Newsletter - *Calibrated for Creative Communications*

Vol. 4, no. 2, Summer 2006

From the Editor

Dear Reader,

The Spring Issue of this newspaper was enjoyed by many. One very positive aspect was that along with the Internet distribution we had significant hard-copy bulk orders from our member societies. Furthermore, the organizers of 3 major events – the Annual Conference of the SSI, AICA's Conference on ICT in Europe: Market and Competence in Rome, and the 9th John v. Neumann Congress in Hungary – ordered newsletter copies for distribution to their conference participants.

We are now pleased to present the Summer Issue. In preparing it, we relied on the input of the leading ICT Societies and experts in our region. We also received excellent articles from the EU Institute of Prospective Technological Studies in Seville and the Charles Babbage Foundation in the USA.

Our "Firsts" include descriptions and photos of the original computers that were developed and introduced in Bulgaria, Czechoslovakia and Italy in the late 50-ties and early 60-ties of the last century. There is also information about a new workshop in the IT STAR Event series.

For more, you're welcome to take the Journey!

Happy reading,
Plamen Nedkov ■

Contents:

Letters to the Editor:
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Organization

IT STAR Meets in Ljubljana

The regular Spring meeting was held in the lovely capital of Slovenia. The Association returned to the country where 5 years ago, in Portoroz on the Adriatic coast, IT STAR was established. The hospitality arrangements were superb and the Slovenian Society "INFORMATIKA" spared no effort in making the participants feel at home.

The Slovenian *savoir faire* led to a productive meeting, which will be remembered for setting the following 5 directions in strengthening the regional ICT exchange:

- Further develop the IT STAR organization, its presence and identity as the leading regional ICT organization. Register www.itstar.eu and advance a regional network of Internet pages and cross-links of digital repositories, establish a Statutes Committee;
- Initiate exchange programs of journals and other literature in the Region;
- Begin with the practical deployment of the IT STAR Professional Pool Database;
- Launch an IT STAR Event Series (*see announcement for the first WS on p.7*);
- Ensure wide distribution of this Newsletter. ■

Who's Who in IT STAR

Balint Domolki

Born in 1935 in Budapest, Hungary.
Degree in mathematics: Eotvos Lorand University, Budapest (1957)
Postgraduate degree (PhD equivalent) in Computer Science: Moscow State University (1966)
Two six-month fellowships abroad: Manchester (1963) and Stanford (1974).

During 1957-59 Balint Domolki participated in the building of the first electronic computer in Hungary and later held managing positions in various Hungarian software development organizations:

- Computing Center of the Hungarian Academy of Sciences (1957-65),
- Infelor System Engineering Co. (1965-77),
- Computer Research Institute (SzKI): (1977-89).

He was the Founder and Managing Director (1990-97) of IQSOFT, a spin-off company of SzKI, member of the KFKI Computer Group since 1999.

Having retired from executive management in 1997 he served as chairman of the Board of Directors of IQSOFT and later, until 2003, he was member of the Board of its successor IQSYS. In 2003-04 he did advisory work for the Ministry of Informatics and Communications and participated in the development of the National Information Society Strategy (MITS). Since 2005 Balint leads a technology assessment project (Information Society Technology Perspectives) at the National Council for Communications and Information Technology.

He is a founding member of the John von Neumann Computer Society and has served in several capacities, including as president of the Society for the period 1985-90, following which he is Honorary President.

In IFIP, he represented Hungary in TC2 for the period 1970-1988 and participated in the organization of several World Congresses. Since 2001 he is the Hungarian member of the IFIP General Assembly.

Dr. Domolki is a founding member of IT STAR.

■

EDITORIAL POLICY

This Newsletter aims to maintain a world-class standard in providing timely, accurate and interesting material on ICT and Information Society activities from the perspectives of Central, Eastern and Southern Europe (CESE) within a global context. It strives to facilitate the information and communication flow within the region and internationally by supporting a recognized platform and networking media and thus promoting and improving the visibility and activities of the IT STAR Association.

The entities and stakeholders whose interests this newspaper is addressing are

- IT STAR's 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.

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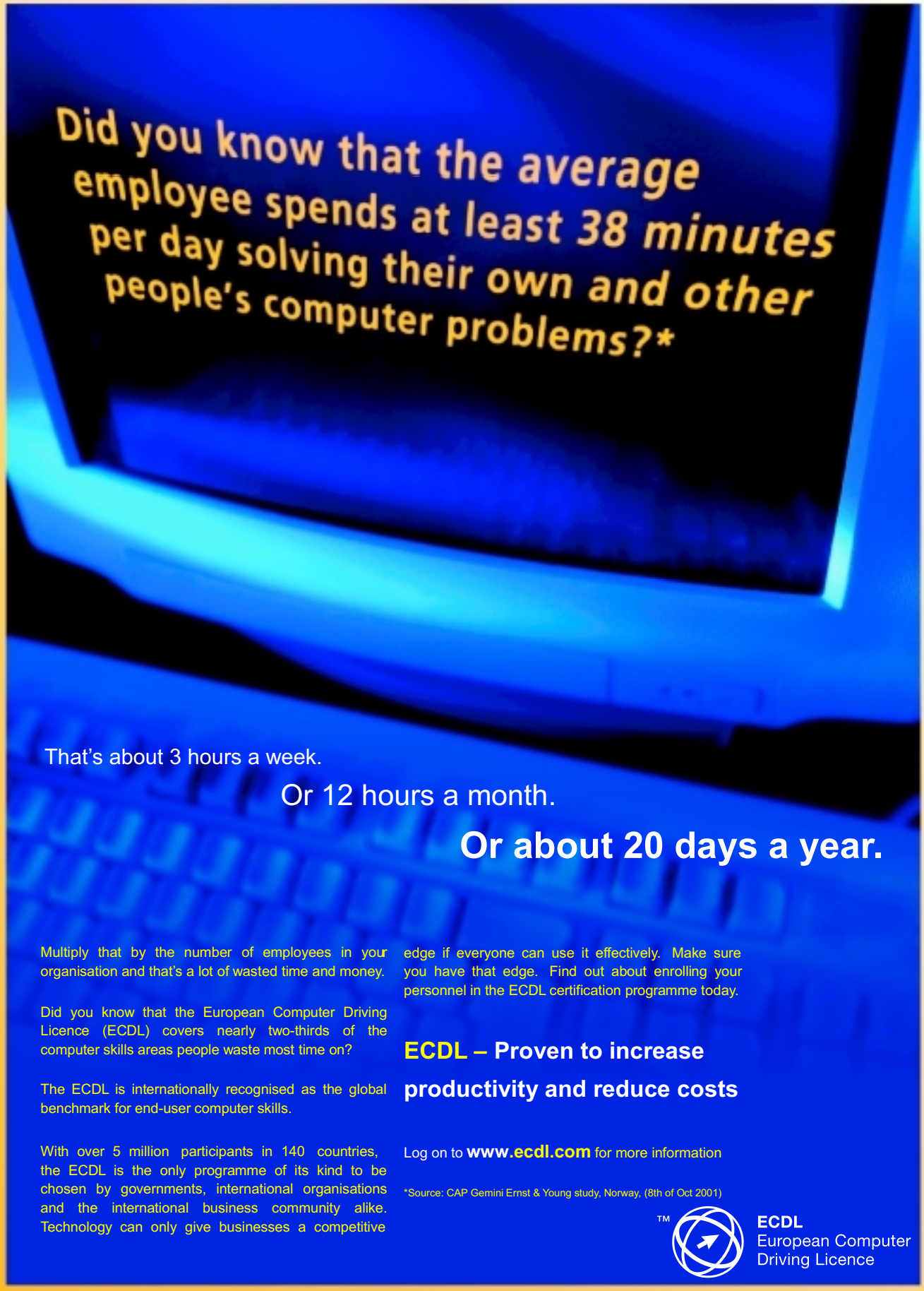
Special arrangements for the production and circulation of the Newsletter can be negotiated.

