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" Free Software: Scientific and Technological Innovation "

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Training ICT for the Recovery of European Economies

Antonio Teti

The offshoring of the European ICT sector and the immigration of IT professionals calls for a drastic review of our professional policy, one which will improve and shape ICT resources to meet the demands of the new global and local scenario.

Keywords: Globalization, ICT, Offshoring, Professional Certification, Training.

1 In a "Glocal" World (Global and Local at the same time)

For a number of years now Information and Communication Technologies (ICT) have taken on the role of main player in all human activities in the world today. Internet and globalization are the glue that integrates information technologies in all organizations, providing services at all levels. ICT can be an enormous help in reducing the cost of products and services which can yield substantial returns, even in the field of employment.

Meanwhile the ICT itself is rapidly changing to accommodate new trends and services (information blogs, e-commerce, e-learning, Internet Protocol TV, etc.). Under the influence of these trends and transformations, the market is being driven by a process of concentration of objectives and strategic alliances between the "players" of an even greater magnitude than in the golden years of the *New Economy*. The record number of acquisitions and of mergers in the last two years both in Europe, and more particularly in the United States, will have a great impact on the years to come, especially on world markets.

This scenario is replete with opportunities and potential. But there are also threats, particularly for southern European countries, if they fail to adopt structural policies to promote sustainable innovation and if their companies do not attempt to innovate, since otherwise they will put their long-term survival at serious risk. The challenge in the coming years for all the players in the market (users and suppliers, and European Governments) will be to read the present situation with eyes toward the future, not to the past, and act accordingly.

It is common knowledge that Southern European economies are based on a large proportion of small and medium-size enterprises which make a consistent contribution to the national economy. This economic and industrial fragmentation does not impact negatively on the development of ICT in companies: in fact it often leads to a great effervescence of the ICT market at its lower levels and may actually be a strong point, given that many ICT solutions tailored to the requirements of the customer (often an SME, Small and Medium Enterprise) originate from the desks and keyboards of local programmers. But at the same time this fragmenta-

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tion also represents a weakness, because it is not conducive to the provision of complex solutions, undoubtedly in the hands of major international, and especially US, companies.

Southern European markets are strongly dependent on external ICT markets and are highly influenced by external suppliers, whether they be operating systems (Microsoft), anti-malware systems (Symantec, McAfee), databases (Oracle, DB2, SQL Server), ERP systems (SAP, Sage, IBM), servers (Windows, SuSE, Red Hat, Solaris), publishing and multimedia platforms (Dreamweaver, Photoshop), storage solutions (CISCO, Sun), hardware (Dell, HP, IBM), or Internet search (Google, Yahoo, Altavista). Some excellent home-grown and European products may be highly successful, but most find it difficult to break into international markets, partly as a result of weak and poorly interoperable ICT infrastructures. The more the market goes global, the greater this disadvantage becomes. Europe has also been very slow to adopt open technologies and platforms that could provide a great opportunity for innovation and competitive repositioning.

We all know how difficult it is to make accurate forecasts in a sector characterized by constant changes in trends and markets, as amply demonstrated by the "boom" of the *New Economy*, which later turned into a "bust" as a large number of ICT companies launched on the promise of easy pickings went to the wall). But there are also excellent examples of ICT progress in Europe, such as Ireland and Estonia, whose economic growth in recent years rivals that of the "Asian tigers" of the nineties. Dublin is a completely

WiFi wired city, while Estonia may be the most high-tech nation in Europe. But it is not enough to become more organized: the companies and governments of European countries need to make a massive investment in innovation and new technologies to promote the supply of products and, most of all, services which are currently provided under archaic methods and systems.¹

2 The Drive of "Chindia" (China and India)

Meanwhile globalization has prompted many European companies to offshore their own activity to countries like China and India. India is becoming the low-cost destination for all those service activities that have grown too expensive in the wealthy English-speaking countries (USA, UK, Australia).

The Gross Domestic Product of India is growing at an annual rate of 9% and the real driver of this growth is the ICT sector itself, which in some cases is growing at a rate in excess of 40%. Indians can deliver all intangible services to the English-speaking countries in a perfect English accent (they need only 4 months of language training) with competencies that are often greater than those of their wealthier counterparts, and at a fraction of the cost.

Being quick to realize the potential of the Indian market, the big US ICT companies are spending billions to offshore to India. "ICT villages", such as New Oroville, have sprung up, where a constant stream of technicians (nearly all IT and engineering graduates) live, work, and are trained in state-of-the-art technologies while earning a fraction of what they would be paid in California. Multilingual call centres, accounting systems, multilingual educational aids (exam correction, preparation of tests), telemarketing, legal queries and actions, architectural and engineering projects are just some of the service in the process of offshoring.

