Newsletter - Calibrated for Creative Communications

Vol. 10, no. 2, Summer 2012

Here Comes the Sun

Getting ready for your usual summer trek in search of the Sun? There's still some time, and before your dash off to your favorite beach, or mountain, or wherever your cravings take you, stop for a while and check out our Summer NL Issue.

We offer an exciting professional journey - you are surely interested in e-Skills as a strategic asset of the Knowledge Economy, and we publish the preliminary results of an AICA - IT STAR project developed on the occasion of the 24th International Olympiad in Informatics in Italy.

The Summer NL edition contains a report on the IT STAR Panel on Internet Privacy and Data Protection, convened during IT STAR's latest Workshop on Digital Security - 30 March 2012 in Bratislava. Likewise, we include a perspective of the IT Security Manager Profile, described during that conference and rooted in the European e-Competence Framework of the CEN WS on ICT Skills, further complemented by EUCIP and the CEPIS Survey on e-Competence Profiles.

What more? An early lead on the forthcoming IPTS report on Innovation Policies for ICT in Europe is there, and you will surely enjoy a trip to Baltic Amber via our MultiCulti column.

Take the Journey,

Plamen Nedkov

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Editor

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Letters to the Editor

"I wanted to check the availability to host the seventh IT STAR WS (Electronic Business II), May 3 to 4 2013 in Bari. The answer is definitely yes with double possibility of hosting the conference at the Polytechnic or in an ancient hall of the Province Council of Bari, on the waterfront. Bari houses the relics of St. Nicholas and in these days the festivities for the city patron saint begin, ending with the historical pageant "La Caravella" on the evening of May 7 and the statue of the saint carried in a boat the morning of May 8 with fireworks - almost an unique show! I hope I can put in coincidence participation in some concerts."

Giuseppe Mastronardi
Chair of AICA-Puglia, Professor at the Polytechnic Univ. of Bari

"The Board of the John von Neumann Computer Society confirmed our invitation to IT STAR to organize in 2014 an IT STAR event on the topic of History of Computing, at the venue of the Museum of Computer History in Szeged".

Balint Domolki
Honorary President of JvNCS - Hungary and representative to IT STAR

"Many journals, bulletins and newsletters come across my desk every month but IT STAR NL is my favorite. A thoughtful digest and balanced mix of contributions that is in my view a paradigm and an unmet challenge to many."

Niko Schlamberger
President of the Slovenian Society "INFORMATIKA"

"Regarding the Spring issue - you have done a great job as always!"

Eugenijus Telesius
Managing Director, Information Technologies Institute and CEO of ECDL - Lithuania ■

EDITORIAL POLICY

This Newsletter maintains a world-class standard in providing researched material on ICT and Information Society activities from the perspective of Central, Eastern and Southern Europe (CESE) within a global context. It facilitates the information and communication flow within the region and internationally by supporting a recognized platform and networking media and thus enhancing the visibility and activities of the IT STAR Association.

The stakeholders whose interests this newspaper is addressing are

- IT STAR member societies and members
- ICT professionals, practitioners and institutions across the broad range of activities related to ICTs in government, business, academia and the public sector in general
- International organizations

Special arrangements for the production and circulation of the Newsletter could be negotiated.

The newsletter is circulated to leading CESE ICT societies and professionals, as well as to other societies and IT professionals internationally. Everyone interested in CESE developments and working in the ICT field is welcome to contribute with original material. Proposals for articles and material for the Newsletter should be sent two months before the publication date to info@starbus.org.

Digital Security

The 6th IT STAR Workshop on Digital Security was held on 30 March 2012 in Bratislava, Slovakia. More than 40 participants were in attendance. 10 presentations were delivered, followed by a panel on Internet privacy and data protection. The conference material is posted at www.star-bus.org/ws6. We are pleased to publish below a report on the panel and an articled based on an Information Security Job Profile – The Editor

Report on the Panel on Internet Privacy and Data Protection

Niko Schlamberger,
President of SSI - Slovenia
(Panel Facilitator)

on behalf of the panel participants

Fm left: Marek Holynski, PIPS-Poland, Balint Domolki, NJSZT- Hungary, Demosthenes Ikonomou, ENISA, Branislav Rovan, SSCS-Slovakia

Further to the contributions that were prepared and presented at the workshop by notable authors and guest speakers, a panel discussion was organized to additionally clarify certain issues by the panelists and the conference participants. The panel covered three topics: privacy, data protection, and intellectual property rights.

1. Introductory Explanations

The present age is characterized by ubiquitous and extensive use of computers and communications, usually referred to as ICT. The new means have besides benefits introduced new threats. The subject of the panel has not been benefits but the threats – what are they, how to recognize them, how to defend against them, and how to avoid them. Many of the risks that are considered to be inherent to ICT are not, such as eavesdropping and theft of identity. What raises the awareness is the ease of procurement of necessary tools and skills that facilitate attackers' misdeeds. However, ICT has created genuinely new dangers that have not existed before because they had been technically impossible. Many of them are related to widespread use of social networks and related services: software patents, retention of data on private communications, abuse of social networks by both providers and users. While we all love to use free new Internet and social networks service providers' facilities, at the same time the basic fact is ignored that the supply does not come for free. Being at no cost for users does not mean that they are at no expense for providers. To be able to offer them free they have invented a new alchemy of transforming data into money. What users are not generally aware of is that it is data on and about them that makes the new alchemy work.

Privacy is probably one of the greatest apprehensions in this context. Along with it new categories of rights are emerging which have not been an issue anytime before in history. One such example is "right to be forgotten". In the new environment, new players have entered trying to methodically and systematically regulate new situations. Ombudsman is an institution with quite some tradition in Nordic countries and the paradigm has been successfully implemented in European Union countries and wider. Another such successful attempt is the United States Freedom of Information Act. On the other hand the same powers that try to protect individuals, introduce regulations that are not working necessarily and absolutely in the intended direction. One such example is data retention requirement of communication. While it is clear that such regulation can help in investigating organized crime it is also clear that archive data on private communication can be abused.

Intellectual rights are another big issue of the day. Again it is the ease of multiplication and dissemination of original works of art and science, but also of common nature such as private photos and conversation that has expanded the issue into a topic that has attracted attention of authorities. One attempt to regulate the matter is the presently much debated Anti-Counterfeiting Trade Agreement (ACTA). Not that it is the only one of the kind1 but surely the most recent one, it has surprisingly generated revolts generally and worldwide even to such extent that the initial enthusiasm about it has rather faded down. Again it must be said that while it is

1 Two more regulations of the kind are United States *Stop Online Piracy Act (SOPA)* and *Protect IP Act (PIPA)*.

important to protect intellectual property it is also important to do it the right way. The bottom line that is indisputable is that whatever is not allowed off-line must not be allowed on-line. Less clear is how to make this principle work.

