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This booklet contains the

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within the Information Society Technology Perspectives (IT3) project of the National Council for Communications and Information Technology (NHIT). The booklet has been prepared in cooperation with the John von Neumann Computer Society.

All materials created by the IT3 project can be found (mostly in Hungarian) on the project portal: www.nhit-it3.hu.

- **First Volume**, giving a general overview of 12 key areas of the information society;
- **Second Volume**, containing 20 detailed ("drill down") analyzes of specific areas;
- **Third Volume**, with further drill down studies and visions of some application areas;
- a continuously expanding **Fourth Volume**, containing considerably updated versions of studies prepared earlier;
- and the bimonthly **IT3 Panorama** (IT3 Körkép) giving actual news about information and communication technologies and their applications (IT3 Panorama is also published in English)

The IT3 project is managed by:
  Balint Domolki

Project participants are:
  Zsuzsanna Kosa
  Ferenc Komlodi
  Peter Krauth
  Balazs Ratai

Beside project participants experts are also participating in the preparation of some of the studies. Project materials are discussed at the monthly meetings of the "Friends of IT3" group (IT3 BT).

On behalf of NHIT the project is supervised by:
 *Peter Bakonyi*
  Miklos Havass

F O R E W O R D

The project "*Information Society Technology Perspectives* (IT3, according to the acronym of the Hungarian name) surveys development and application trends of information and communication technologies in selected areas. Selection is made according to their expected impact on the information society in Hungary within the next decade.

The first part of the IT3 study covers 12 key areas, seven of which are representing the core technologies (basic technologies, communication, peripherals, architecture, application frameworks, content management, system development,). They provide a **technology push**, which is confronted with the **utilization pull**, coming from three key areas: business, public services, private sphere. The remaining two key areas deal with the cross-cutting issues of security and regulation.

Beside the key areas, several topics have been selected for further study. For each of these topics, a "thesis" has been formulated describing a "non-trivial" statement about **technology change** likely to have considerable impact on the Hungarian information society during the 2010s.

As a useful by-product, a bimonthly newsletter IT3 Panorama (IT3 Körkép) is being published containing actual news items coming to our attention in the process of scanning the various media for information relevant to the topics of the project and confirming the statements we are making in the studies. From the large amount of possible news items only the most relevant ones are chosen and they are denoted with pictograms of the key areas.
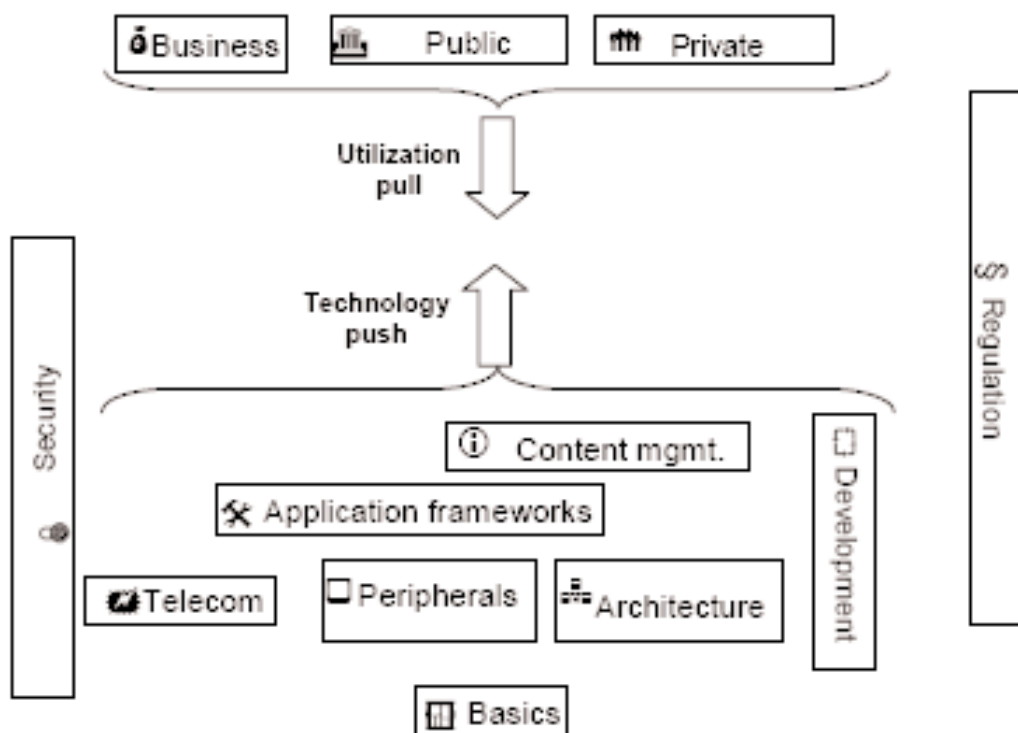
A short description of the 12 key areas is given below:

1. Basic technologies

Technologies of devices ("circuits") of information storage, processing and transfer are described here, together with the scientific foundations of their operation

3. Peripherals

Peripheral devices realizing the connection between IT equipment and the outside world (including humans) are discussed in this area.

5. Application frameworks

Generic tools, being used in different application systems, residing in the layer between the operating system and application programs. Components and (software) tools used in the building of application systems also belong to this key area.

7. System development

Methods and tools for creation (design and implementation) of IT systems and also those used in the management of the complete life cycle of such systems, including technologies and organizational support of all the processes involved.

9. Public service

All activities concerning on-line public administration services. Infrastructure for teleworking education, environment protection management of public records also belong to this key area.

11. Security

IT security is understood as protection against all risks (actions, external effects or resulting situations) threatening the expected (reliable) operation of IT systems and devices (hardware, software and firmware). The area also covers the secure operation and usage of the devices and systems (including data communication networks). Quality assurance issues are addressed only if they are connected with security risks.

2. Communications

All kinds of electronic communication issues are considered here, including telecommunication, media technologies and broadcasting.(Usually postal services also belong to communications but here we are dealing with electronic services only). Networking technologies including interconnection of networks and various layers of services. Issues of limited resources like frequencies and satellite segments are also discussed here as well as identification systems like calling numbers, domain names and coding systems.

4. Architecture

Construction principles of IT devices, including systems connected with networks.

6. Content management

Development, production, storage and systematization methods of different kinds of content information (text, image sound, video etc.) are considered here, including both individual and collective methods. Not the content products themselves, but the methods used in their production, processing and preservation are analyzed in this key area.

8. Business

The demand side of the IT market (e.g.: information and media technologies, telecommunication and content services) is discussed here, including products and services, business models in the value chains and market structure.

10. Private sphere

Applications of IT in the private sphere, influence of digitalization to societal processes, advantages and risks of the use of information society technologies, digital literacy and its effect to the labour market, privacy issues, as well as problems of democracy and cultural identity are discussed in this area.

12. Regulation

The development of the regulatory environment covers the following four areas: a). legal regulation; b) state supported self-regulation; c) policy relating to state subsidy and d) standardization.