The newsletter is circulated to the 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 editor@starbus.org. ■

Articles Welcome

This newsletter is circulated to the leading ICT societies and professionals in Central, Eastern and Southern Europe (CESE), as well as to many other societies and IT professionals around the world. Everyone interested in CESE developments and working in the ICT field is welcome to contribute with original material. Proposals for articles should be sent to editor@starbus.org



That's about 3 hours a week.

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Or about 20 days a year.

Multiply that by the number of employees in your organisation and that's a lot of wasted time and money.

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*Source: CAP Gemini Ernst & Young study, Norway, (8th of Oct 2001)

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Letters to the Editor

[We publish below extracts from letters to the Editor with regard to the last issue of our NL. Your comments and suggestions will be most welcome. The coordinates are given on p.1]

"Dear Plamen,

I plan to visit Sofia on the JVA *(John Vincent Atanasoff- PN*) Initiative. I would like to see you and fill you in on this activity if you should be in the area.

The major thrust of the JVA Initiative is to raise a substantial amount of money ~$1M for awarding an International IEEE Medal biannually in JVA's name to someone that makes a significant technical (computer and/or software) contribution to our standard of living or quality of life. In addition we will support technical conferences, documentaries, books, and publicity to increase the awareness of JVA's seminal efforts in the invention of the ABC.

Your publication may be an assist in publicizing this. A conference is planned in Bulgaria October
3-6, 2006.

Best Regards, John"

John Vincent Atanasoff II, USA
CEO, Medefficiency Inc.

"I have looked at your fine newsletter - what a most interesting organization …"

James Cortada, USA ■

The Advent of the Information Society

*"While the **role of ICT in productivity growth** is well known, Europe still lags behind its major competitors in investing in ICT.*

*While ICT brings every day **new solutions to societal problems** from health to ageing and inclusion, Europe's administrations and public services are still slow in adopting ICT.*

*In all major scoreboards, **Europe comes third after the US and Asia** not only in embracing ICT but also in shaping its development and progress."*

***Vivianne Reding,** Commissioner for Information Society and Media*

[From Keynote Speech at the EU conference on "Forging a European Vision for ICT Research", 22-23 March 2006, Vienna] ■

A Snapshot of European Private Investment in ICT R&D [1]

by Geomina TURLEA and Martin ULBRICH

Geomina joined the ICT Unit of the Institute for Prospective Technological Studies (IPTS) in Seville in 2005. Her main interests are in macro-modeling and applied econometrics, particularly with regards to the knowledge economy and endogenous growth.

Martin joined IPTS in 2004. His main topics are biometric identification system, ICT and productivity, and the impact of ICT on social and economic structures.

***I**CT-related R&D and production can enable, or even drive, the current wave of internationalisation. At the same time, there is a growing concern among policy-makers and in the R&D community, that Europe may lose its position in leading-edge technologies such as ICT.*

IPTS has launched a study on private investment in R&D in ICT as a response to the need for a documented overview of the developments of R&D in ICT in the 25 EU Member States and in Europe as a whole. The study aims to deepen the existing understanding of R&D capacity-building processes in ICT sectors, and of the relative competitive advantages for the location of these capacities at the regional, national and European levels. The paper below presents synthesised results from the first phase of this ongoing project.

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[1] The paper analyses selected preliminary results from the ongoing *STUDY ON THE TRENDS IN EUROPEAN PUBLIC AND PRIVATE INVESTMENTS IN ICT R&D AND ON THE GLOBALISATION OF R&D AND THE COMPETITIVENESS OF THE EUROPEAN INNOVATION SYSTEM IN ICT* implemented by IPTS, DG Joint Research Centre on behalf of DG Information Society and Media. The views expressed hereby are of the authors and do not necessarily reflect the position of the European Commission

The following figures and conclusions refer exclusively to business expenditure of R&D [2] in the ICT sectors. [3]

There is a significant gap between the EU25 and its major competitors in terms of absolute and relative volume of investment in R&D in ICT and of overall R&D intensity.

Enterprises in the EU25 made a total R&D investment of 35.1 billion EUR in 2004. This was slightly less than half the investment made by the USA's corporate sector and close to that made by the Japanese corporate sector.

