


**NJSZT: John von Neumann Computer Society  
GIKOF/SEFBIS: Scientific and Educational Forum  
for Business Information Systems  
SZE: Széchenyi István University**



**ISBIS'2005**  
**International Symposium  
on Business Information Systems**

**Hotel Konferencia, Győr, Hungary  
11–12<sup>th</sup> of November 2005.**

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## Welcome to ISBIS'2005

The idea of organizing an international symposium in the field of business information science was formalized in the last Year, at the GIKOF Conference, where the participants expressed their need to meet not only the Hungarian colleagues, but to meet experts coming from other countries. The Scientific and Educational Forum for Business Information Systems (SEFBIS) is an Association of the John von Neumann Computer Society. It was established only four Years ago in order to give a controlled public forum to the members, and to give publicity to both the experienced and the young specialists.

After two successful domestic conferences this is the first time that we can welcome you in an extended professional circle. Contrast to the previous conferences this Symposium is strongly supported by the special Association of the International Federation for Information Processing. The chairman of the TC 8 Information Systems Committee, Dewald Roode emphasized that only the nationwide activity of the specialists manifested by meetings, conferences and publication of a high standard can realized the international goals.

As the European Union is getting wider and wider, it is much more important to start with another way of thinking! After that some post socialist countries including Hungary joined to EU the cooperation in the field science and education becomes more and more important. The key issue to the European vision is the information and the information management, which constitutes also the focused theme of our conference. We the committed leaders of SEFBIS take the responsibility of collabo-

rating with professionals in realizing the knowledge based society, and do our best to provide Europe-wide access and interchange of information. Our program reflects the European needs, so we organized sessions with the aim of discussing

- the role and the impact of IS/IT in business and in society,
- the concepts, modeling techniques, methods, visualization languages supporting the IS development process,
- the solutions that satisfies customers' requirements, and ensures security and privacy
- the realization of the European Higher Education Space in the field of Business information systems (aims, programs, curricula, cooperation, new teaching materials etc.)

Although this first International Conference has only a few numbers of participants from other EU Members or other lands it is a great honor to have participants already from five different countries, such as Japan, Serbia, Holland, South Africa and Slovakia. In the hope that the next Years our conference becomes more known and acknowledged, we can welcome more participant from other countries as well.

Concluding with my sincere greeting for a successful Conference I wish you to obtain new ideas, concepts, to know new solutions and research results, to get new friendships in a truly European Spirit, and to let your stay in Győr unforgettable!

Maria Raffai  
Győr, October 2005

# The Conference Program

## General Overview

**10–12. of November 2005.**

### **10<sup>th</sup> of November 2005. Thursday**

- 9:00 – 17:00 Registration
- 10:30 – 13:00 Opening  
Plenary Presentations with Invited Speakers: The Role and the Impact of IS/IT in Business
- 14:30 – 18:00 Session A: Business Impact of Information Systems
- 19:00 – 22:00 Welcome Party – Hotel Konferencia 1<sup>st</sup> Floor

### **11<sup>th</sup> of November 2005. Friday**

- 9:00 – 12:00 Session B: Modeling, Methods, Solutions, Visualization
- 13:30 – 16:30 Session C: Business Application, Business Intelligence
- 16:30 – 22:30 Guided Tour to the Treasury – Dinner in a Downtown Restaurant with Wine Tasting Ceremony

### **12<sup>th</sup> of November 2005. Saturday**

- 9:00 – 10:30 Session O: Education: Programs, Curricula, Cooperation
- 10:50 – 11:30 SEFBIS' Junior Group: Activity and Plans
- 11:30 – 12:40 Round-table Discussion: The Present Situation of the Hungarian Higher Education Reform
- 12:40 – 13:00 Conference Evaluation, Conclusions, Future Plans; Passing PhD Awards; Closing

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**John von Neumann Computer Society**  
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**Foundation Alexander**

# CONTENT

<b>Detailed Conference Program .....</b>	<b>9</b>
<b>Plenary Session .....</b>	<b>15</b>
Peter Bakonyi: The Scientist John von Neumann, and the Computer Society Named after the Polymath .....	17
Dewald Roode – Maria Raffai: The Role of the IFIP's Information Systems Committee.....	22
Rik Maes: The Quest for Business Information Managers who can make the Difference .....	30
Eszter Elekes: The SAS® Academic Program .....	32
Tetsuya Uchiki: A Training Method and the Program for Information System Analysis .....	33
<b>Session A .....</b>	<b>37</b>
Csongor Németh: Contribution of the Process Modelling to the Efficient Business Adaptation .....	39
Milán Hasznics: Construction Model for Corporate Knowledge Management Systems.....	42
Attila Horváth: The effect of financial ICT on payment systems .....	44
Dávid Petó: Enhancing the Objectivity of IT Audit Assessments .....	45
Gabor Homonnay: New greetings card from Userland .....	47
Péter Dobay: eBusiness Strategies: Blockade the Siren e-Calls .....	48

<b>Session B</b> .....	<b>51</b>
Tamás Heckenast: Seeing the Woods for the Trees –Challenges in Business Information Visualization .....	53
András Sramó: The Visual Culture of (Business) Informatics .....	54
Anna Medve: The joint use of User Requirements Notation Standard with UML in Socio-Technical Systems Requirements Engineering.....	56
Zoltán Csajbók: Elliptic curves defined over finite fields using in cryptography.....	59
B. Molnár – A.Kő – J.Kiss: A Solution which meets the Requirements of Privacy and Personal Data Protection .....	61
T. Hajba – E. Miletics – Gy. Molnárka – A. Schwarcz: Optimization of the Single Product Assembly Line Balancing Problem .....	63
<b>Session C</b> .....	<b>63</b>
Cs. Jankó – B. Gázsó: “Motorunk a minőségünk”.....	63
I. Petkovics – P. Tumbas: Ügyfélkapcsolatok menedzselése az áramelosztó cégeknél adattárházak támogatásával .....	63
I. Németh – Cs. Németh: Does ERP support or hinder?.....	63
László Cserny: Stratégiaalkotás matematikai eszközökkel.....	63
Péter Takács: Az időfüggő kriptográfiai protokollok és alkalmazási lehetőségeik .....	63
Károly Farkas: Management and Business Intelligence .....	63
<b>Session O</b> .....	<b>63</b>
G. Orbán – J. Sziray: Bevezetés az információrendszerek fejlesztésébe a gazdasági informatika szakon .....	63
Miklós Vörös: Katonai felsőoktatás és eLearning – hol tartunk ma?.....	63
Mária Raffai: Mission of Students’ International Consulting Project.....	63
A. Sramó – E. Sramó: Almagestum Novum – Early Antecedents of Presentation-Making .....	63

**Opening, Plenary with Keynote Speakers  
Associations and Organizations  
for the Effective Use of Technologies  
10<sup>th</sup> of November 2005. Thursday**

**10:30–13:00**

**Chair:** Mária RAFFAI

- |               |   |
|---------------|---|
| 10:30 – 10:40 | Opening   |
| 10:40 – 11:10 | Peter BAKONYI: The Scientist John von Neumann and the John von Neumann Society    |
| 11:10 – 11:30 | Dewald ROODE - Maria RAFFAI: The Role of the IFIP Information Systems Committee   |
| 11:30 – 12:00 | <i>Coffee Break</i>   |
| 12:00 – 12:30 | Eszter ELEKES: The SAS® Academic Program  |
| 12:30 – 13:00 | Tetsuya UCHIKI: A Training Method and the Program for Information System Analysis |
| 13:00 – 14:00 | <i>Lunch at the Hotel Restaurant</i>  |

# Session A

## Business Impact of Information Systems

### 10<sup>th</sup> of November 2005. Thursday

**14:30–18:00**

**Chair:** Győző MOLNÁRKA

- |               |  |
|---------------|--|
| 14:30 – 14:50 | Csongor NÉMETH: Contribution of the Process Modelling to the Efficient Business Adaptation |
| 14:50 – 15:10 | Milán HASZNICS: Construction Model for Corporate Knowledge Management Systems              |
| 15:10 – 15:30 | Attila HORVÁTH: The Effect of Financial ICT on Payment Systems                             |
| 15:50 – 16:20 | <i>Coffee Break</i>  |
| 16:20 – 16:40 | Dávid PETŐ: Enhancing the Objectivity of IT Audit Assessments                              |
| 16:40 – 17:00 | Gábor Homonnay: New Greetings Card from Userland   |
| 17:00 – 17:20 | Péter DOBAY: eBusiness Strategies: Blockade the Siren e-Calls                              |
| 17:20 – 18:00 | Questions, Remarks, Discussion   |
| 19:00 – 22:00 | <i>Welcome Party – Hotel Konferencia 1<sup>st</sup> Floor</i>                              |

**Session B**  
**Modeling, Methods, Solutions, Visualization**  
**11<sup>th</sup> of November 2005. Friday**  
**9:00–12:00**

**Chair:** Péter DOBAY

- |               |   |
|---------------|---|
| 9:00 – 9:20   | Tamás HECKENAST: Seeing the Woods for the Trees –Challenges in Business Information Visualization   |
| 9:20 – 9:40   | András SRAMÓ: The Visual Culture of (Business) Informatics  |
| 9:40 – 10:00  | Anna MEDVE: The Joint Use of User Requirements Notation Standard with UML in Socio-Technical System Requirements Engineering                      |
| 10:00 – 10:30 | <i>Coffee Break</i>   |
| 10:30 – 10:50 | Zoltán CSAJBÓK: Elliptic Curves Defined over Finite Fields Using in Cryptography  |
| 10:50 – 11:10 | Bálint MOLNÁR – Andrea KŐ – J KISS: A Solution which meets the Requirements of Privacy and Personal Data Protection at Identity Management Domain |
| 11:10 – 11:30 | Tamás HAJBA – Edit MILETICS – Győző MOLNÁRKA – Attila SCHWARCZ: Optimization of the Single Product Assembly – Line Balancing Problem              |
| 11:30 – 12:00 | Questions, Remarks, Discussion  |

## Session C

### Business Applications, Business Intelligence

11<sup>th</sup> of November 2005. Friday

**13:30–16:30**

**Chair:** Gábor HOMONNAY

- 13:30 – 13:50 Csaba JANKÓ – Bertold GAZSÓ : Motorunk a minőség  
– DMS rendszer bevezetése az AUDI Hungariánál
- 13:50 – 14:10 Imre PETKOVICS – Pere TUMBAS: Ügyfélkapcsolatok  
menedzselése az áramelosztó cégeknél adat-  
tárházak támogatásával
- 14:10 – 14:30 István NÉMETH – Csongor NÉMETH: Does ERP Sup-  
port or Hinder? – Efficient Processes
- 14:30 – 15:00 *Coffee Break*
- 15:00 – 15:20 László CSERNY: Development of Strategies Using  
Mathematical Tools
- 15:20 – 15:50 Péter TAKÁCS : Az időfüggő kriptográfiai protokollok  
és alkalmazási lehetőségeik
- 15:50 – 16:10 Károly FARKAS: Management and Business Intelligence
- 16:10 – 16:30 Questions, Remarks, Discussion
- 16:30 – 22:00 *Guided Tour to the Treasury, and Dinner in a Down-  
town Restaurant with Wine Tasting Ceremony*