C O N T E N T S

Social networks

According to the latest data, today in Hungary around 1.8 million people use the services of iWiW (www.iwiw.hu), i.e. around two-thirds of the Hungarian Internet users are members of the popular, MySpace-type social network. The basic function of the open social network building programme is that people who knew each other earlier will find each other once again (X finds his/her childhood playmate and goes to see him/her). The system also provides specific extra information to users, e.g. this way we may prepare ourselves to meet unknown people or catch sight of our acquaintances' friends, whom they often talk about. The page, originally entitled "Who is Who", was launched in 2002, but the real breakthrough came in the winter of 2005-2006.

Naturally, this phenomenon is not a Hungarian speciality. This type of communities - which may partly be associated with the breakthrough of Web 2.0, but which, in terms of their roots, are much older - mushroom all over the world. It is not a mere coincidence that one of the most fashionable expressions of our days' online jargon is social networking, which has become an important component of Internet strategies. For the sake of historical fidelity, let us note that the first homepage deemed as social network, Classmates.com (www.classmates.com), today with almost forty million active members, was launched in 1995.
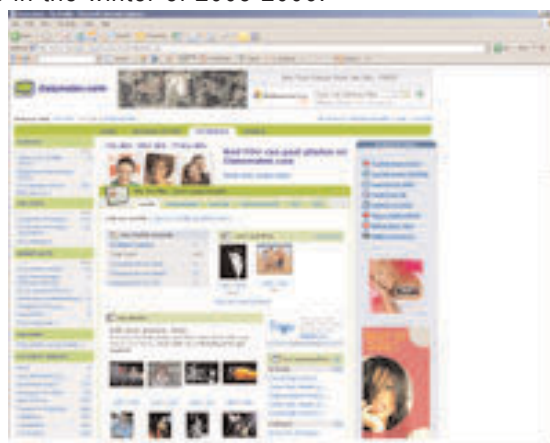
Virtual communities

There have been numerous examples of the communication generating power of mass media already in the radio and television era. However, patterns observed in the information society already demonstrate a general phenomenon: social networks interlink with virtual communities.

The term of virtual community was first used by Howard Rheingold (www.rheingold.com) in his book published in 1993 under the same title. He described the appearance of communities operating in cyberspace, geographically perhaps several thousands of kilometres away from each other, linked exclusively by the world-wide web as one of the most important phenomena of computer-mediated communication. While in the nineties this communication was governed only by computers, today mobile phones also play an increasingly important role in the creation of communities. (Rheingold in his pun-titled book "Smart Mobs", published in 2002, analyses the society transformation perspectives of this phenomenon. However, in addition to the positive features, it should also be mentioned that these communities have become the hunting grounds of online criminals, e.g. of identity thieves).

The operation of virtual communities is characterised by real-time interaction (not necessarily based on tight personal links) among the members, fast exchange of thoughts, mutuality and the compliance with mostly unwritten rules. Various levels of interaction may be observed starting from commenting and labelling blogs, through simple forum messages to competition in massive multiplayer online role-playing games (MMORPGs). The organisation of these communities may take place in the traditional manner: controlled from the top ("message boards", chat rooms) or organisation may be initiated from the bottom (instant messengers, wikis).

These organisations, also referred to as CMCs (computer-mediated community), facilitate the activity of the participants using social software. The members of an online community may implement tasks together, e.g. they may develop open source-code software (e.g. developer communities, but other areas of life also generate plenty of active online groups built around a certain theme or professional field).

Community types

The following important online virtual community types may be distinguished:

Mailing, messenger communities:

- the "heroic age" Usenet (USEr, NETwork) systems, launched in 1979, which to some extent were the predecessors of the Web 2.0 type online cooperation and interaction;

- IRC (Internet Relay Chat) operating since 1988: forums used for real-time Internet-based chat, conferences;

- instant messenger systems (IM, Instant Messaging, the popular MSN): .NET Messenger Service, AOL Instant Messenger, Google Talk, ICQ, Jabber, Skype, Yahoo! Messenger.

Communities managing common content and building networks:

- Internet-forums and their predecessors, the BBSs (bulletin board systems, of which the most well-known is WELL - www.well.com - operating continuously since 1985);

- MySpace-type (www.myspace.com) communities;

- Peer-to-peer (P2P) networks (Kazaa, Napster, etc.);

- Communities organised around blogs and wikis.

Communities built on games and virtual reality:

- MUDs (Multi-User Dungeon) mixing role-plays, shooting games and chat rooms;

- Virtual worlds/cities gaining ground thanks to the improvement of the virtual reality technology and to the ever-broader bandwidth (Second Life (http://secondlife.com), The Sims Online (http://player.thesim-sonline.ea.com/index.jsp), etc.). In simulated computer-based environments interactions among the participants are carried out by their "alter egos", by avatars. The first known example of this was LucasFilm Games' Habitat in 1987;

- MMORPGs - akin to virtual worlds, but more strongly reminiscent of games -, where a large number of participants interact with one or more virtual universes through fictive, usually fantasy characters (EverQuest II - http://everquest2.station.sony.com, World of Warcraft - www.worldofwarcraft.com, etc.).

History of community networks

Among the prototypes of community networks, simpler e-mail mailing lists definitely must be mentioned, which were used in certain workgroups of international organisations already in the first half of the nineties. Professional communities meeting once or twice a year maintained and still maintain relations with each other through these lists and prepare professional materials for the next personal meeting. There are two types of mailing systems: by simple circular e-mail or through web-page registration and access authority management. Most of the study groups of ITU (International Telecommunication Union) and the standardisation work of ETSI (European Telecommunication Standardisation Institute) are based on such mailing networks.

After Classmates.com, Fast Company - specialised in the "noveau riche" at that time mesmerised by the dotcom balloon - launched its network in 1997 and at the same time introduced business-based Internet network building. In 1997, several similar homepages were created, and in 1999, the first European community network also appeared (Dooyoo - www.dooyoo.com).

The deliberate "circle of friends" type network building - known from virtual communities - started to spread only around 2001. It swiftly became popular: Friendster's (www.friendster.com) success in 2002 was a real breakthrough. At present, there are more than two-hundred similar, heavily visited homepages. The success story is well demonstrated by the fact that MySpace - originally a music and party community - in 2005 could boast of more hits than Google (which, under the name of Orkut (www.orkut.com), also started a community network in 2004). In 2005 Yahoo! also took to the stage (Yahoo! 360°, http://360.yahoo.com). Yahoo! and Google provide a good illustration of the last one or two years' most important trend, i.e. the integration of market elements into a network (social marketplace).

Networks are normally developing based on the following model: the founders send invitations to their own friends and acquaintances. And the new members repeat the same process. There are more and more members and connecting points. From time to time, the pages automatically update their address lists and public profiles, and this way new links and different, yet unknown, forms of online social relations are created. Almost all homepages are public, i.e. anybody may join them. As opposed to earlier networks, the newest networks focus more strongly on a single topic (travel, football, sex, cars, etc.) and are organised along such topics.

As a next step, inter-homepage systems started to appear, which act as further world-wide web maps... Search engines designed specifically for community networks (XHTML Friends Network - www.xhtmlfriends.net, etc.) may greatly facilitate this.