Further attempts are under way. The European Commission has prepared a comprehensive reform of the data protection rules. The Council of Europe has modernized the Convention 108 - agreement between signatories that also non-EU countries may sign. In USA the Federal Trade Commission Report titled *Protecting Consumer Privacy in an Era of Rapid Change* offers recommendations for businesses and policymakers. However, a common policy and practices are seemingly still some distance away.

2. Responses by Panelists and by the Audience

After presenting and explaining the issues, views by the panelists and by the audience were expressed in the discussion that followed, not all of them sharing the same opinion.

As for data retention and archiving, cloud computing is useful but it also creates new dangers. Too little concern is devoted to safety of data in the cloud. Consumer data privacy is a general concern but safety of corporate data is an unexplored issue. It can be a matter of survival to companies. The newest endeavors by the authorities are more likely attempts to enforce rather than regulate. Benefits of directives are taken for granted but are not necessarily obvious. Consumer privacy is vital in enabling e-democracy but on the other hand it encourages offences of various degrees. *Echelon* has been much debated some time ago but seemingly it is out of public focus regardless of its unchanged nature and potential.

ICT has created a mass of commodities, which seem to somehow elude control putting us somehow in a position of the sorcerer's disciple. Intellectual property rights in the software domain may require a special regulation as compared to classical work. A possible approach could be to shorten the copyright period for ICT based intellectual property.

ACTA is seen as a rather rigid and unfriendly approach. The most radical view is that it is an attempt of censorship and a contrary to democracy. It grants too much power to commercial companies, which in turn might inhibit development of ICT and information society. The example of *Creative Commons* has been offered as a paradigm how to overcome the problems ACTA tries to solve.

3. The Bottom Line

The discussion has shown that each of the issues would alone require the time allotted to the three of them (privacy, data protection, and intellectual property rights). It was also clear that all participants did not share similar opinions although there have been not explicitly opposing the expressed views. The common consent has been that the panel was about safety. In the base of the Maslow pyramid is security and it has been perceived also at the base of the conference and the panel in particular. The highest degree of consent was reached on the issues of privacy and data protection while ACTA has not been generally appreciated regardless of some positive details. A recommendation was that such panels are an advantage for IT STAR workshops but should be devoted to one issue. ■

CEPIS Survey on e-Competence Profiles: the Information Security Job Profile

Roberto Bellini

Roberto is President of AICA's Milan Chapter and EUCIP Manager for Italy.

e-CF and the EUCIP System

The European e-Competence Framework (e-CF) is the new reference framework of 36 ICT competences and 23 profiles that can be used and understood by ICT demand and supply companies, the public sector, educational and social partners across Europe[1]. The development and promotion of the e-CF has been carried out through CEN, the European Committee for Standardization, and CENELEC, the European Committee for Electrotechnical Standardization, within their standards work in the domain of Information and Communication Technologies (ICT), and specifically through a series of CEN ICT Skills Workshop projects supported by the European Commission - DG Enterprise and Industry.

The EUCIP system has been designed and promoted by CEPIS as the basis for the provision of certification in seven countries across Europe[2], including Italy under the responsibility of AICA, aimed at informatics professionals and practitioners[3]. AICA has furthermore developed the EUCIP Services Program, providing assessment and measurement of ICT skills and other specialized Human Resource management services.

CEPIS, as well as some of its members such as AICA, are participating in the CEN ICT Skills Workshop and its projects. CEPIS supports the dissemination of the e-CF and is committed to accomplish the integration of ICT HR Management Services (including certification) centered on the e-CF framework and enriched with the experience and results of the EUCIP system and service program.

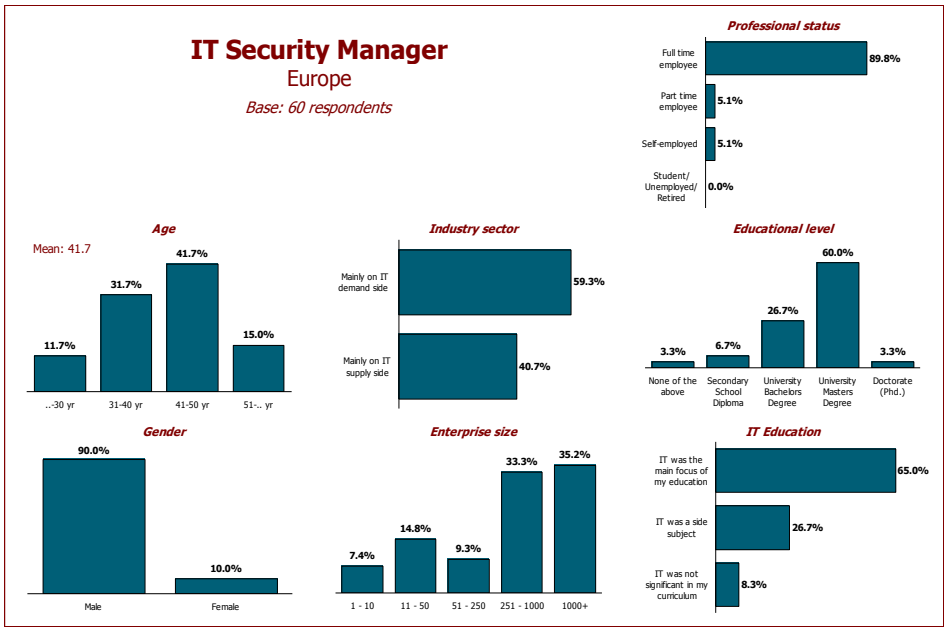
As part of this alignment with e-CF, CEPIS and AICA have completed two specific projects during the last 2 years:

- The Sloop2desc project[4], with the involvement of hundreds of computer science teachers in Romania, Slovenia and Italy. The open educational resources, designed with reference to the EUCIP Core syllabus, can be easily adapted to the e-CF framework but, above all, the spread – sponsored by Sloop2desc – of the culture of competence-based learning and the reference to an external competence framework has created a climate for the diffusion of e-CF in informatics schools.

