CEPIS – Remaining Relevant for the Next 20 Years

Vasile Baltac, President Elect CEPIS

The rapid, unparalleled development of technologies has challenged IT professionals in a way that no other profession has encountered. The future of the ICT industry will continue to make no less challenging demand on our IT professionals. CEPIS, as their European representative body has to respond to these challenges, the author outlines what these challenges are likely to be and how CEPIS can put its experience to use in addressing them.

Keywords: Certification, Dissemination of Basic Skills, Education, E-Learning, End-Users, Entrepreneurs, Higher Education Institutions, IT Industry, Lifelong Learning, Professionalism, Research, Second Generation Digital Divide, Universities.

20 years is a long time in Information Technology (IT). The Web was invented just two decades ago and many of the Internet's features today were not even thought of then. This rapid, unparalleled technological development has challenged IT professionals in a way that no other profession has encountered. The Council of European Professional Informatics Societies (CEPIS), as the European representative of national professional bodies, has had the mission of coping with these developments. New professions have had to be included and professionalism, a major CEPIS preoccupation, has been defined and re-defined as we gave seen extreme European diversification that allows for everything, but simplification.

Information technology has become a day to day tool for a significant number of people. 20 years ago, what we today call the Internet was used by some thousands of people, whereas now more that 1.5 billion people (more that 23% of the world's population), use IT, mostly in networks. CEPIS responded to this phenomenal increase in the use of technology by defining and launching the European Computer Driving Licence (ECDL), the most recognised European tool for certification of the basic skills needed to use IT. We are now approaching the issue of the 10 millionth ECDL Skills Card; a figure that demonstrates the adoption of the concept not only in Europe, but also on other continents.

While the European Certification of Informatics Professionals (EUCIP) has not yet met all expectations, it is still a CEPIS project with high potential aimed at helping IT professionals with a vendor neutral certification.

CEPIS represents professionals from both academia and the IT industry. This is the main reason why CEPIS set up a task force to examine the relationship between them. The task force found that universities and industry do not yet cooperate at a sufficiently close level. The changing world influences universities making them operate in an environ-

Author

Vasile Baltac is a well-known Information and Communication Technologies (ICT) personality in Romania. He started his long career in information technology in 1961 as a computer pioneer and continued his studies in the '60s at Cambridge (United Kingdom) with Sir Maurice V. Wilkes, Fellow of the Royal Society (FRS) and of the Royal Academy of Engineering (FREng). Back in Romania he contributed to the development of the Romanian computer industry coordinating national projects leading to the creation of mainframes, minicomputers, and software engineering. Dr. Baltac went on to become a top manager of nationwide IT related research and manufacturing organisations. Dr. Baltac is currently President of ATIC (the ICT Association of Romania), university professor at the prestigious National School of Public Administration and Political Studies, a member of the Institute of Electrical and Electronics Engineers (IEEE) and of other professional societies. He has initiated successful national projects in e-Government, IT skills dissemination (European/International Computer Driving Licences, ECDL/ICDL) and is involved in IT-policy projects within the European Union, UNIDO, World Bank, etc. Since 2006 he has served as Vice-Chairman of WITSA (World Information Technology and Services Alliances) in charge with Eastern Europe and from 2006-2008 he served as Vice-President of CEPIS. Since November 2008 he has been President Elect of CEPIS. He is listed in various Who's Who, received the Romanian Academy Award and the National Order For Merit of Romania. He has published books and papers on computers, information technology and society, the history of computers, etc. Recently he discussed the digital divide, social issues of IT, e-Readiness and technology foresight at important conferences in Romania, France, Malaysia, Germany, Hungary and Italy. Prof. Baltac is active in community social projects as member of the Rotary Club "Old Court" Bucharest (Romania). <baltac@cepis.org>.

ment where there is a trend towards part-time studies, in particular for computer-related subjects. While several universities favour theoretical research and leave applied research to industry, the research activity in universities, both theoretical and applied, is the most important pillar for sustaining teaching and bringing educators close to current industrial practice. CEPIS believes that speeding up the application of research, to match the high innovation rate in

ICT seems to benefit industry but forces universities into industry-like timeframes.