Business and private use

In addition to open community networks there are also invitation-based systems developed for certain specific communities, e.g. Acedemici (www.academici.net) - the European network of university and college teachers, where, search for participants can be carried out for scientific projects, on the basis of the indication of profes-sional areas. Network members may also be informed of guest-teacher positions advertised in an institution "somewhere in Europe". Ideawicket (www.ideawicket.com) is recommended to researchers working in the field of innovation, which provides for exchange of thoughts and organisation of online projects.

Xing (www.xing.com) recommends itself for the development of business relations. Private, open virtual communities may also be used for business purposes: prior to a job interview background information may be obtained on the applicants, and so-called "social junctions" with a large number of acquaintances may be selected for advertising purposes.

Community software

Which applications support social networking?

Of the numerous definitions of social software, maybe the most accurate one is this: "software supporting collective interaction". This software differs mostly in its applications from collaborative software used for collective work. Usually it does not mean a single software type, but combines two or three methods of computer-based, community-forming communication: some sort of combination of one-to-one (e-mail, instant messaging), one-to-many (web-pages, blogs) and many-to-many (wikis) ways of communication. It appears that certain software types facilitate community organisation processes along voluntary, confidence-, equality- and performance-based, bottom-up approaches. Using the appropriate database, network analysis becomes easier, and such software generates links among users.

However, even very similar software applications differing only in some design concepts may generate completely different community output: while mediawiki allows for the pages to be edited by any user, tikiwiki, using thorough access control, provides stronger content control and less of a community nature. At the same time thorough access control may convert social software applications into tools facilitating collective work.

Spectrum from telecommunication to news handling

It ha been called as **telecommunications**, now it is mentioned as info-communications. Phone, wired and wireless, broadcasting and internet access are included. Further more, information technologies and media processing are also converging to info-communications.

Info-communications means, that signals (having a rational meaning) are transmitted to small or larger distances, through physical spaces or networks. It can be done by wired or wireless systems, through undersea cables or via satellites. It may serve only one place or a huge region. It is more and more important, but it becomes invisible: it is embedded into our everyday life, into our intelligent devices.

Technology of information linkages used to have two significant parts: information handling and transmitting. This separation cannot be done any more. From one hand, technology of signal processing is similar in both: in information handling and in transmission too. On the other hand, in transmission there are needed more information related to sources and directions of information packages.   These transmission-related information go together with the meta-information related to the handling orders. We may see the convergence and integration of the informatics and communications technologies. Let us see, what are the newest technologies determining the future of the info-communications sector.
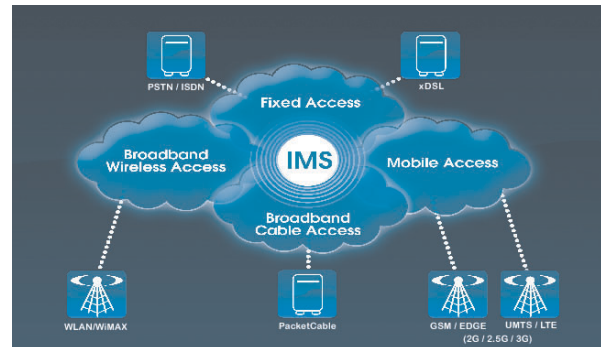
After the liberalisation of the telecommunications, the innovative competition is growing. New technologies emerge in transmission networks. The concept of new generation networks (NGN) was done by European Telecommunications Institute (ETSI) in 2003. It has software interconnections between inhomogeneous netorks http://www.etsi.org/tispan/. The International Telecommunications Union has also started a widespread standardisation study worg in this field. http://www.itu.int/ITU-T/studygroups/com04/roadmap.html.

In New Generation Networks there are soft switches, interconnecting different networks, via software. The role of system integration makes new situation in the network capacity market. The firm controlling these intercon-nection points might achieve new monopoly situation. http://www.dataconnection.com/news/download/softswitchinNGN.pdf .

Demand for mobility seams to differentiate itself into wireless but not moving access, and real time moving access. Wireless Wifi-Wimax transmitting systems are to become hard competitors to wired networks. Wireless systems are able to overlay areas quickly and effectively also at lower subscriber density. As a reaction, larger network operators have made a strategic alliance to enhance the fixed mobile convergence. There was a conference in Paris April this year about different kinds of wireless technologies http://www.ew2007.org/, this is the largest assembly of Europe within this topic.

Processors are embedded into other systems, and they communicate among each others. Normal objects of our environment get elemental intelligence, and they also try to communicate among each others. Therefore wireless real-time transmission of signals is needed. Media Lab of MIT, which is one of the best laboratories on the world has a project named "Things that think" http://www.media.mit.edu/about/overview.pdf

Vehicles in transport systems are moving and also communicating with each others; sensor networks having distributed processing, these are also ad-hoc and ad-hoc mobile networks with randomly built linkages. Organising the communications between these objects, first task is to build up the channel, and the transmission can be only the second step. Internet Engineering Task Force, the standardisation forum of Internet deals with this topic: http://www.ietf.org/html.charters/manet-charter.html

Convergence follows towards media technologies. Info-communications Network Operators intend to maintain their customer relations; therefore they try to step into content providing industry too. Content handling technologies are integrated into networks, and even the customers are also providing private self-made private contents. As a consequence, the business model of media industry may be changed. Now we have reached the news handling, which requires new function from the networks: not only transmit the information is needed. Information should be also stored somehow, somewhere in the networks; in a centralised or decentralised way. As an example there is a information portal about the soiles of EU http://eusoils.jrc.it/.

Sperading networks and environmental intelligence, the everyday life depends more and more from technology. Society can resist this only if regulation related to reliability and safety becomes more strong. There may be a new approach in regulation: "customers need secure and reliable services".

New wireless technologies are more efficient using the spectrum bands. On the other hand, new spectrum using systems, like medical applications, radiofrequency identification, ambient intelligence, near-field communications, sensor networks need more and more spectrum-usage. The task of spectrum management authorities is to growing. Usage of spectrum nowdays is based on intangible rights of organisations bought on a frequency auction or get from the authority directly. States are financing their activites related to frequency magagement and sector specific regulations. The usage of the spectrum as limited resource needs new technologies and also new methods in distribution http://www.spectrummanagement.eu/.

There are new technologies with adaptive spectrum usage, these are called software defined radio http://www.softwareradio07.com They brake the traditional way of thinking about frequency management.

These technologies are able to watch the frequency usage, and they adapt themselves to the empty frequency bands, am put the information flow to this band. These transmission technologies have been developed for professional applications, where there were no free frequency bands. The technology is matured now, and now begins to work in other fields. The IEEE organises the second conference about betworks based on cognitive radio in August this year http://www.crowncom.org/

Based on this technology, the new way of thinking about frequency bands is spreading: authorities should not sell exclusive rights to use frequenc bands, but there should be free spectrum bands for adaptive technologies.

There is a non-profit movement for open-spectrum, it has an own site to inform the public about new conferences in this topic. In case this idea would win, authorities might look for other sources to finance their activities http://www.volweb.cz/horvitz/os-info/calendar.html .