- The CEPIS European Survey of Professional e-Competence provides an insight of Professional e-Competences[5]. The research was conducted using an online self-assessment tool based on the e-CF. A set of 18 IT career profiles, recognized by the labor market, and 44 enhanced e-competences derived from the European e-Competence Framework, form the pillars of the assessment tool.

Proximity Profiles - detail of

IT Security Manager



The CEPIS Survey Results

The objective of this research was the evaluation of competence gaps among IT professionals across Europe. Nearly 2000 IT professionals from 28 countries across Europe participated in the survey. The following main recommendations arise:

1. The young talent that Europe needs is lacking – promoting the IT profession among young people is essential.
2. Continuous Professional Development (CPD) needs to play a greater role and should be targeted to existing and anticipated e-competence gaps. Examples are

1 http://www.ecompetences.eu/
2 http://www.cepis.org/index.jsp?p=1116&n=1124
3 www.eucip.org
4 http://www.sloop2desc.eu/
5 http://cepis.org/professionalecompetence

given on IT Project Manager and Security Manager profiles.
3. Career paths with defined training and education requirements are needed.
4. All countries urgently need to address the gender imbalance.

The CEPIS Survey results allow for an in-depth analysis of the Information Technology Security Manager Profile, as shown in the Proximity Profile below.

The Proximity Profile is the one where most professionals matched the required competences: we have 60 respondents matching the profile of IT Security Manager, that is only 30% of those that declared this profile before the calculation. .From an anagraphic point of view, the age of these practitioners seems to be quite high (more than 63% are older than 41 years), around 84% are male, their educational level is very high (68% have at least a university degree) and their education has been strongly focused on ICT.
The model adopted by e-CF allows other competences at a higher granularity level to be considered for each profile; for instance, in his presentation during the IT STAR Digital Security WS in Bratislava[6] Prof. G. Mastronardi quoted the Digital Forensic special skills, that are not included in the IT Security Manager profile in the CEPIS Survey; it is possible to select among the skills quoted as essential by the Digital Forensic Profile those that could be added in the original profile, to obtain a more complete profile or to determine a new one.

Conclusions

The anticipated shortage of IT professionals with required competences and the associated costs paint a grim picture for Europe's industry.

The availability of the new e-CF system and the CEPIS Survey results allow a better understanding of the e-competences IT professionals in Europe currently have. Identifying and analyzing the e-competences of IT professionals across Europe can enable European employers, industry (including SMEs and entrepreneurs), policymakers, and educators to develop and implement a vision to manage the mismatches and shortfalls that threaten Europe's competitiveness and productivity.

The added value of the CEPIS approach, derived from the ECDL and EUCIP system expertise offers the market (schools, universities and continuous training bodies; large organizations, enterprises and distribution & supply chains of networked micro enterprises; professionals and managers with non-focused IT education as individuals) concrete and focused services, helping business and specialist groups to manage HR IT resources for recruiting, organizing, training and learning, certifying, etc., with reference to a common and unique framework. ■

6 http://www.starbus.org/ws6

Talent in Informatics

IOI Survey on Young Talent in Informatics – preliminary finding of an AICA project launched in co-operation with IT STAR

Plamen Nedkov

Plamen is Chief Executive of IT STAR and Project Coordinator of the Survey on Young Talent in Informatics

Introduction

The International Olympiad in Informatics (IOI) is widely recognized as a leading international competition of algorithmic nature, in which national teams composed of secondary school pupils show such basic IT skills as problem analysis, design of algorithms and data structures, programming and testing.

The 24th edition of the IOI will convene from 23 to 30 September 2012 in Lombardy, Italy, 25 years after UNESCO's endorsement of the original proposal of Bulgaria for organizing such competitions, an excellent occasion to underline UNESCO's role and activities in this field. The Italian organizers plan an international conference on Young Talent in Informatics on 26 September in Milan. On that occasion and as a contribution to the conference, AICA - the leading Italian Informatics Association in cooperation with IT STAR - the regional ICT Association in Central, Eastern and Southern Europe, launched a survey with the objective to examine and promote the experience of countries in Central, Eastern and Southern Europe whose IOI teams have shown remarkable results in IOI competitions. The findings, based on consultations, interviews and Internet research, will be reported at the conference.

Approach

Competitions are embedded in the process of education: whether in the classroom, or on a local, regional, national/ international level. Constant monitoring of teaching and learning results is a useful practice to access performance, gain new experience, introduce measures to improve the process and reward the best performers. In this regard, the performance of national teams in IOI competitions could be viewed as indicative of ongoing processes in the broad fundament of the national education systems and the national network of mathematics and informatics related institutions.

In considering our project approach, we kept in mind that exact sciences are "difficult". There is a decline of ICT

students in many European countries[1]. On the other hand, ICT competences are strategic assets for the development of Europe as a real Knowledge Society, and any broadening of the gap between the scarcity of ICT-Skills and the needs informatics professionals and users by the economy might have serious consequences.[2] Policy-makers in Europe should take urgent notice of this fact and ensure the necessary measures and investments in education. We hope the findings of the project would be useful to this end.

This paper (and, indeed, the survey) is based on a questionnaire related to the selection, preparation and participation of national IOI teams of Bulgaria, Croatia, Latvia, Poland and Slovakia. These countries were chosen in order to have a representative sample of the whole of Eastern Europe - Latvia for the Baltics, Poland and Slovakia for Central Europe and Bulgaria and Croatia for South-Eastern Europe. With the exception of Poland, these countries are rather small in all counts but deliver remarkable results at international informatics competitions.

Their overall ranking, on the basis of IOI medals, is:

#	Country	Gold	Silver	Bronze	Total
1	China	57	22	12	**91**
2	Russia	40	28	12	**80**
3	**Poland**	**31**	**27**	**23**	**81**
4	USA	30	30	14	**74**
7	**Slovakia**	**20**	**32**	**18**	**70**
8	**Bulgaria**	**18**	**32**	**30**	**80**
17	**Croatia**	**10**	**23**	**29**	**62**
23	**Latvia**	**5**	**19**	**33**	**57**

Source: http://www.eduardische.com/ioi/

Their IOI achievement is striking. These countries were our start-up point, however, the project is open to the experience of other countries in the region, which have done remarkably well in IOI. We hope to have on board in the near future material concerning Romania, 6th in the overall IOI ranking, the Czech rep. - 12th, Hungary - 15th, and other.