# Session O

## Education: Programs, Curricula, Cooperation

### 12<sup>th</sup> of November 2005. Saturday

**9:00–13:00**

**Chair:** András GÁBOR

- 9:00 – 9:20 Gabriella ORBÁN – József SZIRAY: Introduction to the Subject IS/IT on the Course for Business information Systems
- 9:20 – 9:40 Miklós VÖRÖS: The Military Higher Education System and the eLearning
- 9:40 – 10:00 Mária RAFFAI: Mission and Benefit of Students' International Joint Consulting Projects
- 10:00 – 10:20 András SRAMÓ – Eszter SRAMÓ: Almagestum Novum – Early Antecedents of Presentation-Making
- 10:20 – 10:50 *Coffee Break*
- 10:50 – 11:30 Viktoria PATAKI: The Activity and Plans of the SEFBIS' Junior Group established in March this Year
- 11:30 – 12:40 Round-table Discussion: The Change Over to the Multi Level Higher Education System
- 12:40 – 13:00 Conference Evaluation, Conclusions, Future Plans; Passing PhD Awards; Closing
- 13:00 – *Light Lunch before Leaving*



# **Plenary Session**

## **The Role and the Impact of IS/IT in Business Associations and Organizations for the Effective Use of Technologies**



## **The Scientist John von Neumann, and the Computer Society Named after the Polymath**

PETER BAKONYI

*President of the John von Neumann Society; Deputy Director of SZTAKI  
eMail: pbakonyi@sztaki.hu*

### **Biography of John von Neumann**

John von Neumann, the Hungarian polymath was born in Budapest in 1903. He earned his diploma in mathematics from the University of Budapest and a doctorate in chemistry from the University of Zurich. After that he joined the faculty of the University of Berlin in 1927. In the Year 1932 he moved to Princeton where he became the youngest member of the IAS. During this time, he made important contributions not only to the pure and the applied mathematics, but also to physics and in some ways, philosophy (e.g. in relation to the quantum paradox). He was also active in the Manhattan Project (the development of the atomic bomb) and was one of President Truman's advisors on the Atomic Energy Commission.

His later work on parallel processes and networks has earned him the label of the "father of the modern computer". As Nicholas Kaldor wrote later, "He was unquestionably the nearest person to a genius I have ever encountered".

An astoundingly creative mathematician, John von Neumann has played a rather important role in post-war economic theory through two essential pieces of work:

- his paper published in 1937 on a multi sectoral model of growth,
- his book appeared in 1944 (coauthor was Oskar Morgenstern) on game theory and uncertainty.

John von Neumann's bestseller book (1944) was a social science's landmark of the twentieth century. Besides the single-handedly inventing of Game Theory (which began with the famous article in 1928) this book introduced several other important elements used in other fields of economics, such as the axioms of utility theory and choice under uncertainty.

During the mid '40s the programmable electronic computing instruments were built for the first time. The ENIAC as first electronic computer was only programmable in a very limited sense, however; it had to be rewired for each new calculation (typically requiring a half-day at least to prepare the machine for operation). In principle a flexible machine with many potential uses was used primarily for calculating ballistic trajectories. But the first name: von Neumann machine was changed as this was the plan for a new kind of computer: the stored program one. It was posited first in a 1945's memo. Neumann stated that the computer has to contain five basic components: a control unit, a memory, a calculating unit (CPU), and an input/output component for interacting with human beings, the so called users. The concept of the stored program computer was a realization of the theoretical construct of the universal Turing machine developed by the English mathematician Alan Turing in the 1930s. Anyway, the name of Neumann has become synonymous with the modern computer architecture!

### **The John von Neumann Computer Society**

The John von Neumann Computer Society (in Hungarian: NJSZT) is a professional organization established in 1968, having a membership of about 2300 individuals and over 100 companies. It has territorial organizations in 15 counties and in 5 cities all over Hungary. The 19 professional communities cover most areas of the field in IT. The program of NJSZT of 2004-2006 continues the traditions of the previous programs and concepts, concentrating on the increasing participation of the Society in the IT oriented activities and providing better services to the members. NJSZT continues to be one of the most important civil organizations invited people to be part of the permanent changing process and results of Information Technology. But further on, this gives a Forum for the political parties in order discuss actual problems of the ICT, especially the forthcoming legislation.

In 2005 NJSZT cooperated with three other civil organizations in the preparation of a document titled InfoCommunication Industry Policy Recommendations, intended as a contribution to the creation of the National Development Plan for the EU planning period of 2007-2013.

The NJSZT is also very active in supporting to establish the Information Society in Hungary! Through its activity it plays a leading role in the nation-wide dissemination of computer literacy. The most active engine of this mission is the European Computer Driving License program (ECDL). The Society is member of the ECDL Foundation and it coordinates the ECDL dissemination activity all over Hungary. Characterizing the importance of ECDL let us see some figures:

- around 400 accredited Test Centers (including the ones in the neighboring countries),
- over 200.000 registrants and 100.000 diplomas

Beyond the entry-level IT skills, the NJSZT is deeply involved in the eSkill initiatives of CEPIS. A new ECDL module on digital photography has been developed by the initiative of NJSZT. Beside the ECDL the NJSZT esteems the younger generation's IT-education very important. The competition named by Tihamer Nemes, the Logo Programming competition with more than 5000 participants from the surrounding countries have yearly already traditions. In the Year 2005 we organized the 12th Central-European Olympiad in Informatics in a historic small town of North-East Hungary.

Reporting about the newest and the most important activities of the NJSZT we should mention the Internet Fiesta (organized worldwide by the Internet Society), organized regularly in every Year emphasizes the role of libraries supporting the population with services of the Information Society, and the Software Technology Forum has been started in the mid of 2002. This quarterly organized event invites the best well known scientists in this field. Apart from a high level conference in Budapest, several events are organized in more than 30 local libraries all over the country with active participation of local branches of NJSZT.

### **The SEFBIS Association**

On behalf of this Conference I am forced to emphasize the role of our newest Association. The *Scientific and Educational Forum for Business Information Systems* (SEFBIS/GIKOF) was established in the Year of 2000 with the aim of

- giving a controlled public forum to the members making research activity in the field of business information science, and
- ensuring publication possibility to both the experienced and the young specialists.

The strategy and program of SEFBIS defined creates different forums to discuss the newest results achieved in the field of information science as follows:

- organizing research symposiums in every year with special focus on the Ph.D. research works,
- preparing and publishing the SEFBIS Journal two times a year with the up-to-date achievements of the following fields:
  - newest IS/IT technologies applicable in business,
  - actual programs, meetings, symposiums, conferences
  - the problems and solutions in higher education, and
  - information about the related published books.

### **International Contacts**

The John von Neumann Society has close relations to the relevant international organizations such as IFIP, IEEE CS, CEPIS, EFMI, ECCAI, IMIA, IAPR, ÖCG, and it also participates in different international projects. In summary the John von Neumann Society plays a very active role in building the worldwide Information Society!

## The Role of the IFIP's Information Systems Committee

DEWALD ROODE<sup>1</sup> – MARIA RAFFAI<sup>2</sup>

*<sup>1</sup>IFIP, chair of the Technical Committee for Information Systems*

*<sup>2</sup>Hungarian Representative of IFIP TC 8*

*eMail: <sup>1</sup>jdr@inbekon.com; <sup>2</sup>raffai@sze.hu*

### Mission and Perspective

IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of Information Technology for the benefit of all people. The principals of IFIP are

- to stimulate, to encourage and to participate in research, development and application of Information Technology (IT) and to foster international co-operation in these activities,
- to provide a meeting place where national IT Societies can discuss and plan courses of action on issues in our field which are of international significance and thereby to forge increasingly strong links between them and with IFIP,
- to promote international co-operation directly and through national IT Societies in a free environment between individuals, national and international governmental bodies and kindred scientific and professional organizations,
- to pay special attention to the needs of developing countries and to assist them in appropriate ways to secure the optimum benefit from the application of IT,

- to promote professionalism, incorporating high standards of ethics and conduct, among all IT practitioners.
- to provide a forum for assessing the social consequences of IT applications; to campaign for the safe and beneficial development and use of IT and the protection of people from abuse through its improper application,
- to foster and facilitate co-operation between academics, the IT industry and governmental bodies and to seek to represent the interest of users,
- to provide a vehicle for work on the international aspects of IT development and application including the necessary preparatory work for the generation of international standards, and last but not least
- to contribute to the formulation of the education and training needed by IT practitioners, users and the public at large.

## Origins

IFIP traces its roots to the very first major international conference on computers and computing which was held in Paris in 1959 under the auspices of UNESCO. Representatives of the main computer societies active in computing got together at that meeting to explore ways of building on the achievements of the conference. As a result thirteen national computer societies agreed to found in 1960 an international federation and named it IFIP: the *International Federation for Information Processing*.

IFIP's principal aims were and are to foster international cooperation, to stimulate research, development and applications and to encourage education and the dissemination and exchange of information on all aspects of computing and communication.

IFIP's creation was well timed. In the 1960s there began a veritable explosion in the growth of the computer industry and in the application of its products. Within the life-span of IFIP information technology (as it is widely known today) has become a potent instrument affecting people in everything from their education and work to their leisure and in their homes. It is a powerful tool in science and engineering, in commerce and industry, in education and administration and in entertainment. To-day *IFIP has 46 organizations as Full Members, 4 Corresponding Members and 10 Affiliate Members, representing countries from all regions of the world.*

### The Organizational Structure

The organization structure of IFIP is shown on Figure 1.

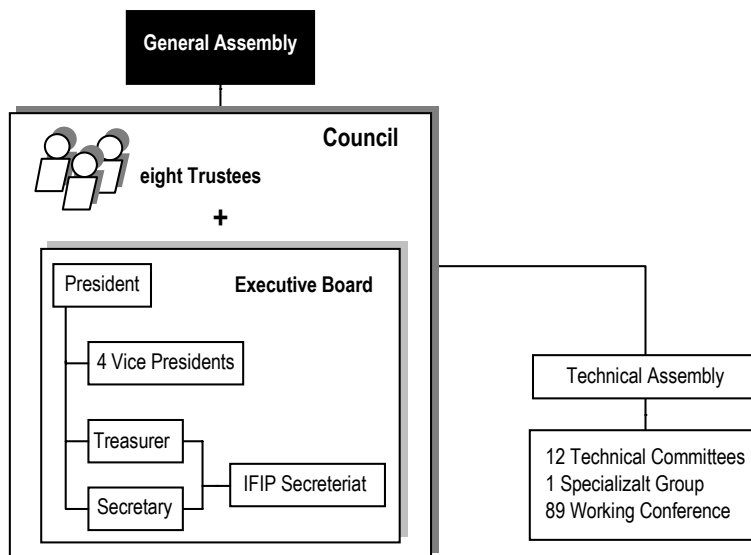


Figure 1. The Organizational Structure of IFIP

The Federation is governed by a *General Assembly (GA)*, which consists of the representatives from each Member organization and the Chairs of Technical Committees. The GA meets once every year. It decides on all important matters, such as general policy, the program of activities, admissions, elections and budget. The responsibility of GA is to represent their Societies' interests at General Assembly and in all other relevant ways and to realize and/or fulfil the strategy, finance and activities. The GA elects a *President, four Vice-Presidents, a Treasurer, a Secretary and eight Trustees* who together form the *IFIP Council*. The day-to-day work of IFIP is directed by its Officers: the President, Vice-Presidents, Secretary and Treasurer. The Officers are elected by the General Assembly and together constitute the *Executive Board*.

The administrative hub of IFIP who is responsible for the wide range of tasks vital to the operation of such a far-flung international body is the secretariat at *Laxenburg*, near Vienna.