One of CEPIS's findings was the present scarcity of ICT skills in Europe. While universities are mostly prudent about the qualitative aspects of ICT skills needed, they are also pushed by the market to adapt and provide solutions for the increasing scarcity of ICT professionals. The different approaches of universities and industry to realising the skills required in graduates only increases the gap between what universities offer and what industry needs. Reconciling these divergent approaches for reducing the gap between the skills demanded by industry and the ICT skills offered by university graduates is difficult and may be impossible to achieve.

The present and future of the ICT industry present challenges for professionals. CEPIS as their European representative body has to be able to cope with these challenges. Continuous advances in information systems technologies and applications require us to reconsider the skills needed by tomorrow's ICT professionals. Probably most important is to recognise that building an Information Society (and further a Knowledge Society) needs a new type of professional, with new skills as yet unknown. A recent poll by ATIC shows that the IT industry in Romania (probably indicative of similar situations in other European countries), lacks system analysts and architects, database administrators, application services and security experts, product applications, services and sales skills and Chief Executive/Technical/Information Officers (CEOs/CTOs/CIOs).

The next advances in the industry will cover a wide variety of areas from Web 2.0 and 3.0 to Service-Oriented Architectures, grid-computing, Enterprise 2, Internet Protocol Television (IPTV), etc. There will be dramatic changes in the world of media, news and publishing, further impact by search technologies and a deeper integration into our environment paralleled by a proliferation of new levels of high speed connections. At the same time there will be a rise in privacy concerns (and institutions are slow to change). Already some people question the need for so many Internet Protocol (IP) addresses to be interconnected and the stability of huge databases. A new wave of worries about the environment has reached our industry shores and Green IT has become a preoccupation.

One matter of great importance is the capability to keep applications growing at the same pace as micro-electronics. It has been stated that delays between successive radical breakthroughs in computer science decrease exponentially, i.e. each new one comes roughly twice as fast as the previous one. Integrated circuitry seems to conform to this law. Killer applications, however, appear at a much slower speed.

While we have several accelerating factors that bring ever shorter cycles of innovation, e.g. new hardware technologies, broadband advances, search engine capabilities, e-Content growth and availability, open source software, e-Education impact, we are confronted with decelerating factors such as limitations of present technologies, increasing complexity, information overload, slowing down of hardware by software, and compatibility issues to name just a few. At the same time the future of the industry is threatened by vulnerability problems, the increasing volatility of information storage, intellectual property protection issues, the need for perennial standards for media, etc.

All these will bring new challenges for ICT professionals. Consequently, CEPIS has to adapt itself to this very dynamic environment. CEPIS will be confronted with several issues, not new, but with a stronger impact than before:

■ Professionalism in the new even more dynamic environment.

■ Education issues for professionals.

■ Education issues for ICT users.

Professionalism has to be enhanced by certification. The ICT industry has developed a full series of vendor certifications. A more general certification based less on company-specific competencies and more on general professional standards could build a university-industry bridge. CEPIS has great potential in terms of creating the vendor neutral schemes needed by industry.

Education of professionals will increasingly be based on higher education institutions. These institutions, as the recent CEPIS report on Universities and Industry shows, aim to produce well-qualified scientists and engineers with a strong scientific background. In practice, most large ICT companies ask for a solid scientific background as they have the resources to further train their staff. Smaller ICT companies prefer specialised "ready-to-work" ICT graduates who provide a quick return on investment without incurring the expense of additional training. It is impossible to reconcile these two opposing requirements to provide ICT graduates who are both flexible and immediately usable. Each university has to decide which kind of professional it wants to offer to industry and adapt its curricula to best fit that requirement within the type of profession chosen.

The ICT industry is fed by **entrepreneurs**. CEPIS can work with the European universities to better contribute to the increase of Small and Medium Enterprises (SMEs) in the ICT sector; firstly by giving their students a scientific and technical background that allows them to be innovative and secondly by equipping them with the managerial skills they will need to run a small enterprise.