The International Telecommunications Union deals with the standardisation of the radio-communication and the distribution of the spectrum bands. The ITU organises this year the world radio conference in Geneva. One of the most exiting questions could be the open spectrum approach. http://www.itu.int/ITU-R/index.asp?category=conferences&link=wrc-07&lang=en
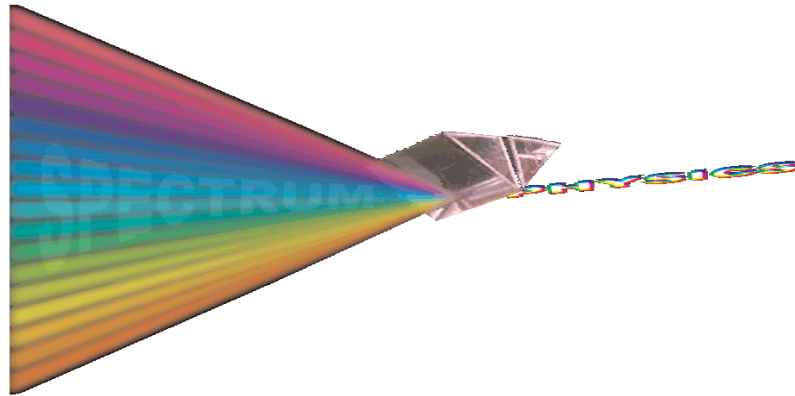
Future of document formats

Document formats are becoming more and more important with the growth of internet penetration and the widespread use of electronic documents. Complex systems and application integration needs appear and long term preservation of information stored in electronic documents is also becoming more and more important. Open document formats play a key role in the fulfillment of demands in relation to the interoperability between web and desktop applications and the long term preservation of information. It is likely that long term preservation of information is not cost efficient without the use of open document formats, because nothing guaranties that a manufacturer will support its products and the formats of these products in 10-20 years. Therefore it is no surprise that in the last years a very sharp debate started around the use and development of document formats. However, this debate is hardly understandable and the frontier lines are barely visible for the average user.

Since the appearance of the computer there was always a huge amount of different document formats in use, some were widespread and some were used only by a few applications. An average computer user works mostly with office applications, and therefore he or she meets formats supported by these applications (e.g. rtf, html, MS Office: doc, xls, ppt, OpenOffice.org: odf, etc.). Since the average user is mainly interested in the visual (electronic or printed) appearance of the document, he or she is not very keen on understanding document formats, which encode the content to be visualized. Because of this for the average user the visual appearance seems to be much more important than document formats. In fact formats are as important as visualization, since there is no single application, which can understand and visualize all of the document formats. Therefore the choice of the document format from a user's point of view mostly selects the applications, which the user can choose and also determines the possibility of system integration from a developer's point of view.

It was obvious already in the beginning of the 1990s that the so called binary document formats will not be able to fully support future needs, but the descriptive or semantic markup technologies became advanced enough to be able to provide a suitable alternative only around the turn of the century. In the center of the change is the appearance of XML (eXtensible Markup Language), which is a generic technology of the creation of markup languages. The success of the XML based solutions can be shown with the appearance and fast market acceptance of XML document formats. XML has many properties, which helps the long term preservation of information stored in documents and the system integration needs. However XML can also be used for the development of open and closed document formats, therefore a crucial question of the future is, how fast can open solutions replace application specific closed formats.

Fight between ODF and OOXML

Every system has some relationship with its users on both input and output side. Therefore those document formats, which can be produced and understood by applications in widespread use play a distinguished role in system integration, because the use of those document formats, which can be easily produced and interpreted by users lowers the cost of system integration. Such formats are currently those, which the WYSWYG (what you see is what you get) office applications like MS Office and OpenOffice.org can produce and interpret. During the last years both OpenOffice.org and Microsoft has developed an XML based open, office document format. These are ODF (Open Document Format) and the OOXML (Office Open XML).

ODF has been accepted as an ISO standard in 2005 and OOXML is already in the last phase of the ISO standardization procedure. ODF is based on the format developed by OpenOffice.org while OOXML is basically the XML version of the former Microsoft Office binary formats. ODF is the native document format of OpenOffice.org office applications and OOXML is the native document format of Office2007.

The fact that Microsoft has started the development of OOXML after the appearance of ODF triggered lots of criticism. Many regarded this as an unfriendly step, which aims the restriction of the potential competition in the field of office applications. Some also criticized the choice of the name the "Office Open" prefix may easily suggest that OOXML is the format, which is used by the open source OpenOffice.org applications. (This later problem certainly exist, because the Wikipedia OOXML page starts with a special warning that OOXML is not about the OpenOffice.org document format.) However the choice of the name adequately reflects that the office applications of Microsoft replaced the old, closed binary formats with a new open XML based format, because these formats can better support the user needs.

Besides the decision of Microsoft to develop OOXML, which can easier fit former MS Office formats, instead of implementing ODF, can also be understood. However this is the fact what triggered the strongest criticism against OOXML. The most problematic issue, which relates to this choice is that Microsoft has many exclusive rights (patents and copyright protections) in relation to the former binary formats, which in practice may make it impossible for others the actual development of OOXML compatible applications. Microsoft has tried to take away the strength of these critiques and made a unilateral declaration, which ensure the free use of OOXML (Microsoft Open Specification Promise), and issued a covenant not to sue.

It is however still true that MS office applications do not provide support for the use of ODF documents by default. The Office 2007 is not able to open and produce ODF documents, which is likely to cause inconveniences for the users of MS Office. It may be the case that the identification of this problem initiated that Microsoft started to support activities, which aim to produce open source applications that can help ODF - OOXML conversions. (e.g. http://odf-converter.sourceforge.net).

Web document formats

It is only one aspect of the fight between ODF and OOXML, whether another open document format (the ODF) can or can not gain wider acceptance in the desktop office market beside the dominant Microsoft document formats. A more interesting question of the future is what will be the dominant document format of the information interchange between desktop and web applications.

The desktop applications loose more and more of their importance with the growth of broadband internet penetration and the parallel development of SOA and SaaS approaches. In a longer run it seems to be likely that document formats of the web applications will prevail over desktop document formats, and it seems least likely that web application will turn toward desktop document formats. The reason is that there are already in wide scale use open XML based or compliant document formats in the sphere of web applications.

The first sign of this change can be seen in the popularity of wikis, blogs and web office applications (e.g. Google Docs and Spreadsheets, gOffice, NumSum). The native document format of these applications is mostly XHTML and other W3C specifications like MathML, which is designed for web applications and is capable of expressing complex mathematical formulas.

The web applications are still behind the desktop applications in relation to the complexity of visualization, but this current situation will obviously change in the coming years with the development of browser capabilities and the growth of client side computing capacity. The success of the web 2.0, "read-write-web" concept is an extremely strong incentive behind this change.

The possibility of this development was already part of the ideas relating to the World Wide Web, and it is also worth to remember that the creation of the World Wide Web was itself motivated by the idea global intercon-nection of documents and the support for an efficient human computer information interchange. Tim Berners-Lee wrote the following about the future of the web in 1998: "The great need for information about information,

to help us categorize, sort, pay for, own information is driving the design of languages for the web designed for processing by machines, rather than people. The web of human-readable document is being merged with a web of machine-understandable data. The potential of the mixture of humans and machines working together and communicating through the web could be immense."