The share of ICT in total business-sector R&D expenditure in the EU 25 amounted to about 27% in 2004, significantly lower than in the US (39%), Japan (43%) and Korea (55%). This reflects to some extent their specialisation in the ICT industry as compared with Europe. Canada (30%) and Australia (23%) have similar levels to the EU. It is also interesting to note that this share has remained stable or even increased in the EU15 (the EU before the enlargement in 2004), US, Japan and Korea since 2000, but declined in Canada and Australia. Clearly, the bursting of the Internet bubble did not make the US, Japan and South Korea turn away from ICT to the extent that other countries did.

In terms of R&D intensity [4], the EU25's position is nevertheless worrying. The differential between the EU25 and the USA in R&D intensity in ICT sectors is 1 to 2.5, while between EU25 and Japan it is as high as 1 to 2.12. Even though these numbers may hide methodological limitations, [5] they show that, overall, the EU25 lags behind in terms of aggregate levels.

While the EU25 market is not fully integrated today, the EU25 model seems to build on hotspots of ICT R&D and production and intra-European regional specialisation. The overall figure for R&D intensity in EU25 hides significant differences between the member states. Countries such as Sweden, Finland, France and Denmark have R&D intensities in ICT sectors above, or close to, the ones in the USA, and show ratios specific to high-technology sectors in the traditional sense - for example, R&D expenditure exceeds 8.5% of sales. Sweden and particularly Finland have a much higher share of ICT R&D in their total business R&D (42% and 63% respectively). The figures indicate a similar situation for neighbouring Estonia and Latvia, but due to the small overall amount, the statistical significance needs to be checked further. If confirmed, this would be an indication of the spreading of the technology-oriented Nordic model towards the Baltic States. On the other hand, Italy and Spain form part of the EU15 group, and most of the other New Member States are also lagging behind. These are also countries where the business model in the ICT sectors is based on insourcing in manufacturing sectors and small companies delivering non-R&D intensive (but often innovative) services. With the deepening of the economic convergence process, the overall EU25 profile may change significantly. Even more clustering around the biggest knowledge creators seems to be a more likely future. This development is favoured by current EU policies, which include the creation of platforms, incubators and liaisons between universities and industries. At the same time, a rich layer of knowledge distributors and innovators will continue to mushroom all over Europe as part of the further deployment of the Information Society.

With the addition of the New Member States as a group, the heterogeneity at the EU level sharply increases. Most of the New Member States, like some countries on the periphery of the EU, build their competitive advantage mostly on cheap qualified labour and more locally-available niches. Hence their production is based more on technology transfer, knowledge flows through global networking and domestically relevant innovations, than on R&D-based knowledge

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2 This includes all R&D carried out by enterprises, irrespective of the origin of funds, and excludes R&D carried out in the public sector, i.e. in public research institutes and universities. For the analysis of the ICT sector, it nevertheless covers the vast majority of R&D, because at over 80% the share of overall R&D carried out by European industry is much higher than the 55% in the economy as a whole. Symptomatically, this sector is thus already well above the Lisbon target of 2/3 of total R&D financed by the private sector. Moreover, the share of private R&D investment in total is, in the case of ICT, much more similar between the EU, US and Japan than for the economy as a whole, thus facilitating international comparisons. The statistical evidence therefore would suggest the same multiplying factor from public funds to the private ones in the three main regions. Nevertheless, the complex triggering mechanisms of public funds, and the role of overall innovation systems in the dynamics of developments at national levels is still to be assessed.

3 For the purposes of the study, the ICT sector was defined according to the operational definition of the OECD's Frascati Manual of 2002, comprising the ISIC numbers 30, 32, 33, 64 and 72.[3] Hence, the figures do not include R&D carried out in other sectors, although the technology involved may be ICT. These activities are often referred to as "embedded" systems and may constitute an important share of R&D in other sectors.

4 Calculated as ratio between the R&D expenditures in the ICT business sector and the total production of ICT. In doing this estimation the most recent data for ICT production from the CSTI "Research And Development In Information Science And Technology in Large Industrialised Countries", http://www.recherche.gouv.fr/rapport/rdsti.htm was used.

5 For instance, the ICT production in the USA does not include the defence sector, where a significant part of research in ICT is carried out.

creation. In absolute terms, R&D investment in the ICT corporate sector is very low across all New Member States, at only 0.3 billion EUR altogether in 2004. This translates into only 7 EUR per inhabitant, compared to around 90 EUR per inhabitant in the EU15. The differential between the New Member States and the EU15 in terms of R&D intensity is 1 to 7 - almost three times bigger than the one between the EU25 and USA, Nevertheless, there are signs that the gap is starting to close – at least for some countries. Between 2002 and 2004, spending more than doubled in Poland, the Czech Republic and Estonia, showing, together with Portugal (+ 19%), France (+17%) and Finland (+ 12%), the most dynamic development. However, similar progress could not be observed for Hungary, Slovakia or Slovenia. In addition, the very low starting levels mean that even high growth rates do not yet result in significant absolute numbers compared to the EU25 as a whole.

R&D performance reflects the internationalisation trends and the success of EU15 in creating and maintaining knowledge-intensive niches. The relocation of ICT hardware production and ICT (enabled) services from the US and Western Europe to Asia and Eastern Europe has recently gained momentum and foreign direct investments, imports and exports are booming. This is especially true in specific regions and countries - for example, in New Members States like Estonia, Hungary and the Czech Republic. As a result, computer hardware manufacturing is the field where the least R&D is carried out within the EU25 ICT sectors. Moreover, it is heavily concentrated in just two member states: half in the Netherlands, and half in Germany. Telecoms equipment remains the most important ICT sub sector for R&D, now followed by computer-related services, with France, Germany and the UK joined by Finland and Sweden as important R&D locations. For medical and optical equipment, France and Germany lead, with Sweden again unusually important. R&D for Telecoms services is dominated by France, with Germany and the UK following, while for computer-related services it is the UK that dominates, followed by France and Germany.

The dynamics and distribution of R&D in ICT at EU25 level is driven by the behaviour of the big R&D investors. IPTS also compiles an annual scoreboard of the R&D expenditure of the largest 700 companies in the EU and the largest 700 non-EU companies.

This scoreboard shows that most R&D is carried out by large companies, heavily concentrated at the very top. The results confirm some tendencies previously observed: R&D in the EU has fallen in the ICT manufacturing sector, but grown in the service sector, especially in computer services.