The GA Members are expected to:

- Attend all GA meetings. If attendance is impracticable then they will seek a deputy from their Society. If that proves impossible then they are expected to appoint another GA Member as proxy giving instructions, if so desired, as to how that vote is to be used.
- Respond promptly to correspondence from IFIP.
- Ensure that IFIP literature (Annual Report, Bulletin and Newsletter) receives appropriate distribution within their Societies and seek to secure reporting of IFIP activities in their Societies' own publications.
- Publicize IFIP events and publications widely through their Societies and encourage participation by their members.
- Strive to secure good and active participation by their Society in Technical Committees and Working Groups and, when appropriate, on Program and other committees.

- Monitor the attendance and participation of their Societies' representatives in IFIP's activities and where there is a deficiency seek to improve the performance or to replace the representative.
- Request Annual Reports from their Societies' IFIP representatives and hold an annual meeting with them to review the value of their activities to their Society and to prepare for their Societies' Annual Reports to IFIP, dealing particularly with suggestions for improved IFIP performance. They ensure that these Annual Reports are prepared and submitted to IFIP in good time.

### **Congresses and Major Conferences**

IFIP's flagship event is the World Computer Congress (IFIP WCC), currently held biannually. The next WCC will be held in Santiago de Chile, from 20 to 25 August 2006 (<http://www.wcc-2006.org/>). The nature of these Congresses has changed substantially over the years. They are no longer of the all-singing and -dancing variety addressing every conceivable facet of our field. Instead they consist of a number of independent conferences dealing with a major specialized subject. These run in parallel so that some more general keynote addresses can be attended by all participants who can also share in social and other activities. In addition there are major international conferences organized by our Technical Committees. These include events dealing with Production Engineering, Security, and Computers in Education and Human Computer Interaction.

## **The Activities of IFIP running in Technical Committees**

At the heart of IFIP lie its Technical Committees that count on the active participation of some two thousand people world-wide. There are twelve such Committees. Each Technical Committee has a management team responsible for a given field of activity and for the work of from three to nine Working Groups, a total of 80. These Groups work in a variety of ways to share experience and to develop their specialized knowledge. These include open conferences, smaller working conferences, seminars and tutorials, circulated papers and, increasingly, as befits our subject, electronic conferencing and e-mail.

The not subject specific general targets of the Committees are as follows:

- to establish and maintain liaison with national and international organizations with allied interests and to foster cooperative action, collaborative research and information exchange,
- to identify subjects and priorities for research, to stimulate theoretical work on fundamental issues and to foster fundamental research which will underpin future development,
- to provide a forum for professionals with a view to promoting the study, collection, exchange and dissemination of ideas, information and research findings and thereby to promote the state of the art,
- to seek and use the most effective ways of disseminating information about our work including the organization of conferences, workshops and symposia and the timely production of relevant publications,
- to have special regard for the needs of developing countries and to seek practicable ways of working with them,
- to encourage communication and to promote interaction between users, practitioners and researchers, and

- to foster interdisciplinary work and, in particular, to collaborate with other Technical Committees and Working Groups.

**The IFIP's Technical Committees:**

- TC1: Foundations of Computer Science
- TC 2: Software: Theory and Practice
- TC 3: Education
- TC 5: Computer Applications in Technology
- TC 6: Communication Systems
- TC 7: System Modeling and Optimization
- TC 8: *Information Systems*
- TC 9: Relationship between Computers and Society
- TC 10: Computer Systems Technology
- TC 11: Security and Protection in IP Systems
- TC 12: Artificial Intelligence
- TC 13: Human-Computer Interaction

**TC 8 - Information Systems**

The aims of the TC 8 Information Systems Committee is the most relevant to the mission of the Association NJSZT GIKOF, that deals mainly also with the IS/IT impact on the business processes.

**Aims**

The TC 8 was founded in 1966, and their aims were revised in 1990 in order to promote and encourage interactions among professionals from practice and research and advancement of investigation of concepts, methods, techniques, tools, and issues related to information systems in organizations.

### **Scope**

The planning, analysis, design, construction, modification, implementation, utilization, evaluation, and management of information systems that use information technology to support and coordinate organizational activities including:

- effective utilization of IS/IT in organizational context;
- interdependencies of information technologies and organizational structure, relationships and interaction;
- evaluation and management of information systems;
- analysis, design, construction, modification and implementation of computer-based information systems for organizations;
- management of knowledge, information, and data in organizations;
- information systems applications in organizations such as transaction processing, routine data processing, decision support, office support, computer-integrated manufacturing, expert support, executive support and support for strategic advantage plus the coordination and interaction of such applications;
- relevant research and practice from associated fields such as computer science, operations management, economics, organization theory, cognitive science, knowledge engineering and systems theory.

### **IFIP Publications, Newsletters**

Many IFIP events are linked to publications, annually 30 to 40 IFIP *books*. A vital element of IFIP's communication with its Members and with all who participate in our work is the *IFIP Newsletter*. This is published quarterly in both hard copy and electronic form.

## **Relationships**

IFIP enjoys friendly cooperation with a number of international organisations. First among these is UNESCO with which IFIP maintains a formal consultative relationship. UNESCO has commissioned from IFIP several projects and supports the participation of some scientists from developing countries in IFIP events. IFIP is a Scientific Associate of ICSU (International Council of Scientific Unions).

There are four international federations with which IFIP collaborates. These are IFAC (International Federation of Automatic Control), near neighbors of ours in Laxenburg, IMACS (International Association for Mathematics and Computers in Simulation), IFORS (International Federation of Operational Research Societies) and IMEKO (International Measurement Confederation).

## **The Quest for Business Information Managers who can make the Difference**

RIK MAES

*Universiteit van Amsterdam FEE, Business School  
eMail: maestro@uva.nl*

Information management is a discipline in full development. For decades, the business-IT relationship is thought to be a leading theme. The main thesis of this presentation is that we won't make any progress if we don't recognize "information and communication" as a decisive, IT-independent factor in this relationship. This factor has a strong relationship with the information-intensive businesses in which our organizations are involved, and a lot less with the IT applied. CIO's main function is

being a business information manager, in the first place managing the business-information relationship. His/her relationship with IT is merely that of a portfolio manager.

This thesis is substantiated through an analysis of the actual situation in management, prevailing visions on core concepts such as information and architecture and the enduring stress on the application of large scale IT. IT infrastructures appear to shape organizations, inter-organizational networks and the society at large. Prominent approaches here are ERP systems, process automation, working under information architecture etc. These approaches are all characterized by their emphasis on standardized working, to the detriment of craftsmanship. The underlying vision on organizations is one of organizational engineer ability and of conclusive management control. The importance of this observation is accentuated by the shifting influence of information on the very identity of organizations and on the shaping of society at large.

In this presentation, we first comment on the critical concepts used in our field, to begin with the notion of 'information'. We then elaborate on better balanced approaches, taking into account the benefits of standardization but at the same time aiming at individual expertise. These approaches are necessarily multi-disciplinary and creative. We indicate how we managed to introduce these approaches in projects the University of Amsterdam undertook together with the City of Amsterdam, where we applied, e.g., IT to strengthen social cohesion in disadvantaged city areas. We further elaborate on ways to integrate these approaches in executive educational programs. The end result is a business information manager who can make the difference: fully aware of the do's and don'ts of IT, but scoring points at the business side.

## The SAS® Academic Program

ESZTER ELEKES

*SAS Institute Hungary*

*eMail: Eszter.Elekes@hun.sas.com*

Founded in 1976 SAS Institute is among the top five biggest independent software companies: SAS® is the market leader in providing a new generation of business intelligence (BI) software and services that create true enterprise intelligence. SAS® is the only vendor that completely integrates leading data warehousing, analytics and traditional BI applications to create intelligence from massive amounts of data. SAS® software and services are used by more than 42 000 companies, governments, universities, in 115 countries.

The SAS® BI Intelligence Platform provides a fully integrated set of tools that supports the entire process from accessing data, through transforming data and optimal storage, to all the most refined reporting and statistical analysis. The SAS® Business Intelligence (BI) platform also offers business solutions built on the Intelligence Platform, which are easy to implement and gives a fast return of investment. Such solutions are for example the SAS® Financial Management, SAS® Activity Based Management; SAS® Strategic Performance Management; etc.

The main pillar of the SAS® Academic Program is the so called Master License Agreement signed by the academic institution. This possibility allows students and professors to achieve top results by applying one of the most up-to-date tools for teaching and research.

Number of universities in the USA and in Europe has been using the SAS® system in the areas of statistics and data mining, and nowadays it

is more often part of the business education. The administrative usage, running the university, is also gaining ground.

With initiating the SAS® Academic Program in Hungary also universities and colleges in this country might have access to SAS®. For our academic partners, a special software package has been developed, the price of which includes also documentation and technical support. In the frame of this program we close an agreement with the partnering chair/department/university. The modules can be run on any platform without a limitation in the number of users.

The presentation gives detailed information about the possibilities of the SAS® Academic Program.

## **A Training Method and the Program for Information System Analysis**

TETSUYA UCHIKI

*Saitama University, Faculty of Liberal Arts*

*eMail: uchiki@kyy.saitama-u.ac.jp*

In a design of information systems, systems engineers are needed the analysis of mechanical systems based on the situation and its environment, and user's requirements to the mechanical systems. And the information processing as a mechanical system in the information system accompanies interactions with users. Therefore, in information process analysis, the skills for observing and recognizing the process are necessary. However, many system engineers as information system designer do not belong to a user organization. In the reason, it is difficult that the engineers know the user's requirements, system's environment, and

their workflows completely. Accordingly, it is difficult to design and to develop the information systems satisfying to expectation and needs of users.

An improvement of communication skills of system engineers has been pointed out as one of the important solutions of this problem. The improvement method of communication skills has not been practiced so much, because it is difficult to grasp the developing skills and effectiveness of the methods clearly. In contrast, concrete machine systems in prototyping or non-procedural languages in EUC have been used like as communication tools. In recent years, there are also some EUD tools/environments which users can develop their information systems by themselves. However, such solutions cause to shrink the role of system engineers to a design of the mechanical tool from a design of an information system. They also cause to narrow their analysis to only a machine system and to neglect the analysis and comprehension of objects in a system design. Moreover, there is even risk that information systems are designed in the absence of design concept by quicker and incremental system development trend.

A purpose of this paper describe about the effective method that cultivates system engineers who had the information processing analysis capabilities as indispensable skills in an information system design. In the analysis of information processing, observation skills and the abilities of formalizing the invisible information processing are more important rather than only thinking in their brains. The most effective way to cultivate capabilities of information processing analysis is to make a learner faced with the difference between the real process and their recognized process, through observing the actual information processing site, formalizing them, and getting evaluation from the officers at the site. Because learners' analysis capabilities of information systems are improved and they recognize the importance of the analysis in an information sys-

tem design through experiencing difficulties of recognizing and formalizing an invisible information processing. However, many learners cannot investigate to a practice at the actual sites and not discuss with the officers of the site at the same time. Thereupon, we propose a training method that inspects the analysis result through enforcing their observed and formalized information processing in their actual field by another group. The trainees can evaluate their analysis result by themselves without the officers at the actual sites using this method.

Minimum 2 groups are necessary to the enforcement of this method. One group watch the video that recorded an actual site, and then they try to recognize and to write down in some formal style the information processing hiding behind the situation in the video content. Another group receives the report and play back the information processing accurately in accordance with the description in front of the group members. The analysis capabilities of themselves would be evaluated objectively through comparison and discussion of the differences in the information processing between showing in the video and playing back in accordance with their report. The analysis of video contents differs from the observation at the actual site, as we know. However, we think in the education at the first stage that to use a video is desirable rather than to observe the actual sites because the educator offers the same information, volume, and situation for all of the learners, and they also can repeat the observation until understanding and formalizing them.