Because ICT sector services are already highly offshored: software production; remote customer care for PC users; system interventions for networks, servers, and databases; data migration and integration (documents are physically transferred and restored); security consultancy; document management; statistical analysis of acquired data; multimedia operations (video, audio, and photographic montages), etc. The firms involved are Dell, Oracle, IBM, Microsoft, Sun, Intel, AMD, SAP, HP and a host of others.

¹ For example, one idea might be the use of digital ID card based on RFID technology (a radiofrequency based ID system) which has been trialled in the United States and is now fast being widely deployed: by means of a very simple, low cost "card" all the cardholder's data plus all case information can be captured speedily. After its trial as an "ID card" it will also be used as a digital passport, without any additional implementation, thereby simplifying procedures and saving time, etc.

² The countries that were former colonies of Spain, Portugal, France or Great Britain have fewer language and culture problems; their relative proximity of distance from Europe gives rise to a more stable model of immigration.

China is up there too, and its strength does not only lie in low salaries. The Chinese miracle is also the fruit of high productivity, high quality of education and scientific research, and investment in modern infrastructures. For example, the Zhangjiang High-Tech Park in Pudong is, even today, still largely unknown to most people. Until 1992 it was just a huge field farmed by poor farmers; today it is home to 3,700 companies which have invested nearly 11,000 million dollars to create laboratories and scientific and technological research centres in what has been dubbed China's Silicon Valley. Which companies have invested there? Microsoft, Intel, IBM, Hewlett-Packard and Infosys among others. It is no coincidence that since 2003 Asian markets have even had a specialized profession whose members are referred to as "offshore engineers".

3 Repercussions in Europe

It is not only European companies that are shipping part or all of their manufacturing activity to emerging countries. Queuing up at the borders of Europe are thousands of competent technicians who are hungry for salaries that here we might think ridiculously low. The number of Indian and Chinese engineers is not only growing in English-speaking countries. This is hardly surprising if we consider that on average an Indian IT engineer is happy earning around 17,000 euros in Europe, while his Chinese counterpart (equally well qualified) is willing to accept 13,000 euros. In other, less Anglophone countries we might think that the fragmentation and lack of dissemination of many European languages would act as a deterrent. But in the Balkans and the Baltic states, language schools teaching these languages (German, French, Italian) are springing up like mushrooms to teach the local technicians who want a better income but would prefer to stay in their own country. Such operations are often backed by the big companies that straddle the new European countries and are subsidized by European cohesion funds.²

It is not a question of whether this problem of the fierce competition for IT jobs will arise, but rather of exactly what form it will take when it does. The only proactive solution available hinges on the competence and professionalism of all involved. European governments, schools and universities must play a decisive role in a process of cultural renewal involving professional innovation and growth at each and every level. There must be a constant effort to promote cultural and professional growth among Europe's IT professionals at every level, whether institutional or corporate.

Ongoing training means improved skills, greater competitiveness, and therefore a better outlook with regard to the evolution and enhancement of the products/services provided in the context of a worldwide market. For example, in the United States, which has been hugely affected by offshoring, the local technicians are spending money and energy on becoming more specialized, an effort which often pays dividends by allowing them to rejoin the job market with better prospects. They cannot prevent the arrival of job-hungry foreign professionals, so they attempt to lev-

erage the cumulative advantage gained in previous years to raise their own skill levels and become competitive again in the job market.

The commitment of European institutions and national governments plays a vital role as a driving force behind the ICT sector. Unfortunately, institutions and governments have for decades been unfairly providing aid to companies without a future (latterly even to football clubs) and have neglected to give proper help to the "jewels" of their economies: companies that were once "centres of technological excellence" and are now mere shadows of their former selves.³ You do not need to invent the wheel or be a rocket scientist to know which are the best choices to make and which are the best paths to take. Often all that is needed are simple incentives to give a boost to a sector which is already rich with skilled and competent professionals. The simple availability of broadband, for example, may be one of the best "fertilizers" available today, together with the raising of public education standards. But we continue to see incredible examples of wasted financial and human resources.⁴

4 Qualitative and Quantitative Improvement of Professional ICT Skills

The production of IT systems and the consequent distribution of services is the result of a complex organizational machinery involving technology, applications, know-how, and the availability of personnel. Whether we are talking about a company operating in the open market or merely an internal corporate function, these critical success factors do not only rely on the knowledge and mastery of the technologies but, and perhaps more importantly, on the ability to transform technologies into services for external or internal customers.