Outside the EU, both R&D in ICT manufacturing and software and services continues to grow. Moreover, interestingly enough, the software and services market in the US seems more concentrated and mature that the ones in EU25. The USA's companies dominate the main world markets (software, Internet and computer services) while the top EU company (SAP, Germany) invests in R&D less than quarter the amount invested by the top two non-EU companies (Microsoft and IBM - both from the US).

The Netherlands and Germany, hosting companies such as Phillips, ASML, Siemens and Infineon technologies, lead EU25 investment in R&D in electronics and electrical equipment and IT hardware. Finland (with Nokia), Sweden (with Ericsson) shape the EU25 R&D profile in IT hardware. Germany, France and the UK host companies that lead EU25 performance in software and computer services.

Although these figures are not directly comparable with the ones presented above, [6] they seem to have valuable relevance at country level, as companies still tend to keep their strategic research activities in the country where they establish their headquarters. This is becoming less and less true, with the ongoing internationalisation process, and especially in the highly networked and delocalised e-economy. [7] In fact, as observed in the literature, there is a growing use of non-internal technology development in the ICT sectors, both by outsourcing and strategic alliances.

For the policy perspective, nevertheless, the important specificity of this development is that high innovation intensity in the ICT sectors, as well as the fact that increased international networking favours international leakages of knowledge, change the expected results of outsourcing. This needs to be taken into account when designing national innovation systems, as knowledge transfer at the frontier may have impoverishing effects on the knowledge creators themselves. Therefore, the key element in understanding and forecasting the dynamics of R&D investment in the EU25 is understanding the interplay between the strategies of the big companies and the competition between the national innovation systems. ■

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6 They do not include R&D by small companies; they attribute all R&D of a company to the country of its headquarter; they do not use the ISIC classification; the growth rates are for one year only

7 One very interesting case is ST Microelectronics, which, in spite of having the headquarters in Geneva, Switzerland, carries out as in 2005 88% of its R&D activities in EU, mainly in France and Italy, the origin countries of the two companies that merged into ST Microelectronics.

ANNOUNCEMENT

REGIONAL ICT ASSOCIATION IN CENTRAL, EASTERN & SOUTHERN EUROPE

1st IT STAR Workshop on R&D in Information and Communication Technology

In cooperation with the EU Institute for Prospective Technological Studies in Seville

Enabling ICT R&D in Central and South-Eastern Europe

11 November 2006, Bratislava, Slovakia

***The Mission** of this workshop is to investigate the current state of the ICT related R&D environment in Central, Eastern and Southern Europe so as to draw conclusions and recommendations to facilitate policymaking within the Region and the European Union.*

Steering Committee

V. Baltac, Romanian Association for Information and Communication Technology
K. Boyanov, Bulgarian Academy of Sciences
B. Domolki (Program Committee Co-Chair), John v. Neumann Computer Society, Hungary
G. Dukic, Informatics Alliance of Serbia and Montenegro
M. Frkovic, Croatian Information Technology Society
P. Indovski, Macedonian Association for Computer Technology
S. Katsikas, Greek Computer Society
P. Nedkov (Program Committee Co-Chair), IT STAR
G. Occhini, Italian Information Processing Association (AICA)
I. Privara (Organizing Committee Chair), Slovak Society for Computer Science
V. Risak, Austrian Computer Society
N. Schlamberger (Steering Committee Chair), Slovenian Society INFORMATIKA
J. Stuller, Czech Society for Cybernetics and Informatics
E. Telesius, Lithuanian Computer Society

Program

The one-day event based on commissioned **National Reports, Position Papers and Panels** will gather 25-30 senior experts to examine

- The impact of socioeconomic changes in CEE on the ICT R&D community;
- Driving forces, problems, success stories and setbacks;
- EU integration processes, current positive economic trends in the Region and their effect on R&D in ICTs;
- The role of ICT related R&D institutions in the techno-economic development of the Information Society - existing relations between the R&D establishment and government, the private sector and civil society organizations;
- What is done and what could be better done for a stronger impact of ICT R&D on societal development.

The Workshop proceedings will be published.

Contacts

Local organization and arrangements: Igor Privara <privara@infostat.sk>
Program and Panels: Balint Domolki <bdomolki@gmail.com>
Program, Reports and Publication: Plamen Nedkov <nedkov@utanet.at>

For further information on IT STAR and the Workshop please visit http://www.itstar.eu and contact your IT STAR Member Society and its representative on the WS Steering Committee

IS Profile – Romania

Romania as an IT-Nation: Today and in Future

by Vasile Baltac

Prof.Dr. Vasile Baltac is the President of the Romanian Information and Communication Technology Association (ATIC) and ATIC's representative to IT STAR

With a population of 22 million and an area of 237.000 sq. km., Romania is not a small country being the second largest in Central and East Europe. The GDP per capita is still small, 4.411 USD in 2005 at exchange rate parity, but 8.400 USD in PPP (purchase power parity). However, the rate of growth of GDP has been remarkable in the last 5 years, the economy showing healthy trends before accession to the EU (Chart 1).

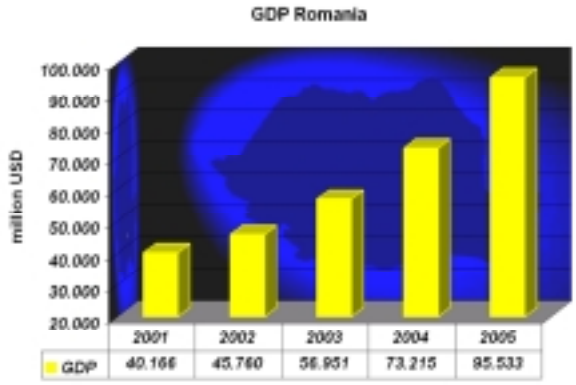

Chart 1

GDP composition is industry 34%, agriculture 13%, services 53%, the main industries being mining, timber, construction materials, metallurgy, chemistry, machine building, food processing, petroleum production and refining. The agricultural main products are wheat, corn, sugar beets, sunflower seeds, potatoes, grapes, milk, eggs, beef.

The labor force of 9,3 million is not hit by unemployment (5,5%) as an estimate of 2,5 million people work now abroad.