The likely prevalence of web applications against desktop applications diminishes the importance of document formats of desktop applications. Besides it is also likely that the dominant document format of the information interchange between web and desktop applications will be based on those document formats, which have their origin in the web environment. It is however more likely that the document format of the future will not be one monolithic format, but a flexible composite of those open, web-based document formats, which fully exploits all the possibilities of XML and is capable of supporting automatic information processing by computers as well. If this scenario becomes a reality, we can safely predict that both ODF and OOXML will adapt to the web document formats and they will be more similar to each other as well, because those open document formats will have a better chance to survive, which can easier fit the web environment, and better support the human computer information interchange trough the Web.

Further background information and reading

http://en.wikipedia.org/wiki/Document_file_format

http://en.wikipedia.org/wiki/Binary_file

http://en.wikipedia.org/wiki/Open_format

http://en.wikipedia.org/wiki/OpenDocument

http://en.wikipedia.org/wiki/Ooxml

http://en.wikipedia.org/wiki/Markup_language#Classes_of_markup_languages

http://en.wikipedia.org/wiki/List_of_document_markup_languages

http://en.wikipedia.org/wiki/Comparison_of_document_markup_languages

http://www.webstandards.org

http://www.odfalliance.org

http://opendocument.xml.org

http://www.openformats.org/main

http://www.ecma-international.org/publications/standards/Ecma-376.htm

http://www.w3.org

Steve Ballmer: Microsoft and Novell Announce Broad Collaboration on Windows and Linux Interoperability and Support, http://www.microsoft.com/winme/0611/28912/MS_Announcement_MBR.asx (On-demand webcast)

Tim Berners-Lee, The World Wide Web: A very short personal history, http://www.w3.org/People/Berners-Lee/ShortHistory

Virtual universe of the future

Stephenson's Metaverse and Metaverse 2.0

"What happens when video games meet Web 2.0? When virtual worlds meet geospatial maps of the planet? When simulations get real and life and business go virtual? When you use a virtual Earth to navigate the physical Earth, and your avatar becomes your online agent?"

We are in the metaverse - answer the authors (futurologists and IT professionals) of the Metaverse Roadmap (MVR, http://www.metaverseroadmap.org).
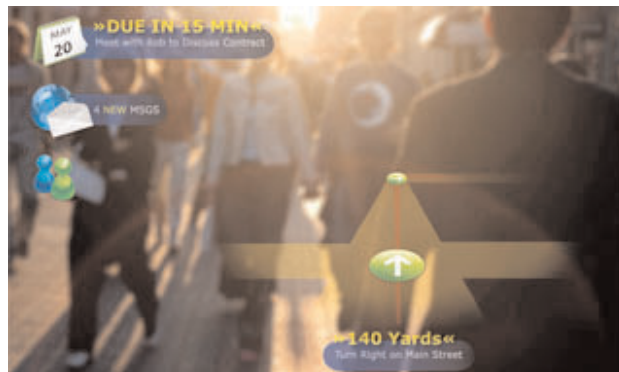
The term "metaverse" comes from Neal Stephenson's (http://www.nealstephenson.com) 1992 milestone novel Snow Crash. In his cult classic the cyberpunk writer depicted a partially - or even fully - immersive virtual world defined by its users where people can get in touch with each other: they can buy and sell goods, they can play, in brief they can communicate with each another. The passive reception of the information is replaced by the (inter)active participation.

In the last couple of years the term has exceeded its original meaning. Nowadays we mean by metaverse the fusion of physically constant, permanently accessible virtual spaces with the virtually "augmented" physical reality. Future users will be able to immerse either in both worlds or separately.

Towards Metaverse 2.0

In present-day rather "Metaverse 1.0" type virtual worlds Stephenson-inspired Second Life (http://www.secondlife.com which has been created by copying the original model) is the most similar to all future environments that will be called Metaverse 2.0. Populated by our avatars, in the self-supporting multi-user Second Life we all have alternative possibilities: entertainment, culture, business, etc. Our near future described by the MVR will be similar: different Web applications will converge with games, we'll use more and more frequently 3D and advanced animation techniques to design digital maps, develop virtual environments and simulate artificial life. In the meantime hardware and software, connectedness, financial investments and socaial adaptation will together create the necessary conditions for the transformation of present-day WWW into the 3D Web and partially into the "real" Metaverse.

Typical Web 2.0 products (like online encyclopedia Wikipedia, photo sharing Flickr, blogging and social bookmarking combination Digg, social network-builder MySpace, Bebo and Japanese GaiaX, video sharing YouTube or the new browsers) are also setting the "scene" for the future Metaverse. Just like other
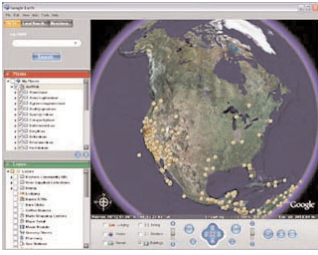
contemporary phenomena: we experiment with virtual humans for educational purposes, virtual prototype-maker softwares have been used in different industrial sectors, 3D navigation and modelling systems are commonplace. Reality-simulacrum (like Stephenson said) "mirror worlds" are proliferating.

According to the MVR authors the process will have been completed by the next decade, approximately by 2017. Instead of one lonely road they examine several paths leading to this ultimate virtual universe.

Critical uncertainties

The scenarios constituting the essential part of the MVR foresight are based on two critical continuities ("critical uncertainties"): the spectrum of technologies and applications ranges from augmentation to simulation, while the other spectrum tends from the identity-focus (intimate) to the world-focus (external).

– **Augmentation** refers to technologies that add new capabilities to existing real systems and layer new control systems and information onto our perception of the physical environment.

– **Simulation** is the term for technologies that model reality and/or parallel realities offering wholly new environments as the locus for interaction.

– **Identity-focused** technologies concern to the individual and/or (semi-intelligent) object, his/her/its actions.

– **World-focused** technologies refer to the outside world: these technologies provide information about and control of the world around the user.

Four scenarios

Nowadays Second Life is the most illustrative example of the fusion between simulation and intimate technologies. This fusion will lead to complex and massively multi-user virtual worlds (VW) with millions of avatars as key components supported by advanced dialog platforms. The focus will shift to the identity and human-human interaction. The differences between VW-based multiplayer games (Everquest, World of Warcraft) and also VW-based social environments (Second Life) will be gradually disappearing. By being operational on "intact" metaversal territories (far from the physical world, far from the other parts of the Metaverse), these systems will rend different communities' economic and social prosperity possible.

The combination of simulation and world-focused technologies will lead us from present-day virtual globe to Google Earth-like but definitely more precise and more detailed mirror worlds that both in space and time give high quality context to virtual models of the reality. Unlike virtual worlds, which involve alternate realities, mirror worlds (with their location- and context-aware sensors, location-based - geographic information - networks, etc.) model the world around us.

The synthesis of external and augmentation technologies will be crystallize in the joint applications of immersive location-aware systems and interfaces. Future AR equipped with high quality pattern recognition and machine vision devices, huge arrays of sensors and actuators will mainly help the user in receiving any time the most accurate and up-to-date data concerning a place, object, etc. The AR devices will permanently supply us with all kind of information and function. They will work like embedded systems - with one exception: these systems will be "embedded" into humans. "To the AR generation, such properties will be like electricity to children of the 20th century" - wrote the authors.