Chairpersons/leaders of the national bodies and IOI teams were invited to complete a questionnaire and to comment on such issues as the national team selection, coaching, communication and promotion, motivation and background for success. A section of the questionnaire was on informatics curricula in schools. In addition, personal interviews were organized in some of the countries. This was carried-out so as to gain a deeper understanding of the following:

- How could countries of this region with small economies and tight budgets for education show consistently, within the IOI format, significantly higher results than the larger and richer economies of Western Europe?
- What are the driving forces of this achievement?
- What are the motivation factors?

A separate set of contacts was made with youngsters who are/were national team-members and have won medals in IOI competitions. The perspective of school teachers and trainers was sought to expand our knowledge of the successful organization and experience of these countries and the issues involved and we are of the opinion that the project could lead to further work with wider implications in education and beyond.

Findings

On the basis of our work so far we can identify the following groupings of factors contributing to the successful participation of the national teams of these countries in IOI competitions:

- *Tradition*
- *Strong emphasis on mathematics in national education*
- *Targeted extra-curricular activities*
- *Early start and gaining experience by participating in competitions*
- *Systematic management, dedicated people*
- *Motivation and reward*

Tradition

Math competitions were organized in the region as early as the end of the 19th century: a primary-school math competition was reportedly held in Bucharest, Romania in 1885 and in 1894 the Eotvos competition in Hungary set the model for math competitions of secondary school pupils. Mathematics journals were launched in both countries in the 90's of the 19th century. In 1934 a Mathematical Olympiad was organized in Leningrad, now St. Petersburg, Russia. The 1st International Mathematical Olympiad (IMO) was organized by Romania in 1959 with seven countries from Eastern Europe participating – the idea to organize such a competition matured during the 4th Congress of the Romanian Mathematicians in 1956 and provided a model for the organization of other competitions, including in the field of informatics [Today, IMO brings together competitors from over 90 countries].[3]

The proposal for an International Olympiad in Informatics (IOI) was made by Blagovest Sendov[4] on behalf of Bulgaria, and endorsed by UNESCO's General Conference in 1987. The 1st IOI was held in Pravetz, Bulgaria in 1989 with the participation of teams from 13 countries.[5]

The respondents from the countries involved in our survey point out that they possess tradition and culture in organizing programming competitions – an important factor for the

1 Jan Dirk Schagen "The ICCT-Mindsets Model – Attracting Young People to the World of ICT", IT STAR Newsletter – http://nl.starbus.org - Vol.9, no.4 Winter 2011/12

2 B. Lamborghini in ICT Skills Education and Certification, ISBN 88-901620-5-8, Eds. G. Occhini & P. Nedkov

3 For further details on the history of competitions – Petar S. Kenderov "Competitions and Mathematics Education", Proceedings of the International Congress of Mathematicians, Madrid, Spain, 2006

4 Mathematician, was Rector of Sofia University and President of the Bulgarian Academy of Sciences

5 Petar S. Kenderov "An Insight of the first Informatics Olympiad" in IT STAR Newsletter Vol. 5, no.3, Autumn 2007 – http://nl.starbus.org

success of their teams, and an inspiration for further work.

Emphasis on mathematics in schools

The regular school curricula in mathematics and informatics are not sufficient to form good competitors in IOI related competitions, however, a solid mathematical knowledge base is certainly a tipping success asset – as a matter of fact, some of the competitors and winners of medals in past IOI competitions have done similarly well in IMO competitions.

The Eastern European model of secondary education during the 60s, 70s and 80s of last century has had a strong emphasis on the study of exact sciences. In addition, a network of gymnasiums specializing in mathematical education (similar to the model of foreign language schools in these countries) was established in the late 60s - early 70s. Such specialized math-oriented schools continue to function today, though, in some of our interviews it was made clear that the ongoing reorganizations of the educational field might negatively influence math education in secondary education in general, which might also reflect on the performance in math and informatics-related education and competitions. In the case of Slovakia, the reorganization of school education has led to a reduction of the weekly number of math teaching in basic and secondary school. On that backdrop, the results of the Slovak IOI teams suggest a decline with no gold medals won during the last 6 years.

Extra-curricular activities

There are some informatics related courses in the curricula of lower secondary (10-14 years) and upper secondary schools. This as mentioned above is not sufficient for the preparation of highly competitive participants in informatics related competitions. Several of the IOI competitors we interviewed said that on-line competitions, training, solving tasks from previous competitions, participation in correspondence seminars in programming, participation in special courses for math and informatics competitions, summer camps and other forms of preparation have contributed to their success.

There are many paths and activities to ensure a solid preparation for IOI-related competitions. We give the following for illustration:

In the case of Bulgaria and Latvia, private educational institutions are involved in preparing all who wish to compete: in Bulgaria, the A&B private school in Shumen was established with the objective to prepare pupils for national and international informatics related competitions[6], in Latvia, Progmeistars private school[7] has similar objectives. Both institutions have developed and introduced methodologies in delivering results and a confirmation of this is that pupils who have attended their courses have won gold medals during the last IOI-2011 in Thailand. A gold medallist who had taken part in such courses said that this has helped him think as a programmer – an important detail related to the performance of these private schools.

One successful training activity in Slovakia is the Correspondence seminar in programming (CSP)[8]. On the seminar's website one can find the problem sets and other information. The competition is of theoretical nature and is organized in rounds. Another form of training/competition for students from secondary schools is "PALMA" – Programming, algorithms, and mathematics. This is an on-line competition involving real programming and automatic evaluation. There is also PALMA Junior organized for pupils at basic school and prepared for one- or two-member teams.

The Polish Children's fund has an important function to work with talented children in various fields, including IT. Similarly, in Bulgaria the High School Student Institute (HSSI) was established by the Institute of Mathematics and Informatics, the Union of Bulgarian Mathematicians, Foundation "Eureka" and the International "St. St. Cyril and Methodius" Foundation with the objective to identify, develop and manifest the talent of pupils in mathematics and informatics. In Croatia, the programs of the Croatian Computer Science Association (CCSA), the main organizer of the selection and preparation of the national IOI teams, fully cover the IOI syllabus.

In most of these countries, the Olympiad itself is an educational activity: materials are published after the events and contain detailed analysis, Internet portals are maintained and summer camps are organized.

Early start, gaining experience by participating

Most of the respondents to our questionnaire said there is no minimal age for participating in regional and national competitions, but in practice the youngest participants are from 10 to 14 years old. In our further interviews, opinions were expressed that, to be successful in IOI competitions, contestants should start at least at the age of 12-13 as at 15 it is already late.