IT in Romania has its roots in the past. Romania, which was the first country in Eastern Europe to build first generation computers: CIFA-1957, MECIPT–1961, DACICC-1962. An industrial base was built in the 1970-ties with licenses from CII-France, Friden-Holland, Ampex, Memorex, Control Data –USA, etc. with research, manufacturing, service, trade, data processing organizations reaching a 40.000 people workforce. Minicomputers "Made in Romania" were exported to Czechoslovakia, East Germany, China, the Middle East and other markets.

But technologies became obsolete in the period 1980-1989 due to lack of investments in western currencies. After 1989 almost all major international IT&C companies arrived in Romania in a sector now almost 100% private or privatized. They discovered the Romanian IT&C best assets, human resources and a quickly developing market.

The Romanian education system is largely recognized as one of the best in the world of IT&C. Over 5.000 new graduates enter the labor market every year. If 10 years ago most of them left Romania to find jobs in the West, now the ratio is much smaller and even some people return. Brainbench puts Romania first based on the number of skilled programmers in Europe.

There are 8.000 software and IT services companies in Romania. Most of them are small, but a process of acquisitions has started and the entry in the EU will probably accelerate this process. Instead of only hiring Romanian experts in their research and production facilities in USA and Western Europe many multinationals created rather large centers in Romania, like Alcatel, Siemens, Oracle, Infineon and recently Microsoft. The software giant will open a Romanian R&D center, despite the fact that people say that the second language spoken in Microsoft Redmond Campus Cafeteria is Romanian and its anti-virus technology is based on Romanian RAV bought by Microsoft in 2004.

Various reports appraise the eReadiness of Romania, i.e. the capacity of nations to participate in the Digital Economy from connectivity, information security, human capital, eBusiness climate and eLeadership. This is a reason for optimism for the IT future in Romania!

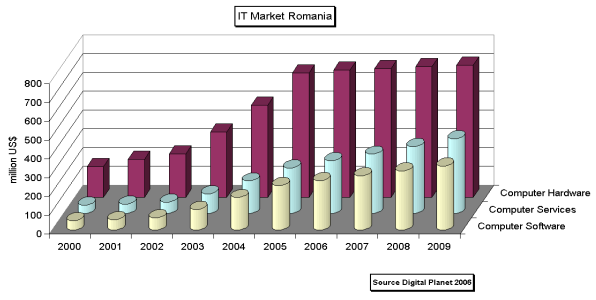

Chart 2

But as most of the neighboring countries, Romania is hit by the Digital Divide - accessibility, affordability, IT literacy and digital content availability being yet inadequate.

The encouraging sign is the response of the market. Romania is placed by Digital Planet (a WITSA/Global

Insight yearly report) among the top 10 countries as dynamics of market growth.

A look at the IT market in Romania (chart 2) reveals a very high rate of all IT sectors in the period 2003-2005 and while computer hardware looks a little bit saturated, computer software and computer services continue their high rate of growth for still many years. The communication market has seen a similar evolution. If in 1989 Romania had a 10% telephone penetration, mostly with obsolete lines, now fixed and mobile lines are abundant, Romania being one of the first European countries to fully liberalize the communications market. Latest data shows a 20% penetration of fixed line telephony with one big operator Romtelecom and 74 alternative operators. The mobile market has 4 big operators: Orange, Vodafone, Cosmote and Zapp (CDMA) with a penetration rate of more than 55%. The Internet penetration is explosive. There are 980 Internet Service Providers and they reported for 2005 a number of 1,8 million accesses, dial-up access being in regress. Broadband access accounted for 41% of the total a rate of 96% increase over 2004. Based on the number of people using these accesses a rate of penetration of Internet of 28% is reported by the Ministry of Communications and Information Technology. A project based on a World Bank Loan of 80 million US$ is now being implemented creating Knowledge and Internet Centers in 200 rural locations. This will further enhance the trend of using IT in office and at home.

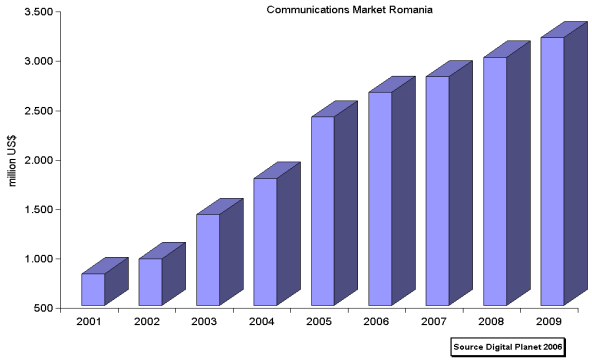

Chart 3

But access and affordability are not enough, as well known. ATIC – IT&C Association of Romania as CEPIS member started to promote ECDL, with an accent on Public Administration, high schools and universities. Recently ECDL Romania reported a network of 370 test centers with already over 20.000 certificates issued and 53.000 skill cards.

Large nationwide IT projects have started, such as these of the Ministry of Finance - Customs Office and Global Income Taxation System, Ministry of Interior - ID & Car Registration, Border Police, National Health Insurance Office, IS of major banks with branches all over the country, Educational & Research Networks.

In Romania IT has certainly a bright future. The country is able to participate in the Digital Economy; the market is increasingly big, human resources are still abundant; the education system is very performing, eBusiness offers a chance to leapfrog stages; foreign languages skills are largely available, protection of intellectual property exists and it is enforced.

The (IT&C) sun is rising in Romania! ■

History of Computing

[Just as the Spring 2006 issue of this newsletter was published, I received an e-mail from Dr. Karen Duncan, the spouse of George Glaser, saying: " Dear Plamen, I am very sorry to tell you that George died on March 17 .We are having a memorial celebration at the Computer History Museum in Mountain View, California, on April 1..."

I know both George and Karen since the 80-ies. I met George at the IFIP General Assembly'84 in Varna, BG, which I helped organize. Karen was the IFIP Publications Officer whom I succeeded as IFIP Contracts Officer after the World Computer Congress and General Assembly'89 in San Francisco. George served as president and member of the Board of Directors of the Charles Babbage Foundation.

