopping cart to start the ordering process. The second part is concerned with the technician part of the interface. This part deals with the ordering process and the stock keeping as well as with the charging part.

Jan Lundell

CHEMISTRY ICT CENTRE – SERVING TEACHERS AND STUDENTS TO UNDERSTAND CHEMISTRY BETTER

The Chemistry ICT centre EChemicum was established in November 2002 to meet the challenges presented by increasing use and applicability of computer assisted methods in chemistry. The EChemicum learning centre supports educators and researchers to use computational chemistry, computer assisted methods and technical ICT resources in their work, supports development of new web-based learning and teaching materials and offers chemistry related ICT-training to personal of

the Department and students alike (number crunching, www-based publishing, database and data-mining, enhance chemical education). A key difficulty in chemical education is the achieving the capability of going from symbols to microscopic world. The ICT strategy 2002-2006 of the University is based on centralized (within the Department) support to ICT usage in chemistry, support of flexible studies, the design of action models to qualitative improvement of teaching, collaboration of research and teaching.

Producing teaching material (pedagogical and technical assistance, WEBCT based learning, network based lectures, virtual teaching material based on computational computer assisted chemistry, digitalization of existing material) is also a task of the finish project of virtual University.

DISCUSSION

The second day discussion has focused on the preparation of the joint paper:

ELCHEM: a Metalaboratory to develop grid e-learning technologies and services for Chemistry.

The paper will tackle the problem of coupling semantic web and e-learning technologies. The paper should be presented to the ICCSA conference to be held in Singapore on May 2005. The contributions of the various partner laboratories will be described in detail.

CONFERENCE “CHEMISTRY IN SCHOOL TEACHING” 9-12 December 2004

Prof. Laganà and Dr Riganelli were invited at the conference to illustrate the “Virtual Laboratories in Virtual Campuses” project and possible ways for the Teaching and Learning Division of the Italian Chemical Society to get involved in the project. Together with the presentation the ECTN itself and two of its most important projects (ECHEMTEST and the EUROBACHELOR scheme) were illustrated. A test session for ECHEMTEST was also opened.

“THE MODERNISATION OF THE CHEMISTRY CURRICULUM IN EGYPT” A TEMPUS project

On the 15 of December a Tempus application aimed at implementing a modernised Chemistry curriculum in Egypt and in particular at the Mansoura University was submitted. The project is based on two pillars one of which is the creation of a Multimedia Laboratory at the University of Mansoura. In this respect the expertise developed by the Mutalc and Elchem groups has been the ground on which the proposal has been built.

The proposed GRIDCHEM ACTION of COST in Chemistry The GELMS working group

In December a proposal for launching a new COST Chemistry Action on transforming the Metalaboratories of the D23 (Metachem) Action into components of a large Virtual Organization for the Chemistry and Molecular Science scientific Community was submitted to the COST Office of the European Science Foundation (ESF). The proposal emphasizes the importance of establishing, among other activities, initiatives for implementing on the grid tools for handling chemical knowledge and related teaching and learning aspects. If approved, the proposal will establish within the new Action, called GRIDCHEM, a working group that will parallel the activities of Mutalc and will provide financial support for the meetings.