This paper also describes the exercise program to evaluate this method in cultivating the analysis capabilities of information systems in a classroom, especially recognizing and formalizing the information processing and the situation. We conducted some experimental lectures in conformity under this exercise program and inspected the effects of this method through the analysis of the experiments and the results. For the experiments, we prepared a video about the business process of the library in Saitama University. This experimental lecture was conducted to each of the system engineer group in companies as a specialist and student group as a general user for the purpose of inspecting the differences of efficacy by the difference of social positions and experiments. As the result, we could observe effectiveness of the exercise program in both groups of students and engineers.

Expanding the users and the applied areas of information systems, the users who do not have the knowledge and skills of information processing and technologies are increasing nowadays. Therefore, the information processing and its situation that system engineers have to analyze will be increasing and be complicated more. The system analysis capability of system engineers in information systems design will become more important.

# **Session A**

## **Business Impact of Information Systems**



## Contribution of the Process Modelling to the Efficient Business Adaptation

CSONGOR NÉMETH

*Budapest University of Technology and Economic  
Economic and Social Sciences  
eMail: nemeth\_csongor@controlling.hu*

The business operation comes true through the execution of processes. The efficiency and capability of any enterprise depend on the suitability of its processes. Despite of the outstanding importance of processes, their modeling and engineering is unsatisfactory.

The proper interpretation of the process is of primary importance for the sake of business process modeling. In the everyday use, the process is a series of actions that someone does in order to achieve a particular result. More accurate definition is needed in order to evaluate its suitability. According this approach a process is a *rule*-harmonized set of *activities* distributed in space and scheduled in time and consuming and transforming *resources* for the sake of the implementation of a *goal*. The goal is the desired state of resources, generally the manufactured product. A *business process* is a chain of processes, which is to be executed for the sake of a sold product or in order to operate and control the whole enterprise. The performance of an enterprise depends basically on the suitability of its adaptation to the environment. The goals must be set taking into consideration of this adaptation. The business adaptation has three nested layers:

- Direct adaptation: the sold product must fulfill the requirements prescribed.

- Operative adaptation: the aggregate effect of all business processes in a given period must match to the expectation formulated by owners in the business plan (mainly profit-and-loss and cash-flow expectations, but other objectives relating to the market, quality, strategic advance etc. can also be set).
- Strategic adaptation: the enterprise must be prepared to exploit or handle forecasted significant changes in the environment, by possessing suitable products and business processes which guarantee the effective and efficient direct and operational matching to the changed conditions in the future

Based on two typical categorizations of business processes (the Porter's value chain and the Process Classification Framework of American Productivity & Quality Center), we can state, that the process modeling yields only a taxonomy (process-sub process trees or hierarchies) and short interpretations, hiding the implementation and information-processing schemes. They do not provide enough support to the evaluation of the effectiveness and efficiency of the business adaptation.

The process chart approach shows only the running of the process. In addition of this when real business processes are studied, a huge amount of nested process charts would be needed which cannot be handled in conventional word processing environments. The BPMN (Business Process Modeling Notation)-style modeling assisted by a CASE-tool looks like an easier way, but this technique is even more the tool of documentation than that of the design.

The solution can be expected from the constructive approach of the process. A process is a designed collaboration. The process achieves the goal via execution. A process can have many executions. The process execution generates effect. This effect is to be compared to the goal. The process is effective when it has resulted in the expected effect: it

has produced that result, which was set by the goal. The goals are means to attain more complex goals.

Since the process is a set of activities distributed in space and scheduled in time, it is not created and executed automatically. It must be designed; the capability of execution is to be created and it has to be operated. In order to attain this, an activity control is needed. This provides a control framework, which can be “pushed” forward by human intervention, when the prerequisites specified in rules are satisfied.

Beside this control framework the intrinsic (semantic) definition of the process is also needed. This is the *genetically coded core* of the process: the concept of achieving the goal. This is the *build-up design* of the product, which is the primary goal of the process. Different build-up concepts can lead to different processes (remind how the conventional manual organization differs from the computerized ones). The genetically coded core of the process is the way of how the initial state getting to the final state through state transitions and intermediary states. The initial and final states must be tangible in reality. The process must be executable, taking into consideration of the variety in the reality.

The constructive process model is complete system model. The best way to this modeling is the UML-based modeling, well proven in the world of object-oriented system development. I will present the course of constructive process modeling (context use case diagram, expanded use case diagram, analysis model and sequence diagram). Finally I will show the benefits of the constructive process modeling: it makes the operation well-grounded, helps in generating improvement ideas, in evaluating the value of these improvements that is in making the operation more effective and efficient.

## **Construction Model for Corporate Knowledge Management Systems**

MILÁN HASZNICS

*Budapest University of Technology and Economic  
Department of Information and Knowledge Management  
eMail: hasznics@itm.bme.hu*

Nowadays, the proper management of the intellectual capital is of utmost importance. The inevitable component of achieving sustainable advantage over the competitors is the effective knowledge management. Just like quality assurance systems, the knowledge management should serve as a corporate subsystem covering all the activities of the company. In this presentation, a model is to be introduced. The usage of this model enables the user (the CKO – Chief Knowledge Officer) to construct a wide coverage, fully functional knowledge management system in a step – by – step manner.

The high level steps of this method are the following

1. Separation of autonomous activities that could be maintained using sub–contractors instead the rest of the company they are part of. Later, these will be handled as small, stand alone companies.
2. Identification of inter-autonomous unit subsystems. The structural element of the company that are members of such subsystems can be effectively used as a channel of interaction between the autonomous units. These channels are highly needed as we are to create a corporate knowledge management system that represents the possible maximum of the intellectual capital of the entire firm even at its smallest component. The structure of the knowledge management

system our model suggests is very similar to the sophisticated hub and spoke data warehouse architectures at the high level. Of course, there is an exception due to of the tacit knowledge storability problem: only codified knowledge can be handled by a centralized solution.

3. After the separation process, we can identify the properties of the system components. In this phase, the adequate knowledge management activities (or activity packages) can be assigned to each component using the KM activity matrix. Both the autonomous and the channel components can be handled in the same way.
4. After the assignment of activities, we can also assign IT support solutions, accordingly to the activities specified during the third step.
5. Optimization step: elimination of duplicate IT components, identification of alternative communication channels via commonly used systems.
6. The step of completion: the assignment of personnel.

The model, the sequence and the KM activity matrix are parts of my Ph.D. research results.

## **The effect of financial ICT on payment systems**

ATTILA HORVÁTH

*BME FESS Department of Information and Knowledge Management  
eMail: hattila@itm.bme.hu*

It is almost a commonplace that the price of time is growing continuously in our globalized world. This is particularly true for the financial sector. The development of the information and telecommunication technology revolutionized commerce, customer and partner relationships and payment as well.

In the last century the role of financial institutions has changed a lot. From being an extremely confidential service based on personal relationships for the few wealthy and important members of the business and private sector, financial institutions have changed into a mass service industry for everyone who wishes to pay the price. Alongside this change of focus finance became the most IT intensive sector. Besides military this sector has always enough capital to use the newest, strongest and fastest ICT possible. These changes reformed the role and methods of payment, even the form of money. Besides cash and money in account, a new medium of payment, the digital cash is about to spread throughout the world of finance, changing the habits of payment.

In this lecture and study the author intends to show the development of the means of electronic payment by comparing the “regular” account based methods – macro payment – (remittance, credit cards, e-cheque, etc.) with the new mediums – micro payment – (digital cash, e-wallet, smartcards, etc.). Through presenting the pros and contras of the single methods and the two main groups (macro- and micro payment methods) it will come out clearly, that the new methods are fare more superior in

the field of technology, security and usability. The pullulation of these means yet has to be waited for. The change is influenced by many interests and counter-interests. This lecture (and study) tries to look backstage and explain why is it, that the new technologies cannot sweep away the traditional means so easily.

The boom of ICT usage in the financial sector reached Hungary in the '90s, and since then the Hungarian financial sector began to fall into line with the international standards. Although Hungarian consumers are said to be conservative and reluctant concerning financial services, the spread of the new channels can be esteemed as a true success. The lecture contains a short lookout on the Hungarian situation, presenting the methods available and expectations in our homeland.

## **Enhancing the Objectivity of IT Audit Assessments**

DÁVID PETŐ

*Corvinus University of Budapest, Department of Information Systems  
eMail: dpeto@informatika.bke.hu*

There are numerous methodologies, de jure and de facto standards for carrying out IT audits. During the audit process the proper method should be chosen, and it is usually done according to the area in focus. It is important that the results of the audit process also be represented in a numerical way. The clients are expecting a benchmark so they can check if their processes are compliant with the regulations and are willing to know how the risks in their organization compare to the industry average.

There are many ways to assess the IT audit results. The most widely used methods are based on the capability maturity model (CMM) or CMMI, but there are also numerous ways to assess IT risks, and create risk index numbers. CMM-like assessments are also part of well-known IT audit methodologies, such as COBIT.

Creating a numerical expression for risk levels always raises problems. Some of those, like comparing different dimensions or to set the probabilities and weights for different risk factors are very hard to overcome. The numerical representations always have to rely on the personal assessment and somewhat subjective views of the auditors, thus cannot become totally objective. On the other hand, the uncertainty in the addition process – the numerical representation of the audit observations – can be diminished.

Most risk assessment methods do not take into account the correlations between the different risk factors, and do not deal with the problem, that the overall risk can become higher and lower by the combined effects of separate risk factors..

The aim of my research is to map the cross-effects of risk factors and by means of that create a risk assessment metrics that assures the results are closer to reality and more objective than in common models. During the research I created a modified correlation matrix of the risk factors relying on the COBIT maturity model, to better represent the effects on the overall risk level. By considering the additive and subtractive effects of co-existing risk factors on overall risk level, new risk assessment metrics are being created.

With the help of a more objective risk assessment method, IT-management decisions and the allocation of resources concerning information systems can become more effective.

## **New greetings card from Userland**

GABOR HOMONNAY

*Sanofi Aventis – Chinoin Rt.*

*eMail: gabor.homonnay@sanofi-aventis.com*

Userland is far away. This conference has received a greetings card from Userland last year. The message of that card was: the clear user responsibility is essential to the successful applications, but the users must be prepared to this new role. Therefore application and more over requirement specification should be trained for the next generation instead of lists and characteristics of hardware equipments and instructions of Office programs.

Userland is famous of the excellent education and training of the users. The current greetings card tells us the approaches and some examples how the small users are growing up, how they become experienced and successful users.

The secrets of the applications are not secrets anymore if no surprises in the application. A surprise could come from:

- the hardware environment,
- the software environment,
- the application itself,
- the new business case or exception,
- the other user's action or lack of action,
- the data garbage.

There are very good world-wide methods how to teach the infotech environments, hardware and software. All IT newspapers are full of telecom and new mobile equipments. The so-called office applications are also

part of the education. The weakness is usually concerning the user driven application, in spite of all flow-owners, flow-officers and user organizations.

The IS education of Userland is based on application-bricks, samples, parables and case studies. The most important are the application-bricks and the samples. Information System domain is still a craftsmanship. It is impossible to educate without practical samples. The application-bricks are necessary to explain and understand the samples.

There are many more specificities in the user education and training in Userland. The surface of the card is not enough to tell more about it. But there will be next events and next post cards.