Another aspect of this is that many contestants experience an initial "stage fright" related to their participation in international competitions. Gaining experience by participating is an important success factor and this is reflected in the record of top performers during the course of several consecutive years of participation in IOI competitions.

Systematic Management, Dedicated People

Formally IOI related matters are under the broad umbrella of the national ministries of education, yet in all countries there are specialized professional institutions, which have responsibilities to prepare and oversee the process

6 INTERNAL CONTESTS AS AN ELEMENT OF THE TRAINING OF PUPILS FOR COMPETITIONS IN INFORMATICS, Anton Mollov, Bisserka Yovcheva, Peter Petrov in Proceedings of the 38th Spring Conference of the Union of Bulgarian Mathematicians

7 www.progmeistars.lv

8 Gabriela Andrejkova "E-learning and e-training of students and their teachers in informatics" - http://virtuni.eas.sk/rocnik/2005/data/program/64_15_Andrejkova.pdf

of selection through internal competitions of the national teams, their additional coaching and participation in IOI competitions.

This is a tested process of meticulous organization based on several tiers of selection – school/local, regional and national competitions, summer schools, training camps and international competitions.[9] Teams from all the countries involved in this survey take part in interregional competitions such as the Balkan Olympiad in Informatics, the Baltic Olympiad in Informatics and the Central European Olympiad in Informatics. For some countries (i.e. the Baltic OI for Latvia) these interregional competitions are an element in the selection process, for others (i.e. Poland in the case of the Baltic OI) they present opportunities for "younger" participants to gain experience.

In the core of this process are dedicated individuals – university professors and students, teachers, tutors, ex-competitors. Many of them have started their involvement as early as the first participation of their country in the IOI process. Some fears were expressed that it is hard to find "new recruitments" for this activity. At the same time, it was a pleasure to meet with the Latvian organizers during the recent 18th Baltic OI, 3-7 May 2012 in Ventspils, Latvia[10] and to observe that many ex-members of the Latvian IOI teams (currently students or young professionals) continue to be involved as organizers, deputy team leaders for recent IOIs, and as authors of tasks and other activities related to IOI.

The ministries for education provide sum funds for the organization of competitions, training camps and international travel and associated activities, though these are reportedly far from sufficient. Additional funds are sought and sponsors attracted, very often on the basis of personal connections, in some cases also related to ex-competitors that have consequently done well professionally. Sponsorship from the IT Industry, foundations and other sources is an important aspect of the funding of IOI related activities in Bulgaria, Latvia and Poland.

Motivation and reward

Motivation is in the core of success and all stakeholders in the process are motivated to take part and see opportunities in doing so. There are two types of participants – the pupils that go through the process and compete at IOIs, and their teachers, instructors, methodological leaders and organizers.

The competitors we interviewed are bright young men, yet no one of them considers himself as exceptional in any respect. After one session of interviews in Latvia I was asked jokingly by one of them whether this would make him famous. This reminded me of a reaction from Genadii Karatzkevitch (Belarus)[11], then 14 years old. Asked whether he has his own strategy of problem-solving his response was that he tries various ways and one works … followed by "I am no genius. I am simply good at it".

Yes, they are good at it and this is achieved with a lot of practice and exercises and the motivation comes from various sources including family and friends, teachers and tutors, computers and ICT, challenging problem-solving, learning from mistakes and improving, competing and winning, … One should also not forget the fun part of it – summer camps, meeting friends, local and international travel.

When entering the path of international competitions, the link between success in IOI's and its impact on future professional development is hardly a fixation for anyone. But the possibilities are there and these competitors are gradually exposed to them - top performers are "noticed" and become heroes of sorts in their communities, travel more, have possibilities for internships in leading IT companies, receive awards and scholarships, gain easier access to top universities in their countries and internationally.

For the other type of participants – teachers, researchers, instructors, team-leaders – there are some financial awards, according to some of the respondents, though the highest reward for a good performance in our mind is professional satisfaction, accomplishment and recognition. Clearly, most of the persons involved in IOIs are professional academics and educators and their experience with IOI is directly reflected in their academic output.

This paper presents some preliminary findings. The project is under development and the results will be finalized in August, reported at the International IOI conference on 26 September 2012 in Milan and further disseminated. ■

9 For details concerning Bulgaria and Poland
- K. Manev, E. Kelevedjiev, S. Kapralov "Programming Contests for School Students in Bulgaria" in Olympiads in Informatics, 2007, Vol. 1, 112–123, Institute of Mathematics and Informatics, Vilnius
- Krzysztof Diks, Jan Madey "From Top Coders to Top IT Professionals" see http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/d/Diks:Krzysztof.html

10 http://www.boi2012.lv/

IOI related Events

The 18th **Baltic Olympiad in Informatics** was held in Ventspils, Latvia from 3 to 7 May 2012 with the participation of Denmark, Estonia, Finland, Germany, Latvia Lithuania, Norway, Poland and Sweden. Polish participants won 4 of the 5 gold medals that were awarded at this event. The 5th gold medal went to a Swede.

11 http://www.ioi2009.org/downloads/br8-3str-en.pdf

The 19th **Central European Olympiad in Informatics** will be organized in Tata, Hungary from 7 to 13 July 2012. Teams from the regularly participating countries - Czech Republic, Slovakia, Germany, Poland, Croatia, Romania and Hungary – are expected to take part. ■

World Championship In Team Programming

Krzysztof Diks

Krzysztof is Professor at the Institute of Informatics of the University of Warsaw. He is Chairman of the Polish IOI Committee and was an organizer of the Warsaw event.

In May 14-18, 2012, the University of Warsaw hosted finalists of the 36th Annual ACM International Collegiate Programming Contest. The ACM International Collegiate Programming Contest – the ACM-ICPC - is the oldest and most prestigious computer science competition in the world, and it is considered to be a world championship in team programming. Each team consists of three students representing a single university.

Regionals are the first stage of the competition; a few dozen regional eliminations are organized on all inhabited continents. The best teams selected during the regionals (including winners and a few runner-up teams, depending on the strength of the region and the number of competing teams) advance to the finals. Both regionals and finals have the same format: each team, composed of three members, is presented with one computer and given five hours in which to solve between eight and twelve tasks. The solutions proposed by the contestants are evaluated in real time, after which the teams receive post-evaluation feedback in the form of a short but clear communication: accepted; run-time error; time limit exceeded; wrong answer; presentation error.