ICT is particularly appropriate for **lifelong learning**. Continuous education with short cycles is a necessity. The shortage of ICT skills brings an important number of non-ICT university graduates into the ICT field, mostly in developing countries. CEPIS could play a better role in the ICT education of those people who have already worked in the industry for years or are undergoing professional cross-/re-training. In addition, new advances in e-Learning technologies allow and favour distance learning, enabling universities to play a more important role in the post-graduate training of ICT professionals. E-Business skills are not generally covered by university curricula because they require the deep context knowledge that comes from on-the-job experience. Instead such skills training are frequently offered by IT vendors as a consultancy service. This is the

category of professionals most sought after by the market and is also the category most likely to seek professional certifications.

CEPIS is well known as a promoter of the **dissemination of basic skills** in the use of ICT. With the rapid rise in ICT users (already exceeding 1.5 billion people), the ECDL programme becomes even more important in assuring the quality of these skills. ECDL will further increase awareness of the need for basic skills. The digital divide is still evident in many respects in Europe and CEPIS will further support efforts for the e-Inclusion of large categories of people. Through ICDL, the ECDL Foundation contributes to achieving these goals on other continents.

On the other hand, we may notice the signs of what I would call a "**Second Generation Digital Divide**". People acquire only the simplest tools needed to use ICT and are far from using the new ICT tools and applications, most of which can deliver a notable increase in productivity and quality of work, e.g. via collaboration or cloud computing. It will be a major challenge for the ECDL programme to cover the new basic tools of the Internet and the general use of ICT.

The 20th anniversary is a moment for CEPIS to reflect on its own capability as an organisation. I am sure that the Council and Execom will take into account the experience gained during the first 20 years to further enhance CEPIS.

Some of the CEPIS areas of development we may pursue next:

1) Increase in Membership: Our constitution states that a professional association from a country member of the Council of Europe may become a member of CEPIS. At present, the Council of Europe has 47 member states. Our council represents 36 member societies in only 33 countries across Europe, leaving enough room for further CEPIS enlargement.

2) Performance Improvement: CEPIS has acted on behalf of member societies and will continue to do so. However, a more prominent leading role in major projects would be welcome.

3) New Strategy: A new strategy is needed for a changing world. This strategy will be the result of the input of the member societies and will reflect the new European ICT environment.

4) Enhanced Recognition: CEPIS is a recognised voice of ICT professionals, but a more dedicated contribution to European decisions on Information Society could be sought.

5) Digital Literacy: CEPIS will continue to be the main body to propose, through the ECDL Foundation, a certifying programme with periodic enhancements to reflect new developments in the ICT industry.

6) Higher Education Institutions: CEPIS can act as a pan-European mediator between universities and industry in a multi-stakeholder partnership. CEPIS can review the current content of curricula for ICT studies to ensure a positive impact on the future of the ICT industry by providing graduates with the proper theoretical background and practical training.

7) e-Learning: CEPIS will support e-learning as a methodology for continuing professional development and considers that universities can be encouraged to offer master or other post-graduate conversion courses to non-ICT graduates.

8) Better visibility: An improved newsletter, Website, statements, position papers, **UPGRADE/UPENET**, conferences and awards will contribute to the increased visibility of CEPIS among professionals in Europe.

9) Cooperation. There are many European bodies representing ICT businesses and professionals. CEPIS has to strengthen cooperation with them and become a central point in this network. Special attention will be given to regional alliances of member societies.

10) Constitution. 20 years of existence has proved that the current constitution is the right basic document for our Council. Some modification will be needed to adapt to the forthcoming new strategy and to improve governance.

As has already been said above, IT 20 years is a quite long period of time in computing. Generations of hardware, software, and applications have been developed by ICT professionals. Their professional background has been radically altered and this trend will continue.

CEPIS has done a lot to accomplish its mission goals:

■ To be the main network of European IT Professionals.

■ To become established as the leading independent European IT Certification Organisation.

■ To raise the profile and promote the views of the European Informatics Societies and Informatics Professionals to the European Commission and European Institutions.

■ To promote the development of the Information Society through digital literacy, skills, education & research and professionalism.

To keep achieving all of these goals, CEPIS has challenging years ahead.