Nokia's Lifeblog is the precursor of lifelogging: the mobile phone organizes cell photos, videos and sounds, SMS and MMS messages into an organic timeline that can be annotated, blogged and shared. Lifelogging will be the

"meeting point" of intimate and augmentation technologies and will not be used for keeping our eye on and controlling the physical environment, but for communication, memory and observation of other people. They will record everything and encode our existence into bits and bytes. Our life will become quasi perpetual 3D blogging guaranteed by omni-present wearable systems, cameras and displays. Without these devices we will only use our "flesh-memory" - like if we lived without telephone in 2007…

The Metaverse

The four scenarios will be realized not only and not first of all one by one, but in different combinations. The Metaverse as sum of these emerging new worlds will include elements of all four of them. Technologies will be integrating into each other: avatars from virtual worlds will navigate using mirror world maps and AR systems, users will lifelog in mirror and/or virtual worlds, and so on.
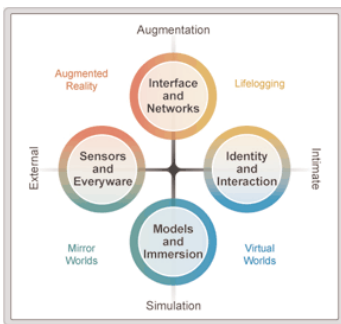
Despite many open questions (privacy and control, integration and acceptance, technical feasibility, etc.) we can take for granted that the technologies leading to Metaverse 2.0 and the Metaverse itself will both in the short and the long term change our life.

For further reading: "Virtual presence and virtual worlds" deep drill study. (NHIT IT3 Study, Vol. II, 13/2005, http://www.nhit-it3.hu).

Technological Basics of the Information Warfare[1]

Definition and scope of the information warfare

The information warfare (IW), as we talk about it nowadays, only exists since the time of the first Gulf War. It is difficult to delimit, and "The Information Warfare Site" (IWS)[2] defines it as a new type of warfare when the information and attack on the information and against information systems become to instruments of war.

Martin C. Libicki in his book published at 1995 described seven areas of information warfare, so we will follow their description despite of a lot of events have overwritten the relationship of the mentioned areas since then.

The key areas as follows:

1. **Command and Control Warfare** (C2W) means the military strategy implements information warfare on the battlefield, including physical destruction; the main objective is to separate the adversary's command structure from its operating forces.

2. **Intelligence Based Warfare** (IBW) means the intelligence fed directly into operating efforts (military operations) e.g. targeting, battle damage assessment, etc.

3. **Electronic Warfare** (EW) means the usage of radio-electronics, electronics and cryptography as a tool for warfare.

4. **Psychological Warfare** (PSYOP) have reference to the usage of information against the human mind and manipulating the human mind with that information.

5. Winn Schwartau, among others regards the term **Hacker Warfare** as the information warfare. Hacker warfare is based on the exploitation of security holes of computer networks but hacker warfare is not a real, conventional warfare. The objectives are spread, but all of them connect to the main terms of interception, intervention, impersonation.

6. The term **Economic Information Warfare** practically means the common area of information warfare and economic warfare. It can take two main forms: information blockade and information imperialism.

7. The so-called **Cyberwarfare** exists in the cyberspace, nearly fictitious and utopian. It is difficult to identify the forms and can continuously change in time. So we describe only the information terrorism, the semantic attacks, the simula-warfare and the Gibson-warfare.Mivel az informatikai módszerek alkalmazásai a felsoroltak közül az utolsó háromban játszanak meghatározó szerepet, a továbbiakban csak azokkal foglalkozunk.

Because of information technology plays determining role in the last three areas amongst the forementioned, next we will deal only with them.

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1. *This Article is based on Zoltan Nandor Sik's presentation titled "Information warfare and the governmental challenges" at National Council of Information Technology and Telecommunication, July 9, 2007*

2. *http://www.iwar.org.uk*

Hacker Warfare

Nowadays the hacker warfare uses "conventional" technologies, such as virii, worms, logic bombs, trojans, a lot of sniffers, social engineering tools, etc.

Hacker attacks against civilian targets are similar to military targets, but the latter requires special skills regarding the fact that the military systems are planned to security, they are redundant and lot of critical systems are physically not part of any public or civilian private usage computer networks.
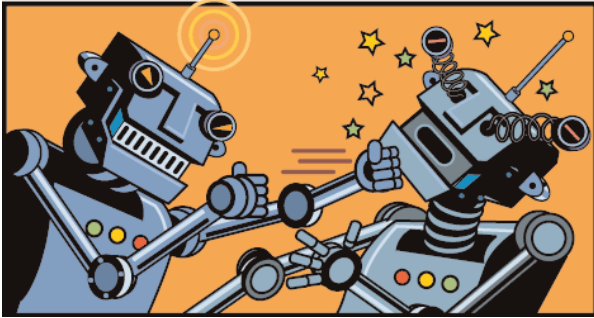
Regarding the practical issues, attacks against computer networks can be physical, syntactic and semantic. Hacker attacks are syntactic while semantic attacks belongs to cyberwarfare. Targets of hacker attacks can be anything but there are some civilian targets called critical infrastructures which can be starting points of vast disasters when they attacked. Despite of critical systems are planned for security and the supervision of their security systems by professionals is usual, simulated attacks, log file analysis, disaster recovery plans belongs to their everyday operation, we can not called them really secure.

Attacks against computer networks usually occur with insider assistance regardless of purposefulness. It should be noted that the number of hackers on the Internet grows more rapidly than the number of users of the Internet. Nevertheless the Internet itself can be the goal and the tool of attacks, it also summarizes knowledge because diverse knowledge can be stored can be built up and anyone can reach the new knowledge. Even it is useful when groups of hackers decided working in team and in this manner they can start comprehensive and widespread attacks.

Notwithstanding an attack can be far most dangerous than originally planned so it can lead to disastrous consequences.

Economic information warfare

The information blockade is generally used by developed countries on the rest of the world but also exist opposing examples too.

Nowadays mostly the well-being societies exploit intensively the advantages come from wired and wireless terrestrial and satellite communication and broadcasting but the above mentioned channels nearly impossible to blackout in a well defined geographic area.

Blocking all telecommunication between persons possibly harder because it can cause unintended confusion amongst non-hostile parties, and can cause difficulty even impossibility to work regarding the emergency services, notice of accident, life-saving, crime investigation, disaster recovery, etc.

Now, most of the developed countries, concerning their vulnerabilities in information security exert how to exploit information in common rather than deny it from others and exposing themselves to be denied from information.

The other part of economic information warfare is the information dominance (or information imperialism) that means exploitation of information advantages of a country, turning the advantages into economic dominance and influencing other countries exploiting other countries' market with it.

Cyberwarfare

Information terrorism is similar to hacker warfare, tools used by the tools of hacker warfare, but the objectives belong to terrorism and organized crime.