All tasks are evaluated individually and marked as accepted or rejected. The team that completes the most tasks successfully wins the competition. In the event that several teams complete the same number of tasks, they are ranked based on the total time spent solving the tasks, shorter times being better. However, each rejected submission of a completed solution results in a 20-minute time penalty.

From over 8,000 teams selected in regionals from 2,219 universities in 85 countries, the top one hundred and twelve teams of students competed at the 36th Annual ACM International Collegiate Programming Contest World Finals sponsored by IBM on May 17, 2012, in Warsaw, Poland. The 2012 World Champion became St. Petersburg State University of IT, Mechanics and Optics solving 9 tasks out of 12. The University of Warsaw won the second place with the same number of tasks but with worse time. Below is the list of the best twelve teams:

Place	Name
1	St. Petersburg State University of IT, Mechanics and Optics
2	University of Warsaw
3	Moscow Institute of Physics & Technology
4	Shanghai Jiao Tong University
5	Belarusian State University
6	Zhongshan (Sun Yat-sen) University
7	Harvard University
8	The Chinese University of Hong Kong
9	University of Waterloo
10	Moscow State University
11	University of Tokyo
12	Belarus State University of Informatics and Radioelectronics

The 2013 World Finals will take place in St. Petersburg, Russia. ■

IPTS

Innovation policies for ICT in Europe

An excerpt from a forthcoming IPTS Report based on a text by R. Veugeleers and reedited by Marc Bogdanowicz. The report will be available soon at http://is.jrc.ec.europa.eu/pages/ISG/innovation.html

In the EU, the US and Japan, the ICT sector is by far the largest R&D-investing sector. In 2007, while the ICT sector represented 4.8 % of GDP and 3 % of total employment in the EU, it accounted for 25% of overall Business Expenditure in R&D (BERD) and employed 32.4 % of all business-sector researchers.

Within the ICT sector, ICT services and more particularly the software sector have been growing in importance. In 2007, ICT Services accounted for more than 75% of total ICT value added, with 42% being in the "computer services and software" subsector alone. The "computer services and software" subsector is also the only EU ICT segment with a strong and sustained increase in both BERD and the employment of researchers.

The ICT sector is also the area most responsible for the business R&D gap between the United States and the EU. The EU-private R&D deficit compared to the United States is primarily manifested in ICT goods and services. This correlates with a lower specialisation of the EU economy in ICT, and since ICT sectors are highly R&D intensive and growth enhancing, matters for Europe's overall innovation and growth performance.

Although the ICT sector is the largest R&D investing sector in both economies, the weight of the ICT sector in total R&D expenditures is substantially smaller in the EU than in the US. While the US has a technology specialization[1] in all ICT sectors, the EU only holds a technology specialisation in Telecom Equipment and Telecom Services. In software, one of the most dynamic ICT sectors in terms of R&D, the EU has no Revealed Technology Advantage. In Internet, Europe holds no major leading innovators, as does Japan[2]. It's not only that the ICT sector has less weight in the EU business R&D environment compared to the US, but also that Europe's ICT firms overall are less R&D intensive compared to the US. The US ICT R&D intensity is almost twice as high as the EU's (11.2% relative to 6.2% in 2007). This lower R&D intensity of the EU ICT sector seems to be mostly due to a failure to specialize in the ICT subsectors which are most R&D intensive, most notably semiconductors and the ICT service-based internet and software sectors. Within these subsectors, EU firms are not particularly outperformed in terms of R&D intensity by their US counterparts.

Further firm-level evidence suggests that the EU's R&D deficit in the information technology sector may reflect constraints on the rapid growth of new, technology-based entrants in the EU compared to the US.

Europe's business age structure is key to understanding its difficulties in redirecting itself towards high-tech high-growth sectors. A recent Bruegel Policy Brief [3] shows, based on an analysis of leading innovators in the 2008 EC-JRC R&D Scoreboard, that the EU's business R&D deficit compared to the US can be almost entirely explained by the EU having fewer young leading innovators (*yollies*) in young high-tech sectors. This age deficit is mostly present in the ICT and health sectors.

Almost all of the ICT sectors are "young", namely where leading innovators are (more than average) composed of young firms (i.e. born after 1975), the only exception being Telecom Services. Firms in these "young" sectors are highly R&D intensive, not only the young firms, but also the older firms in these young sectors. As these "young" ICT sectors are also the most R&D intensive, Europe's lack of technology specialisation in the "young" ICT sectors, like Internet, semiconductors and software, can therefore go a long way to explain its lower overall R&D intensity. The clearest case is the Internet sector, which was entirely born after 1975 and in which Europe does not hold any world-leading innovator. Only telecom equipment is a young, high R&D intensive sector in which European firms have managed to build a strong technology position.

There is a considerable heterogeneity across young ICT sectors in the relative importance and performance of EU's young and old leading innovators relative to their US counterparts. In the telecoms equipment sector, a sector of technology specialisation for Europe, the EU has fewer young leading innovators in this sector than the US has. But the few ones it has are more R&D intensive than older leading innovators, and even more importantly they outperform their young US counterparts. In computer services, more of the EU's leading innovators are young but these young ones are less R&D intensive than their US counterparts. In software, the EU manages to get relatively more young leading innovators than the US and they are somewhat more R&D intensive than their US counterparts.

To conclude, Europe's strong position is in the layer of telecom services, which is the "oldest" and least R&D intensive layer. Software and Internet are not only the ICT sectors with the highest R&D intensity, they are also the "youngest" layer. In these sectors, Europe is less present. Europe's struggling R&D position in the ICT eco-system can

1 Revealed Technology Advantage Indices (RTAs) are calculated using the IPTS Scoreboard data. The advantage of using this data is that they allow for a more detailed split-up of ICT sectors than the usual BERD data from OECD. The disadvantage is that it only includes the largest R&D spenders. Nevertheless, the R&D expenditures of the scoreboard firms represent more than 80% of all BERD (Veugelers & Cincera (2010). The IPTS scoreboard data do as yet not allow for a sufficiently long time series analysis. The analysis reported here is performed on only one year (2007), but an update for 2008 revealed similar results (IPTS (2011)).

2 Also when looking at patenting activity, the US also appears to be notably more specialised in ICT than the EU. In 2006, 50 % of all patents applied for by US-based inventors, were in ICT technologies, compared to only 20 % of all patents applied for by EU-based inventors (EC's "Innovation Union Competitiveness Report 2011").