In the training sector there has also been a major change in direction: professionals and companies need to make a large investment in training, in specialization, and in ensuring that the business activity itself is not only profitable but also as professional as possible. As is said in the English-speaking world "...training to invest in yourself".

³ Having worked for a number of years at Olivetti's Research and Development Centre (which at the time was more advanced than its American rival, AT&T), I remember how we used to get researchers coming from all over the world to study the technologies used by Italy in the manufacture of the first PCs of that time.

⁴ By way of an example we only have to look at the bizarre portal set up to promote tourism in Italy <www.Italy.it> which was recently officially released to the public at large. It cost something in the region of 50 million euros to produce, but expert opinion around the world claim it is slow, technologically obsolete, and poor in content. To cover their backs after a less than glorious presentation, the Government has said that the portal "is still under development". Meanwhile China has overtaken Italy as a destination for international tourism. Developments like this are not the way to meet the global challenges posed by ICT.

⁵ CEPIS has also developed the IT Administrator certificate, a professional level with a more limited responsibility for positions in smaller, either independent or decentralized, entities.

There are obvious benefits to be obtained from the use of Internet in companies' business processes, whether in terms of increased efficiency or improved performance of existing processes, or in terms of new strategic opportunities.

But the enormous strategic importance of ICT in companies also introduces new and serious risks arising from the need for new professional categories to be introduced in the ICT sector. Economic and social activities' growing dependency on ICT makes it critical to address the problem of defining or creating specific and up-to-date competency profiles in the sector. To ensure the delivery of the desired performance levels, specialists entrusted with the design, construction, and implementation of a system not only need to have a sound competency in a specific area, but must also have a vast, constantly updated, experience of current technological advances. This leads to the conclusion that, even after completing a specialized university course, a young, recently graduated IT professional needs to maintain an ongoing and sustained level of specialization, and cannot afford to relax and let his or her knowledge slide into obsolescence.

5 EUCIP, Paradigm of European Certifications for ICT Professionals

Ongoing training is the key to the success for all categories of specialists wishing to succeed in business environments subject to continuous changes driven by the evolution of technology and the communication media.

For this reason CEPIS (*Council of European Professional Informatics Societies*) decided to set up a European programme to develop a training course aimed at all IT professionals wishing to receive specific, highly specialized training. The basic idea of the EUCIP programme (*European Certification for Informatics Professionals* – <http://www.eucip.org>) is to establish a level of certification demonstrating a specific professional competence in accordance with the candidate's career path.

CEPIS had previously been responsible for the ECDL (*European Computer Driving Licence*), its popular and widely recognized certification that indicates a basic level of IT competence at user level. But CEPIS places EUCIP at the tip of the certifications pyramid; EUCIP certificate holders have proven themselves to be highly competent professionals capable of occupying top-level positions requiring a high degree of responsibility and professional competence in a business environment.⁵

EUCIP certification does not only aim to raise the profile of the professionals awarded it. It also aims to offer corporate organizations a guaranteed source of certified professionals with a high level of training and specialization who will help optimize the productivity and profitability of their businesses.

6 EUCIP and the re-Launch of ICT in Europe

EUCIP forms part of the Lisbon strategy re-launch proposed by the European Union. CEPIS President Geoff

McMullen presented EUCIP as part of a project developed by a consortium made up of CEPIS, Manchester University, and Eurochambres, with the sponsorship of the Directorate General Enterprise and Industry [1]. This project analyses an extensive consultation with the ICT industry and its European organizations, both public and private, and a key element of both the current long-term European e-Skills strategy (ICT profiles) and CEPIS's own EUCIP on-going training strategy to acquire those e-Skills.

The study uses six scenarios to cover the range of possible job markets and works with a robust prediction model to forecast the supply and demand for e-skills while factoring in the impact of offshoring. The study analyses the influence that some 90 factors may have on supply and demand, broken down into three main headings: the rate of ICT innovation, the economic climate, and the pace of offshoring. Each scenario addresses different professional shortcomings and requires an appropriate public policy at a national and a European level.

The study concludes by recommending that we should seek to improve both our understanding of the growth and globalization scenarios of the ICT sector (by improving the quality of data and making comparative studies) and the degree of collaboration between companies and politicians with regard to the impact of changing ICT cycles.

Finally, the study calls for a detailed examination of the qualitative aspects of the current e-skills gap (for example, by taking joint action to create positive publicity for careers in ICT), together with the development of innovative ways to correct the gap between the e-skills that enterprises require and those that universities teach. The study also calls for increasingly more pressing socio-professional agreements, both at a domestic level in each country and at an international and European level [2] [3].

Translation by Steve Turpin

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