The material below is to commemorate his contribution to the History of Computing. – PN]

Lions at their prime – from left to right: O. Dalton, G. Glaser, A. Goldsworthy, J. Fourot, P. Bobillier and A. Rolstadas, during **IFIP GA 1987 in Budapest, HU**

The History of ICT Goes Global

by Dr. James W. Cortada, Chairman of the Board of the Charles Babbage Foundation and a member of the IBM Corporation

For many decades the history of computing was about how Americans invented computers or how the U.S. government helped launch the American ICT industry as part of its efforts to fight the Cold War. For a long

time it seemed that this interpretation was right. American companies dominated: IBM, Microsoft, Apple, and so many others.

As historians began looking at the subject in the 1970s and 1980s, however, a different picture emerged, one in which European and Asian nations had also been active in developing and using computers, beginning at the same time as the Americans. There were so few exceptions that where historians today do not have information about computing in a country, they no longer assume computers had played a minor role there. It just means they have not yet done the research to tell that nation's story. Thus, while we still do not have detailed histories of computing in Austria, Bulgaria, Hungary or Italy, for example, we know computers were used early and are today, of course, important to their economies.

What largely made possible the broader examination of the global story of computing was the work of the Charles Babbage Foundation (CBF), and its spin-off, the Charles Babbage Institute (CBI). Founded in the late 1970s by a community of active or retired computer industry executives and scientists in the United States, its intention was to promote the preservation of the history of computing and support academic research. To turn intentions into action, CBF established CBI in collaboration with the University of Minnesota, located in Minneapolis, home of many early computer companies.

CBF raised funds to endow a professorship of history, while its trustees contributed funds for its operation, to pay for student fellowships, publications, and conferences. By the end of the 1990s, CBI had the world's largest collection of private papers and other archival materials on the history of computing. It had a full-time staff of a director/professor, an archivist, and others. In the early 2000s, it had moved into new facilities, which included a state-of-the-art archive. Today almost every major study done on the history of computing is either written by a professor who trained by CBI through its fellowship program or uses its library and archives.

Alumni of CBI's Tomash Fellowship (named after Erwin Tomash, founder of CBF) now dominate the field of the history of computing. They have promoted the study of computing in Europe, for example, recruiting authors to write national histories published over the years in the *IEEE Annals of the History of Computing*, other studies on Soviet computing, and more generally about ICT in Europe, the United States, Canada, and Japan.

In the late 1990s, it was time to renew CBF itself. It needed a new generation of generous trustees and leaders, while tax laws and organizational issues required changes in its charter and form. And there was an appetite to revisit how it worked. Leading many of the changes was George Glaser, who joined the community of trustees in 1998.

Almost immediately he took charge of key initiatives. He recruited a new generation of trustees, indeed almost the entire current board of directors of CBF.

As a board member he led an initiative to help historians establish future research priorities, and which resulted in scholars around the world shifting their attention from just studying the history of individual computers to examining the role of software, systems, and national ICT industries. His recommendations have set the research agenda worldwide for a generation of historians.

As president of CBF he guided the foundation through a major restructuring, modernizing its mission for the first time in a quarter of a century, and in relocating its headquarters in California, close to the American information technology industry.

He was also instrumental in raising funds for various projects. Fundraising was particularly challenging because he did a great deal of it during the early years of the new century, following the collapse of the dot.coms and while CBF was bringing in new trustees and reorganizing.

Known by some of the trustees as "Mr. Fixit," every problem George encountered he resolved, often generating new opportunities to recruit an excellent trustee or to turn a project into something innovative and vital.

After his term as president of CBF, the board appointed him Trustee Emeritus, but George refused to use that as an excuse to retire. He helped CBF in collaboration with the Sloan Foundation craft a new project in which the Computer Museum, Software History Center, and CBF would run an initiative to determine how best to use the Internet to document the history of early software and services firms in the industry, relying on the memoirs of founders of these firms and collecting their records. So far, it has developed histories of nearly two dozen companies.

Today the crown jewel of archival and historical preservation of the history of ICT is CBI, although now work is going on all over the world. CBI has continued to add archival materials to its collections, with additional records dealing with computing internationally. The community of historians of ICT communicates with each other on a regular basis and a whole generation of young scholars is emerging in Europe, just starting their careers. They often use the resources at CBI for their work.

Where will the history of ICT go over the next few years? Expect to see national histories of the development and use of computing in almost every European country. We will have studies about computers in government, higher education, and about the role of the Internet in modern life. European sociologists have started to catalog contemporary uses and the historians are beginning to fill in the details for earlier years.

The challenge for Europe is the same that George Glaser saw in the United States: the requirement to collect and protect papers of business leaders (and their firms), scientists and engineers, and users of ICT, and to get these to university and government libraries and archives. Funding training of professional historians remains urgent because there are not enough of them to study what has emerged as one of the great stories of our time, that of the Information Age. CBF, CBI, the Deutsche Museum and universities all over the world are working on the topic, but need the help of the business and engineering communities.

Before George Glaser died in March 2006, he personally modeled the way for what still has to be done. He personally went out and recruited trustees, raised funds, and convinced historians to study new topics. We need more leaders like George Glaser before records are destroyed and important pioneers of European computing pass on, and most urgently in Central, Eastern, and Southern Europe. It is the next frontier in the history of computing.

After word

by Karen Duncan

George Glaser was born in West Virginia in the United States. He earned a bachelors degree in electrical engineering at Notre Dame in 1952, and he studied business administration at the University of New Mexico. George served in the U.S. Navy as an aviation electronics officer and worked as an engineer for Ampex Corporation and Sandia Corporation before joining McKinsey and Company in 1961. At McKinsey, he worked with clients in the United States, Canada, and Europe. He left McKinsey in 1973 to establish an independent consultant practice.

George co-founded Centigram Corporation, a provider of voice recognition and response systems and served as its president and CEO from 1977 to 1980. In 1980 he incorporated as George Glaser, Inc., consulting to corporate top management on a broad range of issues relating to the management of large projects.

George held numerous leadership positions in major information technology associations, including president and chairman of AFIPS 1973-1975, and United States delegate to IFIP 1980-1989 and vice president of IFIP 1982-1989. His IFIP years were among the experiences he treasured most. A major highlight was the chance to observe and study the evolution of national information technology industries throughout the world.