## **eBusiness Strategies: Blockade the Siren e-Calls**

PÉTER DOBAY

University of Pécs, Faculty of Economic and Business

*Department of Business Informatics*

*eMail:dobay@ktk.pte.hu*

Plenty of books and other publications advertise: correct and proper use of eBusiness and ICT can generally provide significant competitive advantage for any business. Cited case studies show ever-increasing opportunities to cut costs, providing a better and faster service to a wider customer base, or producing incredible return on investments (especially the Intranet solutions). This is critically important that we have a right approach to implement a new information and production system, and in cases like that a strategy-formulation can help.

Questions are numerous around. Do you really know, where is your company going in the long run? Do you have a clear vision to present it to an e-consultant? Do you have experience – like best practices, as a minimum – on how e-Solutions work, the areas they cover, the resources they need? And, last, but not least: do you have resources to cover unpredictable costs of a risky ICT-based project?

Especially in the case of an SME, questions raised before should be faced at. If the small business is just “keeping the pot boiling”, if it has a very uncertain market environment, if its production or service is just at the mercy of some large partners – where is the limit of risks, when a manager should say to siren calls: “No, thanks, we don’t jump into eBusiness now!”?

Some consultants offer incremental system development. Yes, it could help: having a prototype, investigating a limited, but working solution for an isolated business function could enhance business intelligence of the firm and the human capital, the personnel and the leadership. But others - like R. Nolan in his classical “stages theory”- say: losing time with a procrastinating attitude can easily mean getting out of business, especially for an SME.

All experts agree: having a clear vision for your business in the future is essential - if the vision is not clear and appropriate, all the ICT solutions in the world will fail to deliver a valuable result. But creating a “strategy project” does not come easy and somebody has to pay the bill even after a failure to complete it.

The presentation first will show an overview of differences between general „strategic thinking” and „eBusiness strategy building”, and will focus on the problem of the SMEs, left behind along the way with “siren calls of e-Solutions”. Then we show some methods of measuring the

value of information gained from common eBusiness solutions, like CRM, SCM, eCommerce, for business competitiveness.

The third part gives some case studies of real companies introducing an eBusiness strategy to present stakeholders behavior and project management problems.

Finally we try to give a schema, a kind of a "Roadmap" to build up a project for strategy building on this field.

# **Session B**

**Modeling, Methods, Solutions, Visualization**



## **Seeing the Woods for the Trees Challenges in Business Information Visualization**

TAMÁS HECKENAST

*Széchenyi István University, Dept. of Information  
eMail: heckenas@sze.hu*

In this paper I would like to shed some light to the difficulties in business oriented information visualization raised by the lack of comprehensive specialized theories and the shortness of knowledge flow between the related parties. Current state-of-the-art view suggests that the design process here is a balance between science and art.

Reviewing the successful business visualization applications there are two important findings: real groundbreaking solutions are rare and application of the most advanced techniques is spreading slowly and hardly out of academics into everyday solutions. These two findings suggest that the theoretical background should deepen foundations and emphasize design. Visualization industry needs predictive and generative theories. To answer the question why they are still missing or are too general we have to take a closer look on the supportive scientific background and the special biases and challenges in business oriented visualization. Directly and traditionally explorative statistical data analysis and presentation are counted as the originating sciences. A special field of interest is opening now in data mining and knowledge discovery. Although these fields may set out problem statements and provide domain specific approach, most of the required knowledge lies outside of their scopes, in other research areas. Most demanding problems are the non-geometric abstract data and the incorporation of human problem solving processes. This divergence is the main cause of the lack of unified ap-

proach and solid theories, which are based evenly in human and engineering sciences as well.

Business information visualization is a relatively new field. In my paper I will overview the closely related research fields with their characteristic problems and connections. I try to build a visualization model, which results methodological suggestions. I will argue that mental model studies have to have more significant role in business information visualization and the right approach to design is the so called activity-centered design. It means that the emphasis should be moved from technology to human centered considerations. Farther I try to show the role of special education in business information system.

## **The Visual Culture of (Business) Informatics**

ANDRÁS SRAMÓ

*University of Pécs, Faculty of Business and Economics  
eMail: sramo@tkk.pte.hu*

The word information is derived from Latin informare which means “give form to”. The etymology thus connotes an imposition of structure upon some indeterminate mass. Most people tend to think of information as disjointed little bundles of “facts”. In the Oxford definition of the word it is connected both to knowledge and communication: “knowledge communicated concerning some particular fact, subject or event; that of which one is apprised or told; intelligence, news”. The way the word information is used can refer to both “facts” in themselves and the transmission of the facts.

When we build a hierarchy from the most common ideas of informatics, information will be a stop on the way from data to knowledge and

wisdom, by the way it gets a hard functional role. How does it works in business information systems? Information have to visualize when we want to use it. Briefly, visualization it is making a mental image of something, whether it be an activity or a group of facts. Often information needs to be presented in a chart, or table, or pivot. Many workers however just grab a line chart or bar chart, since these are familiar. There is a need about some formal guidance for selecting a chart or other visual aid. Not so much the how-to-do with the software, but the why.

Visual information can significantly improve productivity. Users can explore large amounts of data, rapidly assimilate information from many sources, reason with it, understand it and create new knowledge based on it. With the right visual picture, people can make better decisions, faster, backed with more information.

Where the information is placed, that is the information space. A space is a collection of places where things can be. One of the things that can be in a space is an observer. The observer may be outside the space or immersed in the space, and window frames what the observer can see. Things can move in space, in particular, the observer can zoom, scroll and navigate. In the information space we need to differentiate destination information – what we are looking for – and navigation information – helps us locate destination information. There are different techniques to show the structure of the information space: depth cues, interposition, relative size, relative height, linear perspectives, aerial perspectives, shadow, spatial summation, texture gradient and figure ground perception. The presentation will show examples for that techniques inside Ben Shneiderman's classification of visualizing solutions.

## **The joint use of User Requirements Notation Standard with UML in Socio-Technical Systems Requirements Engineering**

ANNA MEDVE

*University of Veszprém, Faculty of Information Technology, Department of Information Systems  
eMail: medve@almos.vein.hu*

The different modeling concepts of UML intend to model complete systems across a broad spectrum of different application domains. Software development is concerned with the construction and circumstance of this desired activity that interacts with its goal-centered environment controlled by organizational and business rules.

Organizational rules are interwoven with business rules and their presentations by users are often taken as enterprise goals and can be in the form of decision tables, computation rules, decision trees, temporal diagrams (describing what events must occur before or after what other events, and the process resulting from that), algorithms, and so on. These contain implicit behavior that can easily be missed, or misinterpreted by the informational system developers rather than by the process developers.

The expansion of telecommunication technologies in business areas produces the needs of enterprise processes collaboration that across different business units or geographies. Depending on an organization's strategy one could make a reasonable argument for consistency or local variation. In these cases, the structure of organization has achieved an effective harmony of shared and locally unique processes. The major of knowledge experiences and tools produced in telecommunications soft-

ware engineering can be employed for business models, UML 2.0 the now version itself and Business Process Management tendency support our assertion. Modeling enterprise features it needs to emphasize the specification of responsibilities superimposed on organizational structure of abstract components.

Another aspect of system complexity strongly influenced by complex business rules, is that an enterprise system is the front-end for many actors inside and outside of enterprise where are different types of end users. Many actors and components are related. These relations establish different actors' viewpoints that contribute to the realization of complex systems. To establish models of application processes all the aspects of organizational changes and technological solutions should be analyzed. Collaboration between stakeholders and computer scientists which needs the tools and techniques for sustained collaborations from *feasibility study* to the iterative process of *requirements elicitation and analysis*, until the alternative models for the target system are elaborated.

During the requirements elicitation process for specifying behavior it is necessary to specify exactly the all structural properties when details are not completely known captured for understanding the relationship between different external viewpoints and concerns by cross-checked event scenarios to discover requirements conflicts. Studies have shown that approximately a third of all serious defects are the result of poor requirements. Before installation a major parts of applications are redesigned. It is absolutely important to derive a comprehensive set of scenarios describing implicit compositions between the requirements for use as test purposes for the development process.

The URN elaborated by the International Telecommunication Union (ITU-T) is the first standardization effort of a formally defined notation used for capturing and analyzing user requirements. URN focuses on

user requirement desired goals or functions that users or other stakeholders expect the system to achieve. URN combines two complementary notations: the *Goal-oriented Requirement Language (GRL)* for goal-modeling techniques built in the well-established Non-Functional Requirement (NFR) framework and *Use Case Maps (UCMs)* for scenarios modeling Functional Requirement (FR).

*Use Case Maps* is a graphical *scenario notation* for describing causal relationships between responsibilities superimposed on organisational structure of abstract components. *Responsibilities* represent generic processing, such as actions, activities, operations, tasks. *Components* are also generic, and can represent software entities, such as objects, databases, processes, servers, as well as non-software entities, such as hardware or actors. *Paths* represents scenarios and scenarios interactions which are parts of use-cases. *Causal relationships* arrange responsibilities in sequence, as alternatives, or in parallel. These are said to be *causal* because they link causes (preconditions and triggering events) to effects (post conditions and resulting events)

*Goal-oriented Requirement Language* is a graphical notation that allows reasoning about (*non-functional*) requirements. GRL is concerned with *intentional* elements, actors, and their relationships. Intentional elements model the “why” aspect — *objectives, alternatives*, as well as decision *rationale* and criteria — but not operational details. GRL captures business or system goals, alternative means of achieving goals and rationales for contributions and decisions.

URN can be an interface for business rules managers and IT experts. In this paper we present our methodology for the joint use of URN with UML in the systems requirements engineering.

## Elliptic curves defined over finite fields using in cryptography

ZOLTÁN CSAJBÓK

*University of Debrecen, Faculty of Health College  
eMail: csajzo@freemail.hu*

Let  $K$  denote a field.  $\bar{K}$  is its fixed algebraic closure, and  $K^\times$  is the multiplicative group of  $K$ . The symbol  $\mathbf{F}_q$  represents finite field with  $q$  elements ( $q = p^k$ ,  $p$  prime,  $k \in \mathbf{N}$ ). The finite field  $\mathbf{F}_p$  of  $q = p$  elements is identified with the set  $\{0, 1, \dots, p-1\}$ .

Let the elliptic curve  $E$  be given by its affine non-singular Weierstraß equation

$$y^2 + a_1xy + a_3y = x^3 + a_2x^2 + a_4x + a_6 \quad (1)$$

where  $a_1, a_2, a_3, a_4, a_6, x, y \in \bar{K}$ . Then the elliptic curve  $E$  is the set of solutions to equation (1) in the affine plane  $\bar{K} \times \bar{K}$ , together with the extra point at infinity  $O$ , i.e.,

$$E = \{(x, y) \in \bar{K} \mid y^2 + a_1xy + a_3y = x^3 + a_2x^2 + a_4x + a_6, \\ a_1, a_2, a_3, a_4, a_6 \in \bar{K}\} \cup \{O\}$$

If  $a_1, a_2, a_3, a_4, a_6 \in K$ , then  $E$  is said to be defined over  $K$ , and we denote this by  $E/K$ . In this case the set  $E \cap K$  is the  $K$ -rational points of  $E$ , and denoted it by  $E(K)$ .

The points of elliptic curves—defined over any field, and so, over finite field—form abelian group under a suitable operation with identity element  $O$ . This fact is the basis behind the elliptic curves using in cryptography.

Provided the elliptic-curve group operation written additively let the  $n$ -the multiply of the point  $P$  denoted by

$$[n]P = P + P + \dots + P \text{ (} n \text{ terms)}$$

for  $n \in \mathbf{N}$  and  $P \in E$ . We also define  $[0]P = O$ ,  $[-n]P = -[n]P$ .