3 Veugelers, R. and M. Cincera, 2010, Europe's Missing Yollies, Bruegel Policy Brief, 2010/6.

therefore be related to its sectoral and age composition and its failure to redirect towards new sectors: the ICT sector contributes less to R&D in the EU than in the US because it is smaller. And it is smaller precisely in the subsectors where R&D intensity is highest, which are also the sectors among the youngest.

Why is it that European firms are less present as leading innovators in new ICT sectors? The most common factor in the literature to explain the differences in dynamic structure between the US and the EU is a greater willingness on the part of the US financial markets to fund projects in new sectors. The more fragmented nature of Europe's product markets have also been often cited as potential barriers to innovate in the region compared with the United States. For new sectors, this holds particularly with respect to markets of early users willing to take up and co-develop innovations. In addition, the lower exit and re-entry costs for firms and the greater mobility in the US labour market are factors spurring the emergence of new industries and new firms in the US.

Nonetheless, part of the story is also the deficiency in the EU innovation "ecosystem" to effectively link its innovation actors. Firstly, a well-functioning interface between the science system and the corporate sector is important for new emerging technologies, which are often built on insights from frontier research. Secondly, the importance of a smooth interface between public and private innovation actors for new ICT markets is demonstrated through the long-standing and continued importance of the role of the US federal government through R&D subsidies and other mechanisms. In particular, the role of public procurement has to be emphasized; US public institutions have been an important early user, pivotal in leveraging further private markets. Thirdly, considering market entry and growth, the relationships between incumbent firms and new innovators also matter. Some experts noted how fortunate the US has been to have a symbiosis of young firms introducing breakthrough innovations, while the large firms, in a mix of cooperation and competition with these young firms, do the follow-up innovations, further improving the breakthrough innovations of the former. Other observers note how critical antitrust policy has been for the development of ICT sectors in the US, not only by reinforcing a competitive environment for R&D performers and commercial promoters, but also by contributing to a relatively weak IP enforcement in the early years of development of the ICT sector and allowing smoother inter-firm diffusion and entry by new firms.

The implications of the unfavourable age- and sectoral composition of Europe's corporate R&D landscape is daunting for EU innovation policy making, which has very ambitious knowledge-based growth aspirations.

The **EU's innovation policy** has been built around shaping the right framework conditions for innovation, common across all sectors and all firms. Such an overarching horizontal innovation policy may be necessary. But will it be sufficient? Will policies aimed at raising R&D expenditure across all types of industries and firms tackle specific barriers faced in new sectors, particularly in new ICT sectors? Is the "Innovation Union" flagship initiative the answer to address Europe's structural innovation deficit?

The **EU's ICT policy** has traditionally placed a strong emphasis on infrastructure building and ensuring consumer's access to currently available technologies at short-run competitive prices. On ICT innovation the attention has been mostly given to public funding of pre-commercial R&D via FP instruments, such as large networks. ICT innovation capacity building has been a relatively weak focus, with less consideration for entrepreneurship, commercialisation and new business creation[4]. Is the "Digital Agenda" flagship initiative the answer to address Europe's structural innovation deficit in ICT?

With such premises, extracted from the introduction to a forthcoming JRC-IPTS report authored by R.Veugeleers, N. Véron and B. van Pottelsberghe, the JRC-IPTS is embarking in an analysis of ICT Innovation policies in Europe and the US. ■

4 Veugelers, R. and B. van Pottelsberghe, 2009, Memo to the Digital Agenda Commissioner and Veugelers, R., 2009.

MS News & Events

Bulgaria

[MC³S] **Meet Challenges in Cryptography and Cyber-Security** - intensive summer school: theory + practice, series of 4-hour lectures by international experts + workshops, mini-tutorials, round-table discussions on hot topics
Date: 28 July (Saturday) - 5 August 2012 (Sunday)
Place: National Institute of Education, Oriahovitza, Bulgaria
Co-organizers: Balkanski-Panitza Institute for Advanced Studies (BPIAS), European Software Institute – Center Eastern Europe (ESI CEE), Minu Balkanski Foundation, IT industry and academic partners
Contacts: minko.balkanski@balkanski-foundation.org gesha@esicenter.bg, http://www.cryptobg.org/

Lithuania

10th International Baltic Conference on Databases and Information Systems (**Baltic DB&IS 2012**)
Date and place: July 8-11, 2012, Vilnius, Lithuania
Organizers:
Lithuanian Computer Society
Lithuanian Academy of Sciences
VU Institute of Mathematics and Informatics
Contacts: BalticDBIS2012@gmail.com
http://www.mii.lt/BalticDBIS2012/

Italy

24th International Olympiad in Informatics
23 - 30 September 2012, Sirmione and Montichiari, Lombardy

Further information www.ioi2012.org

International Conference on Talent in Informatics
26 September, Milan
(organized in cooperation with IT STAR)

Poland

2012 Federated Conference on Computer Science and Information Systems (**FedCSIS**)
Date and place: 9 - 12 September 2012, Wroclaw, Poland
Organizers: Polish Information Processing Societies (PTI) in cooperation with IEEE, ACM and other
Contacts: secretariat@fedcsis.org, http://www.fedcsis.org

Forthcoming IT STAR Events

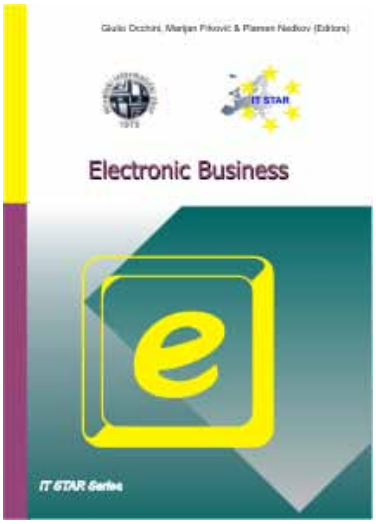
7th IT STAR WS on Electronic Business II

Teatro Margherita: source - *italianvisits.com*

AICA and its section in Puglia will host this signature IT STAR event, which will convene on 3 and 4 May 2013 in Bari, Italy as a follow-up of the highly successful IT STAR Conference on Electronic Business, held in November 2010 in Zagreb, Croatia.

Preparations are underway and will broadly build on the results of the 5th IT STAR Workshop – see http://www.star-bus.org/ws5/ws5.htm and the conference proceedings.

Proceedings of the 5th IT STAR WS on Electronic Business, 12 November 2010, Zagreb, Croatia



Editors: Giulio Occhini, Marijan Frković & Plamen Nedkov
© IT STAR, 124p, ISBN 978-88-905406-1-5

2014 IT STAR Conference on History of Computing

An invitation was extended by the John von Neumann Computer Society to host a conference on History of Computing in the IT STAR region in 2014 in Szeged.