George was delighted with the increasing focus on the history of information technology in other countries, and I know he would encourage you to even bolder efforts to capture that history. He especially recognized the need for an infrastructure to support the history community.

The Charles Babbage Foundation has just established the George Glaser Memorial Fund, both to honor George's contributions, and to provide support for the kinds of history projects George would want to see funded. Details of the Fund will be available soon.

The George Glaser Papers are housed in the CBI archives. They include records from ACM, AFIPS, DPMA, and IFIP and industry committees, conferences, workshops, and projects. A complete listing is available on the CBI web-site: http://www.cbi.umn.edu. The CBF web-site is www.babbagefoundation.org. ■

Firsts in the IT STAR Region

• Antonin Svoboda and the First Czechoslovak Computer

by Julius Stuller
Vice-Director of the Institute of Computer Science, Czech Academy Sciences,
Czech Society for Cybernetics and Informatics

The first Czechoslovak computer **"SAPO"** (in Czech ***SA****močinný* ***PO****čítač* is an acronym for Automatic Computer) was designed and constructed during the period 1950-1956 by a team led by ***Antonín Svoboda*** (1907-1980).

SAPO was most probably the first computer in the world designed as "fault-tolerant". Svoboda was the main architect of at least 20 original computer systems. During 1943-1946, just before his return to Czechoslovakia in 1946, he was a member of *the Radiation laboratory of MIT*. There he developed a methodology for the design of computing mechanisms and applied it in the design of the analog computer, which became part of the air defense system MARK 56. For his contribution to this defense system he got a very prestigious US *Naval Ordnance Development Award*. Svoboda wrote the very first book in the world on computers „Computing mechanisms and linkages" in 1946.

• ELEA, the First Italian Computer

by Giulio Occhini
CEO, AICA

The first Italian computer was designed by Olivetti in the second half of the 50-ies and put on the market in 1959. ELEA was a large general-purpose system with very innovative features at that time. The overall system designer of ELEA was Giorgio Sacerdoti (*an Obituary was published in the Autumn 2005 issue of this newsletter*). Worthy to be remembered: ELEA was fully transistorized, had multiprogramming capability and could connect a wide range of I/O devices.

About 180 ELEA systems were built in the period 1959-1965 and installed in large Italian companies, banks, government organizations and universities. A curiosity: the price of one of those systems was equivalent to several million EUR in today's currency…

- **Vitosha, the First Bulgarian Computer**

by Kiril Boyanov
Director, BAS Institute for Parallel Processing

The design of the first Bulgarian computer "Vitosha" started at the end of 1961 and its implementation was achieved in the beginning of 1962.

The team that developed the machine included Ass. Prof. Bl. Sendov, Eng. G. Alipiev, D. Bogdanov, Eng. D. Rachev, Eng. Encho Kyrmakov, Eng. Ilich Yulzari (person in charge), Eng. Ivan Stanchev, Eng. Kiril Boyanov, Eng. Maria Dimitrova, Eng. Raffi Aslanyan and Eng. St. Pashev. The scientific supervisor was Acad.Lubomir Iliev.

The digital electronic machine used a binary system, with fixed word length, in parallel mode. The word of the machine was 40 bits long. It used three-address instruction format. The main units of the machine were input device, output device, central arithmetic unit, memory and a control device. The control device can be regarded as two units – main control and auxiliary control unit. The memory (RAM) was on magnetic drum with a capacity of 4096 words. The machine was powered by a three-phase power 220/380 V. The cooling of the machine was ensured by a special fan system.

The machine was designed in a single unit, hosting all electronic circuits and the magnetic drum. The main elements were built with valves of the type ESS 862. They had a lifetime of about 10000 hours. The operator could control the machine from the control device and interfere, if necessary, in the computational process, to power up and stop the machine, to switch on and off the power supply. On the control device the state of the arithmetic unit and the counter of the command register could be observed. Here are also the switches for manual information input, resetting the registers and checking of basic operations – transfer the content of one register into another.

The input device worked with a five channel tape punch, read by electro-mechanical device of standard telegraph type.

The output device followed a simple algorithm, as the output print is programmed. An electrical typewriter printed the results. All commands for the control of the typewriter were programmed – space, carriage return, new line, etc. The programs were written in machine code. ■

Joke of the issue

The Sound of Music

How do you get 2 piccolos to play in perfect unison? - Shoot one.

What's the difference between a cello and a viola? - The cello burns longer.

How do you make a guitarist play quieter? - Put a sheet of music in front of him.
And how do you make him stop? - Put notes on it! ■

Member Society News

AICA (Italy) - ICT in Europe: Market and Competence

On May 5th, AICA with the support of EITO and CRUI (Committee of Italian University Chancellors) organised in Rome the conference "ICT in Europe: market and competences". The conference focused on e-competence and certifications as critical factors for growth competitiveness. A variety of issues and topics stemming from the theme of the conference were addressed during the event.

Mr. Lamborghini, EITO President, sketched out the evolution of the offer in the ICT sector, the new phase of growth based on web services and digital convergence and the globalisation of the competitive context.

The increase in Information and Communication Technologies (ICT) innovations and their applications need multilevel competition based on technology, and also knowledge and competence. Both ICT providers and ICT end-user companies require workforces able to develop and manage ICT tools and to understand, build and manage the new ICT–related business. Moreover, considering the shortness of the ICT life cycles, there is an extremely high risk of rapid obsolescence of skills. In this scenario, the labour market is forced to face an ICT skills gap and mismatch. Certifications and qualifications may help fill that gap.

Mr. Richier, Principal Administrator of General Directorate for Enterprise and Industry of the European Commission, highlighted the work that has been done and that still is in progress to set up well-defined standards for ICT skills and e-competence profiles. He also asserted that multi-stakeholder partnerships between the public and private sector are essential to promote a European e-competence framework.
Mr. Patini, representative of the Italian Manufacturers' Association, also pointed out the importance of such a partnership, in order to move to a common e-competence framework. EUCIP has been indicated as the best example of co-operation between IT industries, Universities and neutral certifications entities. In fact EUCIP is increasingly adopted by Italian Universities, as pointed out in the talks of representatives of the academic community.