If it is given points  $P, Q \in E(\mathbf{F}_p)$  such that the relation

$$Q = [k]P$$

holds for some integer  $k$ , then it should be hard in general to obtain the elliptic discrete logarithm (EDL), i.e., a value for the integer multiplier  $k$ . It is called the elliptic curve discrete logarithm problem (ECDLP).

The science of cryptography has a wide range of application in the modern electronic business life, even in every day's business. In the mid-1980's Koblitz and Miller proposed using elliptic curves defined over finite fields in cryptosystems. In our talk we discuss the increasingly role of elliptic curves in modern cryptography in more details.

## **A Solution which meets the Requirements of Privacy and Personal Data Protection at Identity Management Domain**

<sup>1</sup>BÁLINT MOLNÁR – <sup>2</sup>ANDREA KŐ – <sup>3</sup>JÓZSEF KISS

<sup>1</sup>*Corvinus University of Budapest, eMail: molnar@informatika.bke.hu*

<sup>2</sup>*Corvinus University of Budapest, eMail: ko@informatika.bke.hu*

<sup>3</sup>*MTA ITA, eMail :jozsef.kissdr@ihm.gov.hu*

Tasks related to identification and authentication of persons and other entities have been necessary always in public administration and business life. Information Society offers new e-services for citizens and businesses, which dramatically change the administration and results additional challenges, risks and opportunities. Citizen's confidence and trust to services has to be enhanced, meanwhile several requirements, like data protection, privacy and legal requirements has to be satisfied. Identity management solutions show colorful variety of software in Europe, they are at a different maturity level. Paper will concentrate on the PKI related identity management solutions, mainly from Hungarian approach. We review its legal and regulation environment, benefits and disadvantages of its applications.

Relating identity management services will be presented also. PKI itself can not guarantee the authentication and authorization of the identity at the level that is anticipated by the public administration, it has to be completed. The most important Hungarian regulation approach can be found in Ket (CXL. Law, 2004) and we have to count the concept of identity-background checking also. The paper will present a suggested identity management framework (based on the PKI, but improved it), customized for the Hungarian specialties.

The basic problem that should be solved somehow is the following: In the relationship between the citizen and the public administration, there is a very strong requirement for the mutual verification and validation of the identities of partners, usually prescribed by the law, the legal environment and the jurisdiction compulsorily. Regarding the available technologies, there are several opportunities to implement a proper technical solution. However, a technically satisfying solution could collide with the local legal environment and jurisdiction. At some countries, the law permits a *de facto* central register of electronic identity of citizens, at other countries, either the laws in Force or the practice of jurisdiction prohibits the centralization of the registered electronic identities, and allows only some kind of distributed solution. The technology should provide services even in distributed or federated cases thereby the partners — the public administration and citizen — could build up a trust relationship mutually.

The identity of citizen proved by a certification of PKI technology and issued by a commercial organization — the Certification Authority — could not be regarded convincing enough for the public administration. The certification contains some kind of name or names, but it does not have enough information for unambiguous authentication.

The outlined solution provide a correct solution among the constraints raised by the legal environment and the available technology, and avoiding some pitfalls that apparently yield a resolution but it hides some traps because disregarding the basic principles of cryptography.

## Optimization of the Single Product Assembly Line Balancing Problem

<sup>1</sup>TAMÁS HAJBA – <sup>2</sup>EDIT MILETICS – <sup>3</sup>GYŐZŐ MOLNÁRKA – <sup>4</sup>ATTILA SCHVARCZ

*Széchenyi István University, Department. for Mathematics*  
eMails: <sup>1</sup>hajbat@sze.hu, <sup>2</sup>miletics@sze.hu, <sup>3</sup>molnarka@sze.hu,  
<sup>4</sup>svarci@index.hu

Assembly lines are typical production systems in the industrial production of commodities. An important decision problem, called assembly line balancing problem, arises and has to be solved when configuring an assembly line. The problem has many variants depending for example on the number of products that have to be assembled. In this talk we describe a quite general mathematical model (including parallel workstations and precedence constraints) for the single product assembly line balancing problem. Two different type of optimality is considered: (i) the number of products that can be assembled in a given period has to be maximal; (ii) the number of products divided by the number workers has to be maximized. In both cases achieving the optimal solution even in a problem consisting of fifty-sixty basic assembly steps is a hard task to do. For this reason we focused our work to find out mathematical algorithm that gives a solution near to the optimum.

For a given assembly line realization of a technology satisfying all the restrictions the maximum of the station times is called the cycle time. It can be easily verified that problem (i) is equivalent of minimizing the cycle time and problem (ii) is equivalent of minimizing the product of the cycle time and the number of stations. For this reason the algorithm works as follows: suppose we would like to minimize the cycle time. First the algorithm fixes a positive number  $C$  and tries to find a feasible solu-

tion with cycle time no greater than  $C$ . If we succeed then  $C$  is decreased and we search for a better solution with this smaller  $C$ . On the other hand if for a given  $C$  no solution is found then  $C$  is increased. For a given  $C$  to find a feasible solution with cycle time no greater than  $C$  we use an algorithm based on the list scheduling algorithm known from scheduling theory.

On the basis of the mathematical algorithm we have implemented its computer model as well. In the presentation we illustrate the results obtained by using the computer program that has been developed to solve this problem.

# **Session C**

## **Business Application, Business Intelligence**



## **“Motorunk a minőségünk”**

DMS bevezetés az AUDI Hungaria Motor Kft.-nél

JANKÓ CSABA – GAZSÓ BERTOLD

*AUDI Hungaria Motor Kft.*

*eMail: csaba.janko@audi.hu*

A győri székhelyű AUDI HUNGARIA MOTOR Kft., az AUDI AG százszázalékos tulajdonú leányvállalata, 12 éve az Audi- és Volkswagen-konzern központi motorszállítója. Győrben szerelik össze az Audi TT Coupé és TT Roadster sportkocsikat is. Az Audi Hungaria évek óta Magyarország legnagyobb exportőre és az ország egyik legnagyobb árbevételt elérő vállalata.

Az üzleti folyamatok biztonságának megteremtéséhez és a fenti eredmények további javításához szükséges a különböző dokumentumok kezelésének szabályozása, egyszerűbbé tétele. E cél érdekében került bevezetésre az a dokumentumkezelő rendszer, melyet az előadás során az érdeklődők megismerhetnek. Az előadás taglalja a rendszer kialakításának körülményeit, gazdasági indokait, valamint a kialakítás folyamatát a tervezéstől a megvalósulásig. Zárszóként az eddigi üzemelés tapasztalatról, illetve a jövőbeni lehetőségekről esik szó.

## **Ügyfélkapcsolatok menedzselése az áramelosztó cégek- nél adattárházak támogatásával**

<sup>1</sup>PETKOVICS IMRE, <sup>2</sup>TUMBAS PERE

<sup>1</sup>Szabadkai Műszaki Főiskola, e-mail: peti@vts.su.ac.yu

<sup>2</sup>Újvidéki Egyetem, Közgazdasági Kar, e-mail: ptumbas@yunord.net

A technológiai fejlettség mai szintjén a termelési folyamat megszerzése és eredményes lebonyolítása nem jelent problémát. A versenyelőny megszerzéséhez azonban nem elegendő egy kiváló termék forgalmazása (hasznos szolgáltatás kíséretében sem), ha az nem a vásárlók igényeit elégíti ki. A termék-centrikus vállalkozások ideje lejárt, helyükbe a vásárló-centrikus szervezetek lépnek. A szolgáltatások terén ugyanez a helyzet: egyedül az ügyfél-centrikus cégeknek van esélyük a túlélésre, a fejlődésre, a magasabb profit megszerzésére. Az ügyfélkapcsolatok megfelelő menedzselése nagyon bonyolult és költséges folyamat, de nemes cél érdekében történik: az elégedett és lojális ügyfelek érdekében. Az ügyfélkapcsolatok menedzseléséhez komoly géppark szükséges és összetett szoftvercsomag, amely tekinthető e-business, vagy m-business megoldásnak is.

Több szoftverház is kínál már különböző ügyfélkapcsolatok menedzselését támogató résztevékenységet, sőt, a teljes menedzselést támogató termékek is megtalálhatók a piacon. Mégis, az ügyfélkapcsolatok menedzselését megcélzó projekteknek több, mint a fele megvalósíthatatlan marad. A menedzselést támogató szoftverek megléte tehát messze nem elegendő a sikerhez. Az egyébként kiváló dolgokat tudó CRM (Customer Relationship Management) csomagokat testre, illetve cégre kell szabni ahhoz, hogy használhatók és hasznosak legyenek. Minden CRM szoftver hatalmas adatmennyiséget kezel, hiszen az értékesítést, a

marketinget, az ügyfélszolgálatot és az elemzést is magába foglalja. Az elemzési technikák számára a relációs adatbázisok nyújtotta lehetőségek szűknek bizonyultak, így helyettük adattárházakat alkalmaznak.

Az adattárház-elv a döntéstámogató rendszerek fejlődésének fontos mérföldköve: olyan filozófia, amely, általános vélemény szerint, a hatékony és sikeres stratégiai irányítás és –döntéshozatal záloga. Olyan informatikai megoldás, amely a felhasználójának jelentős stratégiai előnyt biztosít az ügyviteli modell elemzésében, a termelési és értékesítési trendek, irányvonalak felismerésében, a megoldás-változatok felkutatásában, az ügyviteli folyamatok átalakításában, optimalizálásában. Az adattárházban könnyen hozzáférhető és feldolgozható, ellentmondásmentes „történelmi” adatok helyezkednek el, könnyű felösszegzési, aggregációs lehetőségekkel. Mindez jó alapul és támaszul szolgál ma is és a jövőben is, az OLTP (online tranzakció-feldolgozás), az OLAP (online analitikai feldolgozás), az EIS (Executive Information Systems – vezetői információs rendszerek) és a DSS (döntéstámogató rendszerek) következő generációihoz.

Az áramelosztó cégeknél is hasonló szerep jut az adattárházaknak: a nagyméretű nyers adathalmazból olyan hasznos adatok kiválogatása, amelyek megfelelnek a «szükséges információ, megfelelő alakban, kellő időben» elvárásnak. Az adattárházak világában kiemelkedő szerepet játszanak a metaadatok, hiszen ezen adatok egy csoportja segít eligazodni a felhasználónak a rendelkezésére álló adatok rengetegében. Emellett a metaadatbázis adatai biztosítják az adattárházban levő adatok minőségét, keletkezését, idejét, forrását és integritását, növelve a felhasználó bizalmát az adatok hitelességét illetően.

A munkában az ügyfélkapcsolatok menedzselésének áramelosztó cégeknél jelentkező sajátágaira mutatunk rá. Ennek függvényében épülhet ki maga a menedzselést támogató szoftverrendszer és az őt

háttérben támogató adattárház is. Külön figyelmet szentelünk az adattárházak metaadatainak (metaadatbázisának) kialakítására az adott üzletágban.

## **Does ERP support or hinder? Efficient Processes**

<sup>1</sup>ISTVÁN NÉMETH – <sup>2</sup>CSONGOR NÉMETH

<sup>1</sup>Controlling Management Consulting and System Developing Inc.

*eMail: nemeth\_istvan@contolling.hu*

<sup>2</sup>Budapest University of Technology and Economics

*eMail.: nemeth\_csongor@contolling.hu*

A process is a harmonized set of activities in time and space. The harmonization is accomplished by means of information processing. Nowadays, this information processing is mostly supported by computer systems and databases called ERP (Enterprise Resource Planning) systems.