Semantic attacks means feeding the attacked systems with false data which will be handled in normal manner but the output result will be false caused by false input data. Based on false results as input data on decision making, all decision will be wrong regardless of that the decision makers are humans, computer systems or automated regulation loops. Of course there are a lot of methods avoiding false data feeds, system can verify input data correctness, accuracy, validity although it is not possible to completely exclude fake data input.

Simula-warfare is an idea belongs to the world of combat games, simulators and strategic games. Simula-warfare is useful for practice although there is a fiction now to fight a "real" battle on computers. On the other hand sooner or later it will be possible to simulate a combat in advance with the help of continuously increasing computing capacity, conclusions based on historic data, and with mathematical and game theory algorithms not known today.

The name of "Gibson warfare" comes from William Gibson's novel titled "Neuromancer" and this belongs to fourth generation or asymmetric warfare. Fourth generation warfare is not a classic war between nations, there are no conventional battles (called irregular warfare) there are no hinterland (called total war) and the main objectives of war is not to win battles rather than vox populi, the goal is to control the public, control the civil society[3]. Methods of this type of warfare are guerilla warfare, terrorism, sabotages, cyberwar and everything else not belongs to conventional warfare.

3. There is a reference to it in George Orwell's novel titled "1984".

SFF - factory in your home

Today society is often referred to as post-industrial society in contrast to the world of the previous two hundred years, which was dominated by industrial production. The main characteristic of the post-industrial society is that services and knowledge based activities in the preproduction phase play a more important role in economy than the actual product manufacturing. However the post industrial nature of the economy did not diminish the role of the industrial manufacturing, and did not eliminate the importance of factories.

However great changes will occur in the manufacturing of everyday products in the coming 10-20 years, which will result in the disappearance of factories. The appearance of the so called "solid freeform fabrication (SFF) and the atomic precise technologies (APT) are behind this change.

The SFF technologies, which belong to the digital manufacturing technologies, are already capable of creating everyday - recently only small size - products in small fabrication facilities and even on your desktop. SFF technologies are sometimes called layered manufacturing, 3D printing and rapid prototyping, which describe very clearly the nature of SFF technologies:

a) objects are produced layer by layer,

B) layers are created on the basis of a digital "print image", which print image describes the product layer by layer like the visual appearance of the printed image described row by row in the case of a printer;

C) the capabilities of SFF "printers"are described with spatial resolution and material types like colours in case of printers.

SFF technologies are not new. Machines, which are capable of "printing" solid objects have been existing for 25 years, but the use of this technology is still restricted to design activities as creation of prototypes.

However several projects were launched during the last years, which aim to change this situation and try to help the widespread use of 3D printers in everyday life. The main goal of these projects is the creation of reasonably priced, personal 3D printers, and the development of open source 3D printer designs, software applications and knowledge base (together SFF systems). Such leading projects are the FAB@Home, the FAB Labs and the RepRap.

The phrase Fab@Home refers to a cheap, open-source personal SFF system. The main goal of the initiative is to brake the vicious circle (expensive systems -> small amount of users -> slow development -> expensive systems), which currently hinders the development and widespread use of SFF technologies. The Fab@Home project is supported by the US National Science Foundation and Computational Synthesis Lab of Cornell. The leader of the project is Evan Malone. (You can find a report in the IT3 Panorama 2007 January-February issue: Desktop fabricator may kick-start home revolution (007/2007)) The price of the FAB@Home project SFF system is currently 2300 USD.
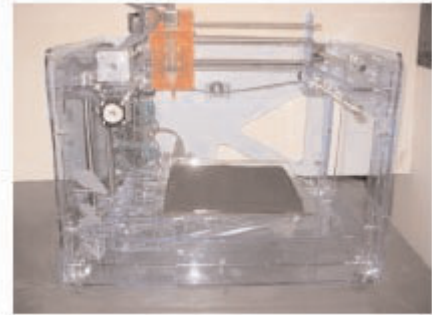
The FAB LAB project is connected to Neil Gersenfeld who is the author of the book entitled "FAB: The Coming Revolution on Your Desktop - From Personal Computers to Personal Fabrication" and the head of MIT Bits and Atoms Laboratory. The aim of the FAB LAB project is to bring the SFF technologies to those underdeveloped regions of the world that lay outside of the usual area of technology development and use. FAB LAB initiative supports this by the creation of worldwide network of FAB laboratories. Outside the USA there are FAB LABs in Ghana, the South-African Republic, Spain, Norway and India.
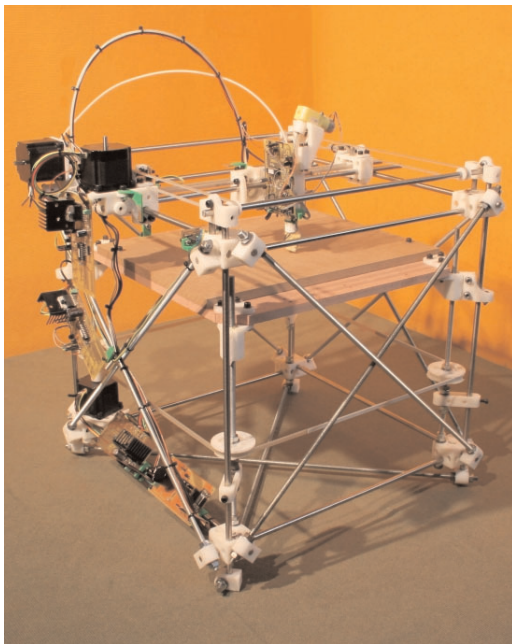
The RepRap project of the Bath Unversity, UK is the most ambitious project in the field of home used SFF systems. The aim is the development of a 3D printer which is capable of creating most of its own parts and which costs less then 500 USD. RepRap project was inspired by the concept of the "universal constructor" of John von Neumann. The project started in 2005 and its prototype replicator named Darwin will be ready in 2008. According to the project website soon it will be possible to order Darwin through the web shop of the RepRap Research Foundation. (We have reported earlier about the project in the IT3 Panorama 2006 May - June issue: Self replicating 3D printer (051/2006))

The results of the RepRap project are promising, but Darwin will never be capable of replicating its own metal parts because of the limits of the applied fused deposition modelling (FDM) technology. Although some SFF technologies are able to print metal objects (e.g. selective laser sinthering), but none of them is able to produce organic materials (e.g. wood or textile). Most of the recent SFF technologies are restricted to the use of plastic materials. However there is a promising field called atomic precise manufacturing (APM), which will provide a suitable solution to such problems in 10-20 years. The technologies behind APM belong to nanotechnologies. Their development is in many respect dependent on the computing power parameters. The 2007 technology roadmap of the Foresight Nanotech Institute predicts that the computing conditions will be ready to support the widespread use of atomic precise technologies within 15 years if we count the continuous development of computing capacity according to Moore's Law. This means that the computing background required for the atomic precise productive nanosystems (APPN) will be available in 15 years time. Once APPN systems become a reality the creation of the fully self replicating machine will be obvious. These machines will be capable of replicating not just themselves, but any kind of object.

Early signs of the change are already appearing in the segment of low volume industrial product manufacturing. Lots of new start-up companies are already on the market, which target niche markets with SFF based product manufacturing.