Politecnico of Milan University presented a report providing an overview of the current diffusion of certifications in Europe and a snapshot of the supply and demand for certifications and qualification programmes. The report focused on Certifications: vendor specific and neutral for both professionals and individual users. So far in Europe almost 900,000 ICT professional certifications have been issued and the number of applicants for some ICT professional certifications exceeds 1,2 million. The figures are very promising for individual user certifications as well. There are more than 2 million in Europe (ECDL is the most important one), with more than 5 million applicants. This indicates that a new trend is emerging. The ICT qualifications and certifications market is evolving rapidly: the dialectic confrontation with the needs and the policies of end-user companies is poised to heavily influence the trend over the next few years.

The opportunities that ICT certifications offer in terms of accountability, quality control and potential cost savings and the importance of common standards were stressed in the speech of a representative of the Italian Police Force: 105.000 employees, 17 internal schools, with problems of quality control and internal obsolete skills framework. ECDL and EUCIP certifications have been chosen as the best and most effective solutions in order to make the most of internal resources and provide employees with high quality training and certifications.

The meeting closed with a ceremony in which the EUCIP professional certification was awarded to the first nine Italian practitioners who have completed the qualification process and the EUCIP IT administrator was awarded to sixteen achievers.

[The Conference presentations are available from the AICA web-site www.aicanet.it] ■

BAS - Bulgaria

The 2006 JOHN VINCENT ATANASOFF International Symposium on Modern Computing will be held on 3-6 October 2006 in Sofia, Bulgaria under the patronage of Mr. Georgi Parvanov, President of the Republic of Bulgaria.

The Symposium, co-organized by the Bulgarian Academy of Sciences, the University of Sofia and the Bulgarian Union of Automation and Informatics will include tracks on *Advanced Algorithms and Applications, Complex and Intelligent Systems, High Productivity Computing and Information Systems and Grid Technologies*. IEEE CS Press will publish the proceedings.

For further information please contact the BAS representative to IT STAR. ■

MASIT – Macedonia

The Macedonian Association for Information Technology (MASIT), in cooperation with BASSCOM, BAIT, ARIES, JISA, HUP, YuInfo, SEPE, SEPVE and other societies, organized on 11 and 12 May 2006 in Skopie the 4th Regional Conference of Southeastern European IT Businesses and Associations. ■

SSI – Slovenia

[We publish below a short profile of the SSI, which hosted the IT STAR Spring Business meeting on 20 May 2006 in Ljubljana]

The Slovenian Society INFORMATIKA (SSI) is a non-profit computer society of individuals working in various areas of information technology and informa-

tion science – in business, universities and administration – who, among other activities, exchange and popularize their experience and results. SSI is managed by an Executive Board, which is elected from among the members of the Society. Members are natural persons only. The Society has a president, a president honorary and two vice-presidents. As of October 1997 it has an appointed Advisory Board of reputable professionals, which is chaired by a member of the Executive Board. The members of the Advisory Board represent the major Slovenian users and providers of information technology goods and services. In 1999 a code of professional ethics was proposed and passed at an extraordinary general assembly.

The Society has two active chapters on Operational Research and Language:

The OR chapter organizes a biannual symposium and the Language chapter developed and maintains an Internet based dictionary. The Society's Internet address is www.drustvo-informatika.si

The Society was established in 1976 and has about 400 members including honorary members. The membership is not limited to Slovenian citizens.

SSI publishes regular and special publications. The regular ones are a quarterly professional journal *Uporabna informatika (Applied Informatics)* in Slovenian language and a scientific quarterly journal *Informatica* in English. Special publications are conference proceedings and special issues of the two journals.

The main SSI event is the annual conference *Dnevi slovenske informatike* (The Days of Slovenian Informatics). It is organized since the late 1970-ties and has succeeded to earn a reputation of the most comprehensive event of the year in the field of information science in Slovenia. It is a national conference with international participation and every year notable domestic and foreign guest speakers are invited.
The Society is a member of IFIP and CEPIS since 1998. In 2000, it joined the ECDL community by having been granted the ECDL license. In 2001, together with the Researchers' Association of Slovenia, it co-founded the Slovenian Forum for Information Society to provide independent views and opinions of civil society on actual issues.

SSI is an active member of IT STAR. In fact, IT STAR was founded during the Society's annual conference in Portoroz in 2001 and the May 2006 meeting in Ljubljana was the 3rd IT STAR event held in Slovenia. ■

UN News

ITU launches Cybersecurity Gateway

In May 2006, on the occasion of World Telecommunication Day, the International Telecommunications Union launched the ITU Cybersecurity Gateway at http://www.itu.int/cybersecurity/index.html.

This is a global reference source of national cybersecurity initiatives and web-sites designed to share information and resources. The interests of citizens, businesses, governments and international organizations are taken into consideration, furthermore, information resources are provided on topical cybersecurity concerns such as spam, spyware, phishing, scams and frauds, worms and viruses, denial of service attacks and other.

ITU will constantly update the portal with information on initiatives and resources from around the world.

■

Type of organization

Regional non-governmental and no-profit professional association in the ICT field.

Web-site

www.itstar.eu

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
- Bulgaria (2003) K. Boyanov
- Croatia (2002) M. Frkovic, M. Glasenhart
- 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
- Romania (2003) V. Baltac
- Serbia and Montenegro (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 communication technology organization in Central, Eastern and Southern Europe which promotes, assists and increases the activities of its members and encourages and promotes regional and international cooperation for the benefit of its constituency, the region and the international ICT community."

Governance

IT STAR is governed according to the letter of its Charter by the **Business Meeting** of MS representatives, which convenes biannually:

2006 Bratislava, **Slovakia** (November)
Ljubljana, **Slovenia** (May)

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

2003 – Niko Schlamberger
2001 – 2003 Plamen Nedkov
(IT STAR Advisor since 2003)

Major Activities

- IT Professional Pool Database (in progress)
- Establishment of an IT STAR Event Series (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 and Publication on ICT and the Eastern European Dimension http://fistera.jrc.es/pages/roadshows/prague%2004/FINAL%20REPORTrevised.pdf
- Support to Member Society initiatives and events

Periodicals

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

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