The performance and competitiveness of companies basically depend on how the framework of their added value generating and supporting/controlling processes satisfies the environmental requirements, how flexible they can take the advantage of the surrounding possibilities, how efficient they are?

A company generally buys a process model with buying an ERP system. This process model was probably the best industrial practice at the time being developed (mostly in the 70's and 80's). These embedded processes give safety and calculability, but they mean constraints to the company. These constraints are not suitable for every corporate to exe-

cute their processes. In several cases the workers, who are not supported properly by the system, need supplementary reports, and “Excel tables”. Lots of users feel that they do not get added value from the system and they are working “only” for the sake of easing the work of accountants. This conflict can decrease the efficiency of processes. Development of an ERP system took huge capital investment because of its large-scale integration, its parameterized diversity, so its radical reengineering hardly can be expected.

More significant fitting problem arises when the process model itself becomes obsolete the ERP system is based on. Since the years 70's, 80's the business environment has changed dramatically: volumes have decreased, individual customer needs are to be satisfied, the price competition has become stronger, the accurate deliveries and higher quality at reasonable price principle are more relevant. In this environment where there is only a little efficiency reserve in manufacturing the efficiency of non manufacturing processes has been rated up, because the direct margin can only cover leaner supporting and controlling processes.

Since the 60's in Japan radically new manufacturing (production management) model was introduced: the Toyota Production System. The west recognized the importance and meaning of it only at the turn of the millennium and it came into fashion called LEAN Manufacturing/Management or Demand Flow Technology. This model would suit the effective and competitive corporate behavior in today's business environment. The ERP systems based on earlier MRP II (Manufacturing Resource Planning) approach definitely impede model changes.

Similar example can be said on the field of controlling. In ERP systems the control of primary processes was the goal, and only the externally prescribed financial and accounting tasks were carried out. Due to

this the controlling was based on accounting feedback, more and more sophisticated controlling (managerial accounting) tasks were supported by more analytical accounting calculations. The feedback is only a part of controlling loop. Planning should provide the aim to controlling. The planning methodology does not allow forming a plan that is the consequence of expected execution of processes. Due to this the plans generally as unrealistic wishes can be compared to facts in greatly aggregated form and not only the deviations can be interpreted but also we cannot get enough information to fix it. This controlling model change is also impeded by generally applied ERP systems.

The basic difference between the MRP II manufacturing approach and the LEAN manufacturing approach is in the way of thinking about complex finished goods and their representation logic. An MRP II based manufacturing system captures the manufacturing processes through states: the availability of WIP (work in process) inner products (parts, bought products, etc.) defined on a BOM (bill of material) level is the requirement to step to the next BOM level. The resources are distributed and placed with taking into consideration the manufactured built in parts. In this logic bigger volumes mean advantage because in the work centers the setup time can be decreased and better capacity utilization can be achieved. However the customers order fewer volumes with earlier deadlines. It is hard if not impossible to forecast at the time of scheduling what would be the real customer need for each product. If the "capacity needs" are served firstly then inventory level will be higher and these finished goods might eventually not be saleable.

LEAN approach grasps the product as a value-generating stream: like a river that integrates the water flows. The process is captured as a chain of activities triggering the state transition in which it takes care of the lead times of activities (its nature of value adding behavior), built in part needs and quality requirement issues. It aims to create a flow sys-

tem with proper throughput satisfying customer needs where the satisfaction of customer needs pulls the realization of preconditions. The planned pace of finished goods defines the Tact time (goods per minute) that synchronizes the propagation of inner needs in the flow. If the customer need is decreasing the Tact time will not change, but the work content will be decreased so fewer resources will be needed and the pulling effect of preconditions automatically decreases (not generating unnecessary work in process inventory).

In ERP based systems only terminated, finished things can be handled: e.g. how many finished goods is to be sold, how many purchase order has to be issued, what was the amount of sales, what was its cost of goods sold, etc. In most cases the cost of goods sold contains the distribution of overhead costs above the real variable costs. The forecast-fact comparison is possible only at the end of the month (after a time lag) with estimating the WIP. In the middle of the month we do not have any support because we do not know where the completion of the plan is. As planning is made in aggregated way and tackles with finished states we cannot flexibly change and fit to the needs the plan because we cannot “subtract” the effect of skipped activities and “add” the effect of new or changed activities. Doing this we eliminate the ability of adaptive controlling, our performance is compared to last year “wishes” and not to the reachable maximum performance in given (changing) circumstances. This controlling looks like a post mortem report not a real adaptive controlling.

To develop a controlling by objectives (CBO) system a process approach change is needed. The processes need to be captured at their occurrence with the effect of their whole lifecycle and not their finished status. There are three essential representation levels: estimation (wish), commitment and fact.

The process is perceived as a frame: the ability to execute something. This theoretical frame has a lot of execution occurrences. An occurrence of a process is called an undertaking thread. A whole lifecycle represents the overall effect of one undertaking thread. CBO simulates the expected effects by undertaking threads. With measuring the financial and accounting effects for each undertaking thread it makes possible to establish plan modifications, correcting intervention actions in time. Instead of "post mortem" comparing budget and fact elements in aggregate, Profit and Loss Statement categories, CBO allows a more analytical comparison (at undertaking thread level) between the current plan and facts. In addition due to handling dynamically the transitions between essential representation levels, it produces reliable expected values (forecasts).

In the presentation we would like to discuss the justification of these model changes and their IT consequences.

## **Stratégiaalkotás matematikai eszközökkel**

LÁSZLÓ CSERNY

*Institute of Informatics, College of Dunaújváros  
eMail: cserny@mail.duf.hu*

*Developing 'good' strategies is of great importance for the organizations nowadays. In my presentation I deal with the development of consensual strategies using mathematical tools. The procedure consists of three main stages.*

- During the first phase the participants using the well-known SWOT analysis try to determine the actual state of the organization.*
- Then, in the second phase, after a brain-storming meeting, they use some mathematical tools to rank the objectives and to analyze the relations between the members of the group. Such tools are for example the pair-wised comparison of the groups of objectives, the hierarchical clustering technique grouping the participants on the basis of the value of rank-correlation between their ranking etc. to achieve a consensual strategy.*
- In the third phase the participants develop activities that use the possible advantages and destroy the obstacle to achieve the desired objectives.*

A szervezetek stratégiaalkotása napjainkban napi feladattá vált. Az alkalmazható módszertani, technikai elemek között fontos szerepet játszanak a matematikai, matematikai-statisztikai eszközök is. Előadásomban a konszenzusos stratégiaalkotásban használható matematikai-sta-

tisztikai eljárásra mutatok példát. A szervezeti célokat magába foglaló stratégia meghatározása három szakaszban történt.

- Az első szakaszban a résztvevők a szervezet aktuális helyzetét mérték fel a SWOT módszer felhasználásával.
- A belső (erősségek, gyengeségek) és külső (lehetőségek, veszélyek) feltételek feltárása után, a második szakaszban a feltételek ismeretében a célelemek összegyűjtése történt az ötletbörze (brain-storming) módszer alkalmazásával. A célcsoportok kialakítása után, azokat fontosságuk alapján a résztvevők rangsorolták. Ennek során preferencia alapú páros összehasonlításos módszer, rangkorrelációra épülő hierarchikus klaszterezési eljárás[segített a konszenzusos vélemények kialakításában.
- A harmadik szakaszban, a munkacsoport által elfogadott célcsoport-rendszer elemeit vizsgálták a résztvevők a megvalósíthatóság lehetőségei és módjai oldaláról. Ehhez, a segítő és akadályozó tényezők feltárásával, cselekvési megoldásokat dolgoztak ki.

A csoportmunkára alapozott és matematikai-statisztikai módszereket alkalmazó eljárás segítette a konszenzusos stratégia megalkotását és széleskörű elfogadtatását.

## **Az időfüggő kriptográfiai protokollok és alkalmazási lehetőségeik**

PÉTER TAKÁCS

*Debreceni Egyetem, Egészségügyi Főiskolai Kar*  
*eMail: vtp@mail.de-efk.hu*

*The purpose of this paper is to present the cryptographic protocols and the features of time factors and their application in time-release cryptography. We examine the solution and verification of Kudo and Mathuria for these problems. We expand the security factors of Kudo-Mathuria protocol and demonstrate the verification of expansion. This examinations/ investigations aid the research of time factors in cryptography. At the end of the presentation we also examine of the application areas.*

Az 1990-es évek közepétől a gyakorlati élet számos területén megerősödött a számítástechnikai és informatikai eszközök használata. A hagyományos ügyviteli rendszerekbe új informatikai eszközöket illesztettek (telefax, számítógép, mobiltelefon, stb.). Jogos igényként lépett fel – és lép fel mai is – az új eszközök alkalmazásával a hagyományos rendszerek által nyújtott szolgáltatások hasonló, vagy magasabb szintű elérése. Adatbiztonsági és titkosítási szempontokat vizsgálva felmerül az a kérdés, hogy milyen módon érhetjük el a korábban már megszokott, általában papír adathordozó alapú biztonsági szinteket.

Ezekkel az adatbiztonsági kérdésekkel a kriptográfia tudománya foglalkozik. A kriptográfiai protokollok írják le, hogy a kommunikációs folyamat egyes résztvevői hogyan viselkedjenek, mit tegyenek. A cél elérése érdekében a résztvevők titkosító algoritmusokat vagy más kriptográfiai alapelemeket használnak.

A kutatások során egyre fontosabbá vált az időbeli tényezők figyelembe vétele a kommunikációs igények megoldására. Egy ügyviteli folyamatban számos helyen találkozunk határidőkkel, időbeli mérföldkövekkel, stb. A dolgozatban bemutatjuk a kriptográfiai protokollok elméletének főbb jellemzőit, majd egy példán (Kudo-Mathuria-féle protokoll és bővítése) keresztül is megvizsgáljuk a kriptográfiai alapelemek alkalmazásának ilyen jellegű vonásait.

## **Management and Business Intelligence**

KÁROLY FARKAS

*Technical College of Budapest John von Neumann Faculty  
for Informatics Institute for Software Technology  
eMail: farkas.karoly@nik.bmf.hu*

Nowadays, it is trade (business) that stands in centre of economy and economics. It is almost a routine work to design and fabricate a product, while sales is getting to be the real difficulty. Mankind – or at least a part of it – is already able to produce innumerable articles and services; substance-technology supplies the basic material with the desired and planned properties; and technology makes more and more of our earlier dreams almost automatically come true. The market access of a new product can often be measured only in days. These are rather the barriers of the economical sales with continuously expanding volume that determine the production. Thus, the management have to deal with business instead of product designing, production designing, and production-management. The latter ones are mainly automated. The leaders' job and sales are also getting more and more support from informatics, and a greater and greater part of it is done – in many cases auto-

matically – by machines. The efficient, controlled and nowadays inevitably informatized trade enables us to fulfill the essential function of economy, that is, to satisfy the needs of mankind at a high level. A professional in Economical- Informatics meets innumerable quickly spreading concepts, which should be soon forgotten. Their names often get worn away before being defined on the base of essential consensus. The Enterprise resource Planning (ERP), the Decision Support Systems (DSS), the Management Information Systems (MIS), and the concepts in close connection with these: Data Mining, CRM, HRM, BSC, Professional System, Artificial Intelligence, etc. can be arranged into a more or less hierarchical system; a great amount of them can be classed under the concept of Business Intelligence. In area of product development and product utilization, the development and change of human needs are getting into the foreground instead of the iterative development of the product. This possibility means also a moral responsibility to the economic leaders.