Other Events

The European Conference on Learning Innovations and Quality (LINQ) will convene on 23 October 2012 in Brussels, Belgium. Experts from Learning, Education, and Training (LET), Human Resources Development, and Quality Certification are invited to contribute with papers and presentations. Information, including the call for papers and program, is posted at the conference web-site http://www.learning-innovations.eu

■

MultiCulti

Baltic Amber - Riga

Dorothy Hayden

This time my story is about Riga, which I had the pleasure to visit in May. I've heard before that it's a beautiful place, but my expectations were exceeded by far with opportunities for sightseeing, history, architecture, gastronomy and a friendly atmosphere.

Riga was founded in 1201 and as a former Hanseatic League member grew into a large and powerful city. Today, it is the biggest metropolis in the Baltics: the broader Riga area is home to nearly 1 million inhabitants, which is half of the Latvian population. The capital is bilingual, with Latvian and Russian spoken practically by everyone. English is also widely used in the services sectors. As a tourist destination with an increasing number of foreign visitors Riga is well connected by air, sea and ground.

My hotel was on the other side of the Daugava river, just across Riga's historical center, a UNESCO World Heritage site. My two days there started early with a sunrise wake-up. Following a generous breakfast, typical for northern Europe, it was walking time – 10 minutes across the Akmens bridge to the Latvian Riflemen square, the City Hall and the Blackheads House, a beautiful 14th century building of the bachelor merchants of Riga, with a Dutch Renaissance façade, severely damaged during WW II but nicely restored in 1999.

Churches are in abundance, the most impressive ones being St. Peter's church with an elevator going up its steeple with stunning bird-eye views, the Nativity of Christ Orthodox Cathedral and the Dome Cathedral with its famous organ.

The winding cobblestone streets in the old quarter are bordered by countless cafes, restaurants, terraces, pastry shops and pubs and the Mediterranean flair, also due to the sunny May weather, was simply charming.

Other features that impress are the many parks of this green city, the canal leading from the Daugava into the heart of the city and offering another way for sightseeing by boat, the beautiful buildings that are meticulously restored and kept, making Riga the premier Art Nouveau destination of Europe.

What more? … Riga boasts to be the Baltic capital of gastronomy and offers a variety of places for wining and dining. As a person with a sweet tooth, the dessert is an enjoyable part of my meal and I experienced something new, the Latvian Bread Soup (Maizes zupa), consisting of rye bread and dried fruit - for a recipe check http://kitchenmouse.rozentali.com/2009/08/maiz-eszupa-latvian-bread-soup/ and enjoy!

SNAPSHOT

REGIONAL ICT ASSOCIATION IN CENTRAL, EASTERN & SOUTHERN EUROPE

Type of organization

Regional non-governmental and non-profit professional association in the ICT field.

Date and place of establishment

18 April **2001**, Portoroz, Slovenia

Membership

Countries represented (*see next page for societies*), year of accession, representatives

- Austria (2001) V. Risak, G. Kotsis, E. Mühlvenzl
- Bulgaria (2003) K. Boyanov
- Croatia (2002) M. Frkovic
- Cyprus (2009) P. Masouras
- Czech Republic (2001) O. Stepankova, J. Stuller
- Greece (2003) S. Katsikas
- Hungary (2001) B. Domolki
- Italy (2001) G. Occhini
- Lithuania (2003) E. Telesius
- Macedonia (2003) P. Indovski
- Poland (2007) M. Holynski
- Romania (2003) V. Baltac
- Serbia (2003) G. Dukic
- Slovakia (2001) I. Privara, B. Rovan
- Slovenia (2001) N. Schlamberger

Statutes

IT STAR Charter http://www.starbus.org/download/charter.pdf adopted on 23 October 2004 by the IT STAR Business Meeting in Prague, the Czech Republic.

Mission

"To be the leading regional information and communi-cation technology organization in Central, Eastern and Southern Europe which promotes, assists and increases the activities of its members and encourages and pro-motes regional and international cooperation for the benefit of its constituency, the region and the interna-tional ICT community."

Governance

IT STAR is governed according to the letter of its Charter by the Business Meeting of MS representatives:

2012 Bratislava, **Slovakia** (April)
2011 Portoroz, **Slovenia** (April)
2010 Zagreb, **Croatia** (November)
2009 Rome, **Italy** (November)
2008 Godollo, **Hungary** (November)
2007 Genzano di Roma, **Italy** (May)
Timisoara, **Romania** (October)
2006 Ljubljana, **Slovenia** (May)
Bratislava, **Slovakia** (November)
2005 Herceg Novi, **Serbia & Montenegro** (June)
Vienna, **Austria** (November)
2004 Chioggia, **Italy** (May)
Prague, **the Czech Republic** (October)
2003 Opatija, **Croatia** (June)
Budapest, **Hungary** (October)
2002 Portoroz, **Slovenia** (April)
Bratislava, **Slovakia** (November)
2001 Portoroz, **Slovenia** (April)
Como, **Italy** (September)

Coordinators

2010 – Igor Privara
2006 – 2010 Giulio Occhini
2003 – 2006 Niko Schlamberger
2001 – 2003 Plamen Nedkov (cur. Chief Executive)

Major Activities

- 6th IT STAR WS on Digital Security - http://www.starbus.org/ws6
- IPTS - IT STAR Conference on R&D in EEMS - http://eems.starbus.org
- 5th IT STAR WS and publication on Electronic Business - http://starbus.org/ws5/ws5.htm
- 4th IT STAR WS and publication on Skills Education and Certification - http://starbus.org/ws4/ws4.htm
- 3rd IT STAR WS and publication on National Information Society Experiences – NISE 08 http://www.starbus.org/ws3/ws3.htm
- 2nd IT STAR WS and publication on Universities and the ICT Industry
- http://www.starbus.org/ws2/ws2.htm
- 1st IT STAR WS and publication on R&D in ICT http://www.starbus.org/ws1/ws1.htm
- IT Professional Pool Database (in progress)
- Workshop and publication on National Experiences related to the EU's 5th and 6th FP http://www.starbus.org/download/supplement.pdf
- Joint IT STAR – FISTERA Workshop on ICT and the Eastern European Dimension

Periodicals

The IT STAR Newsletter (nl.starbus.org) published quarterly.

Web-site

www.itstar.eu ■

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