New IT STAR Book

UNIVERSITIES AND THE ICT INDUSTRY

The publication *"Universities and the ICT Industry"*

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contains the proceedings of the 2nd IT STAR Workshop on Universities and the ICT Industry (UNICTRY 07) held on 26 May 2007 in Genzano di Roma, Italy.

Here are some of the addressed issues:

- *Are there official EU standards for assessing and recognizing e-skills and academic excellence in computer science?*
- *How can Europe narrow the e-Skills gap and be more technologically competitive?*
- *Are there ways for European universities to provide both fundamental knowledge in computer science and the ability for immediate practical application of qualifications to meet the short-term demand and expectations of Industry?*
- *Does the university-industry partnership need a "Code of Conduct"?*
- *Is Europe continuing to loose computer science graduates to other world regions?*
- *What is the role of the EU and national governments in ameliorating the university-industry partnership?*
- *The Bologna process - fresh wind?*

The organizers, speakers and workshop participants are convinced that it is impossible to segregate and scrutinize the partnership between universities and the ICT industry without discussing this relationship within the broader socioeconomic context of development of our modern world. Such an approach was facilitated by the fact that along with the representatives from academia and industry, there were persons with vast experience in government and public policy, national and international NGOs and other civil society institutions.

The volume of the ICT industry clustered around the Internet is astounding. New revolutionary ways and business models are introduced in information, content, services and product exchange and there are profound changes in the value chains and industry structure. In 2006, according to OECD, the World market achieved a 6% growth with countries such as Brazil, Russia, India and China showing steady annual growth of over 20% since 2000. There are remarkable developments in information and communication systems – the number of URLs doubled from 50 to 100 million, 2.5 billion cell phone lines, 200 million DSL lines, 100 million 3G lines, *…[see Keynote by B. Lamborghini published in NL Vol. 5, no. 2., Summer 2007]*.

The new technological environment is rapidly changing our notion of limits and expectations of educational systems, qualifications, mobility, opportunities and risks. For the EU as a whole and for the IT STAR countries (some of which have shown lately IT growth of around 12%) this new environment is a time of great opportunities but also of risks. One particular issue on the "watch list" is the scarcity of human capital with appropriate ICT education to drive the technological change in Europe forward. According to EITO, CEPIS, AICA and other studies and observations there is a significant gap in ICT skills penetration and of e-business skills to use efficiently ICT technology for business and other applications.

ICT is an enabling technology, which is increasingly important for all professions and for all professional and private activities. In this regard one speaker made an analogue between the ICT sector and the Transportation sector. Along with language skills and basic management knowledge, general ICT skills form the essential "soft skills portfolio" for professional development. The issue of e-Skills levels, however, is tricky as it requires some form of certification. In this regard, another speaker drew a parallel with the driving license and pointed that most have one to certify their ability to drive a car without any discrimination between "Sunday" drivers and Formula 1 pilots.

Not that there are no defined levels of certification: Several refer to the Computer Driving License (ECDL) which is successfully and broadly introduced in Europe in pre-university education but also in some universities to assess computer usage abilities by first-year students of most bachelor courses.

When it comes to the level of Universities and computer science related disciplines, the expectations by academia and industry are clearly more profound forming a complex relationship:

- Universities need research to maintain a high level of academic excellence, to remain a key player in basic and high-end science and to receive additional funding from industry
- Industry relies on new academic recruitment by attracting and selecting talented students but also through joint research with universities in areas in which its own R&D units need further competence

In this partnership, conflicting interests arise due to the nature of the 2 spheres (i.e. education and profit). Often Industry requires immediate highly specialized solutions while academia supports the notion of the broader and more abstract horizons needed by the discipline and for long-term societal development. To ameliorate this relationship governments have a distinct role to play:

- Governments (and the EU) are obliged to support the education and research capability of their countries and to ensure a skilled labor force. They are interested to secure high employability and to promote schemes to stimulate closer partnership between academia and industry thus attracting an additional source of funding

The Tripartite relationship is essential for all European public universities. In this knot of multi-stakeholder relations the following important issues are brought to the fore:

- Innovativeness and the process of: The ICT industry is a sphere of rapid technological change, which makes existing knowledge quickly obsolete. While innovation today is mainly produced outside academia, universities can give high-value contributions by way of strong partnership schemes. A great challenge for European universities is to cultivate the spirit of innovativeness by regarding the process of education not simply as an individual endeavor of the students but rather an environment of group work, establishing trust and open exchange of ideas.

- The demand for continuous life-long learning and e-learning projects
- The dilemma of the university curricula focus and the "skill-sets" and qualification of the computer science graduates – narrow and strictly specialized or broad and basic
- The urgent need of a pan-European system for the recognition of university diplomas and certificates: The lack of a system directly effects the mobility of ICT graduates, limits their working opportunities and deprives the ICT industry in general of skilled labor. The Bologna pan-European agreement of 1999 set the process toward the mutual recognition of university diplomas. Several papers discuss the restructuring that is occurring in the national systems of education as well as some of the experienced weaknesses.

Many concrete examples and useful case studies of mutually beneficial schemes for university-industry cooperation are contained in the book.

The Genzano di Roma Declaration [*see NL Vol. 5, no. 2., Summer 2007*] directly emanated from the Workshop recommendations. It is strongly recommended that IT STAR continues to provide a form for discussion on the important topic of University ICT education and research, qualifications and certification, and the Tripartite partnership between academia, industry and government.