The index-number systems are exact parameters to the management. For the demonstration of these we consider the demographical description of our country to be a good didactic example. The interpretation of the forecast and the preliminaries of the actual data serves well the development of the system and function analysis.



# **Session O**

## **Education: Programs, Curricula, Cooperation**

## **Bevezetés az információrendszerek fejlesztésébe a gazdasági informatika szakon**

<sup>1</sup>GABRIELLA ORBÁN – <sup>2</sup>JÓZSEF SZIRAY

Széchenyi István University Chai for Information Science  
eMail: <sup>1</sup>orbang@sze.hu, <sup>2</sup>sziray@sze.hu

*The university-level education in the Economical Informatics Course started at the Széchenyi István University in September, 2002. The teaching of the comprehensive software-development principles with an engineering approach plays a basic role in the instruction of this course. This aim is served by the subject named Development of Information Systems which is taught for three semesters. First, the paper presents the educational concept of the subject, and after this it describes the instruction matter belonging to the first semester. This semester incorporates the basic introductory and surveying matters of the area of software engineering. These matters give a thorough insight into the main parts of the topic. Such parts are, for example, the life-cycle models, complexity metrics, development costs, the basic notions of software testing, dividing the software into modules, integration of modules, maintenance, etc. In the composition of the matters of the subject and in its instruction, we have put an emphasis on setting the base of an engineer-oriented thinking, and the engineer-approached software development. The more detailed and more comprehensive exposition of the relevant parts, their discussion in other aspects, as well as the instruction of further areas in software development are carried out during the two semesters directly connecting to the first one.*

A Széchenyi István Egyetemen 2002. szeptemberben kezdődött meg az egyetemi szintű képzés a Gazdasági informatika Szakon. Ennek a szaknak a képzésében alapvető szerepe van a mérnöki megközelítésű, átfogó szoftver-fejlesztési elvek tanításának. Ezt a célt szolgálja az Információrendszerek fejlesztése nevű tárgy, amely három egymást követő félévre bontva kerül oktatásra. A cikk először a tantárgysorozat oktatási koncepcióját fejt ki, majd ezt követően az első félév tananyagának ismertetésére kerül sor. Az első félév anyaga a szoftver-technológia területének alapvető, bevezető, illetve áttekintő ismereteit foglalja magában.

Ezek az ismeretek a témakör fontosnak tartott főbb részeibe adnak alaposabb betekintést. Ilyen részek például az életciklus-modellek, bonyolultsági mérőszámok, a fejlesztési költségek, a szoftver-tesztelés alapfogalmai, modulokra bontás, modulok integrálása, karbantartás, stb. A tárgy anyagának összeállításában és az oktatásában hangsúlyt helyezünk a mérnöki gondolkodás, illetve a mérnöki megközelítésben történő szoftver-fejlesztési készségek magalapozására. Az itt érintett fejezetek részletesebb, átfogóbb kifejtésére, más szempontú megvilágítására, valamint a további fejlesztési területek oktatására a közvetlenül kapcsolódó két félévben kerül sor.

## Katonai felsőoktatás és eLearning – hol tartunk ma?

VÖRÖS MIKLÓS

Zrínyi Miklós Nemzetvédelmi Egyetem

eMail: Voros.Miklos@zmne.hu

*The Zrínyi Miklós National Defense University (ZMNDU) -complying with the Act on Higher Education- has a primary objective of the preparation of specialists (both officers and civil servants) for the Ministry of Defence, its support institutes, the Defense Forces, and the law enforcement and state security agencies. Due to financial limitations and demand for specialized military-professional knowledge, the proportion of conventional resident courses is expected to decrease significantly, while demand for organized conversion and follow-on training will highly increase - conventional education is unable to meet that challenge. The electronic distance education system based on ORACLE iLearning software has proved to be efficient in a national and international environment alike. The purpose of the ZMNDU's Distance Education Center is to ensure access to high-quality education and training materials that can be tailored to individual learner needs and made available whenever and wherever they are required, to accelerate development of cost-effective learning software in order to meet the education and training needs of the military.*

A Zrínyi Miklós Nemzetvédelmi Egyetem a Magyar Köztársaság egyetlen katonai/nemzetvédelmi, önálló állami felsőoktatási intézménye, amely felkészítési rendszerében állami feladatként felsőfokú katonai/nemzetvédelmi vezetőképzést és szak-képzést, egyetemi és főiskolai szintű tiszti alapképzést, egyetemi szintű alapképzést polgári hallgatók számára, egyetemi szintű kiegészítő alapképzést, doktori (PhD) kép-

zést, általános, illetve szakirányú továbbképzéseket és tanfolyamrendszerű képzéseket végez. A Magyar Honvédségben is folyamatosan nő az önképzés szerepe és ennek egyik megvalósítási formájaként a távoktatás iránti igény, mely támogatására 2004-ben az ORACLE iLearning távoktatási keretrendszer került bevezetésre. A cikk célja áttekinteni az elmúlt egy évben elért eredményeinket, bemutatni az előttünk álló feladatokat.

## **The Mission of the Students' International Joint Consulting Project**

MÁRIA RAFFAI

*Széchenyi István University*

*eMail: raffai@sze.hu*

At the universities the students are forced to acquire theoretical knowledge and to get skills in solving smaller business problems. But during their studies there is not any possibility to work in a real business environment, to learn business processes in different companies and even the students do not solve real business problems. Moreover they do not meet the culture and customs of the other nations, they do not see the differences and they do not meet difficulties that derive from the multilingualistic and multicultural backgrounds.

The basic target of the international joint projects is to give a chance for the students

- to know the business processes and problems in real multicultural business environment,
- to get practice in solving business problems,
- to get skills in teamwork being aimed at preparing an documented issue about the analysis and solution of a problem,
- to learn managing linguistic problems,
- to use out the possibilities lying in information technology and last but not least
- to present their results that is to say to *sell their product to the customers*.

We, the patrons and the professors from the different universities are convinced that these joint projects are very useful from several points of view:

- it strengthens the relationship between universities,
- it helps the students in getting skills in real business environments and culture,
- it makes possible for the professors to compare the results and the efficiency of different education systems,
- it reinforces the international role and image of the universities,
- it gives an opportunity to the companies to learn the abilities of the graduates and to the professors to know the company's requirements and even more
- the project results an issue which has an added value for the company.

The SZE-CIBED pilot joint project consisted of 8 miniprojects, where the Hungarian and the American students worked together during 2 weeks in 4-6 people's teams in order to produce a professional report finalized the whole project with a presentation. The confidentiality of the company's information, all the materials/documents and the result is assured, the professors and the students take full responsibility for it. The reports and the presentation slides remain the property of the companies. This kind of projects seems to be very useful, as they give chance for the students to get wider knowledge and impressions.

### **Almagestum Novum – Early Antecedents of Presentation-Making**

<sup>1</sup>ANDRÁS SRAMÓ – <sup>2</sup>ESZTER SRAMÓ

<sup>1</sup>*University of Pécs, Faculty of Business and Economics  
e-mail: sramo@tkk.pte.hu*

<sup>2</sup>*University of Pécs, Faculty of Humanities, e-mail: befana@t-online.hu.*

It is obvious to leave the discussions, results and classifications of science and philosophy in writing for the posterity. The illustrative and pictorial methods of representation go back to the ancient roots, for example, the Pythagoreans. We can meet with illustrative figures in any period and domain of history of science, which ones illustrate faithfully the philosophical, theological or scientific opinions of the author. These representations mix pictorial and textual items frequently.

The obvious associational method of ideas for pictorial representation is the allegory. There are canonized forms of allegorical representation, but in most cases the author oneself examines the figure interpretable by allegorical way.

It is an important attribute of that kind of representations the direct narrative which can build upon them or the representation is the visual mapping of the narrative. In these cases not the aesthetic and artistic experience is the most important – although many woodcuts also have indisputable artistic value – but the exact visual presentation of the message. It is an interesting attribute of that figures, that we can describe with lingual tools and they are reconstructable on the basis of the lingual description. We can't leave the linguistic stage out.

Giovanni Battista Riccioli (1598–1671) was an Italian astronomer, who devoted himself entirely to the study of astronomy. Realizing the many defects of the traditional astronomy inherited from the ancients, he conceived the bold idea of undertaking a reconstruction of the science with a view to bringing it into harmony with contemporary progress. This led to his "Almagestum novum, astronomiam veterem novamque complectens", considered by many the most important literary work of the Jesuits during the seventeenth century.

In the frontispiece of the *Almagestum Novum* Riccioli explains the complex allegory of the astronomical knowledge of his times. We can discover many element of contemporary presentation-making on this picture: bullet points, comparison, grading, evaluation, demonstration and so on. Using these elements we can make a modern presentation, too.

<a href="#">Detailed Conference Program</a> .....	9
<b>Plenary Session</b> .....	<b>15</b>
Peter Bakonyi ..... : The Scientist John von Neumann, and the Computer Society Named after the Polymath .....	17
Dewald Roode – Maria Raffai: The Role of the IFIP's Information Systems Committee.....	22
Rik Maes: The Quest for Business Information Managerswho can make the Difference .....	30
Eszter Elekes: The SAS® Academic Program .....	32
Tetsuya Uchiki: A Training Method and the Program for Information System Analysis .....	33
<b>Session A</b> .....	<b>37</b>
Csongor Németh: Contribution of the Process Modelling to the Efficient Business Adaptation .....	39
Milán Hasznics: Construction Model for Corporate Knowledge Management Systems .....	42
Attila Horváth: The effect of financial ICT on payment systems .....	44
Dávid Pető: Enhancing the Objectivity of IT Audit Assessments .....	45
Gabor Homonnay: New greetings card from Userland .....	47
Péter Dobay: eBusiness Strategies: Blockade the Siren e-Calls .....	48
<b>Session B</b> .....	<b>51</b>
Tamás Heckenast: Seeing the Woods for the Trees –Challenges in Business Information Visualization .....	53
András Sramó: The Visual Culture of (Business) Informatics .....	54
Anna Medve: The joint use of User Requirements Notation Standard with UML in Socio-Technical Systems Requirements Engineering.....	56

## Content

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Zoltán Csajbók: Elliptic curves defined over finite fields using in cryptography.....	59
B. Molnár – A.Kő – J.Kiss: A Solution which meets the Requirements of Privacy and Personal Data Protection .....	61
T. Hajba – E. Miletics – Gy. Molnárka – A. Schwarcz: Optimization of the Single Product Assembly Line Balancing Problem .....	63
<b>Session C .....</b>	<b>63</b>
Cs. Jankó – B. Gázsó: “Motorunk a minőségünk”.....	63
I. Petkovics – P. Tumbas: Ügyfélkapcsolatok menedzselése az áramelosztó cégeknél adattárházak támogatásával .....	63
I. Németh – Cs. Németh: Does ERP support or hinder?.....	63
László Cserny: Stratégiaalkotás matematikai eszközökkel.....	63
Péter Takács: Az időfüggő kriptográfiai protokollok és alkalmazási lehetőségeik.....	63
Károly Farkas: Management and Business Intelligence .....	63
<b>Session O .....</b>	<b>63</b>
G. Orbán – J. Sziray: Bevezetés az információrendszerek fejlesztésébe a gazdasági informatika szakon.....	63
Miklós Vörös: Katonai felsőoktatás és eLearning – hol tartunk ma? .....	63
Mária Raffai: The Mission of the Students’ International Joint Consulting Project .....	63
A. Sramó – E. Sramó: Almagestum Novum – Early Antecedents of Presentation-Making.....	63