However the appearance of the atomic precise technologies will boost the use of SFF systems and will completely change the structure of the manufacturing industry and will make home manufacturing a reality. In 100 years we will certainly consider the first three decades of the 21st century as the beginning of a second industrial revolution. There will be two determining characteristic of this revolution: a) product manufacturing will be completely separated from design and development; b) the value of the intellectual work before actual manufacturing will multiply compared to the value of production, packaging and transport. Intellectual public goods will also play a crucial role beside closed intellectual properties. We have already experienced in the case of software that legal restrictions on the use of intellectual goods are inspiring people to develop open-source intellectual goods. We will experience the same phenomenon in the field of everyday product designs, once the design will be the only barrier to product manufacturing beside the cost of row materials and production equipments.

References and further readings

FAB@Home - www.fabathome.org

MIT's Center for Bits and Atoms - http://fab.cba.mit.edu

Neil Gershenfeld, FAB: The Coming Revolution on Your Desktop - From Personal Computers to Personal Fabrication

RepRap Project - www.reprap.org

Castle Island's Worldwide Guide to Rapid Prototyping - http://home.att.net/~castleisland/

MINAM Micro and Nanomanufacturing - MicroVacuum www.microvacuum.com

Solid Freeform Fabrication - http://en.wikipedia.org/wiki/Solid_freeform_fabrication

Foresight Nanotech Institute - www.foresight.org

Productive Nanosystems, A Technology Roadmap - http://www.foresight.org/roadmaps/index.html

Center for Responsible Nanotechnology: Nano Tomorrows - http://www.nanowerk.com/nanotechnology/nano_tomorrows.html (A CRN szcenáriók magyar nyelvű összefoglalója megtalálható az Ágens Portálon: http://www.agent.ai)

Digital fabricator - http://en.wikipedia.org/wiki/Digital_fabricator

NEWS
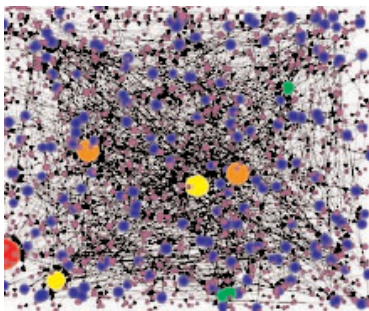
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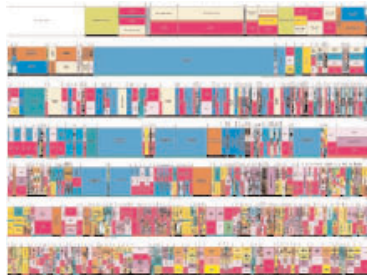
The spectrum
is rather full

Document management –
electronically easier?

Mass society...

Web
in action
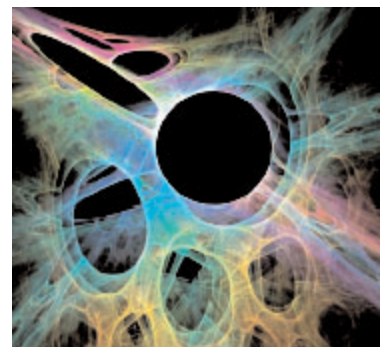
3D revolution

Improved nanodots could be key to future data storage
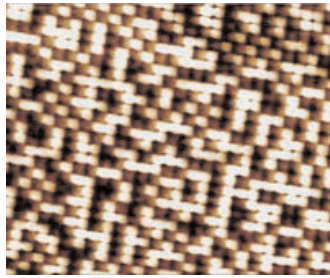
The next decade will probably be spent on stabilising 50 nanometer technologies: either it is about multi-core chip design, or as in this case, about storage devices. The subsequent decade may reach the 10 nanometer sizes, However, after 2020 performance increase can only be expected from shift in technology paradigm.

The massive global challenge of storing digital data--storage needs reportedly double every year--may be met with a tiny yet powerful solution: magnetic particles just a few billionths of a meter across. This idea is looking better than ever now that researchers at the National Institute of Standards and Technology (NIST) and collaborators have made nanodot arrays that respond to magnetic fields with record levels of uniformity. The work enhances prospects for commercially viable nanodot drives with at least 100 times the capacity of today's hard disk drives. A nanodot has north and south poles like a tiny bar magnet and switches back and forth (or between 0 and 1) in response to a strong magnetic field. Generally, the smaller the dot, the stronger the field required to induce the switch. Until now researchers have been unable to understand and control a wide variation in nanodot switching response. As described in a new paper, the NIST team significantly reduced the variation to less than 5 percent of the average switching field and also identified what is believed to be the key cause of variability--the design of the multilayer films that serve as the starting material for the nanodots.

(001/2007)

www.eurekalert.org

Optical trail with record-setting molecules
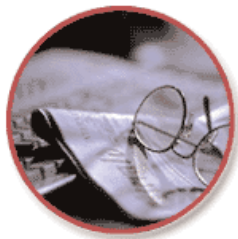
One of the barrier in the full exploitation of the high bandwidth data transfer capabilities provided by current fiber-optic communication technologies is the necessary transformation of the light impulses into electronic signals for the silicon based processors. This transformation evidently creates delays, which may be avoided with the help of optic processors. An American-Belgian-Chinese research cooperation has recently finished a series of successful experiments with optical molecules, which allow the development of a new generation of optical processors.

WASHINGTON STATE UNIVERSITY

The internet could soon shift into overdrive thanks to a new generation of optical molecules developed and tested by a team of researchers from Washington State University, the University of Leuven in Belgium and the Chinese Academy of Science in China. The new materials, organic molecules known as chromophores, interact more strongly with light than any molecules ever tested. That makes them, or other molecules designed along the same principles, prime candidates for use in optical technologies such as optical switches, internet connections, optical memory systems and holograms. The molecules were synthesized by chemists in China, evaluated according to theoretical calculations by a physicist at WSU and tested for their actual optical properties by chemists in Belgium. "To our great excitement, the molecules performed better than any other molecules ever measured," said WSU physicist Mark Kuzyk. Other researchers in the field hailed the breakthrough. "This is a great lead," said Geoff Lindsay of the U.S. Navy Research Department. "I would say this is the greatest advance in organic dye hyperpolarizability theory since the field began." According to physicist Ivan Biaggio of Lehigh University, the work "is a very important contribution that may help the community to finally deliver the all-optical switching performances that are needed for tomorrow's all-optical data-processing networks, an aim that has eluded researchers for 20 years." In the new designs, each molecule has a component at one end that donates an electron and a component at the other end that accepts an electron. In between is the "bridge" portion of the molecule. Previous efforts to boost the interaction with light focused on "smoothing out" the bridge to allow electrons to flow more easily from donor to acceptor end. Kuzyk's calculations showed that a more "bumpy" structure actually enhanced the interaction with light; and Clays recognized that Zhao's structures filled the bill - which was confirmed by measurements made by his group. Quantum mechanics explains the behavior of electrons in this situation, Kuzyk said.

(002/2007)

www.wsunews.wsu.edu

Brain activity provides novel biometric key
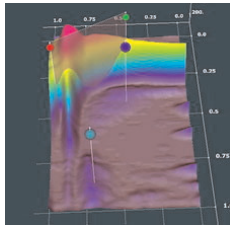
A new biometric system identifying people by the patterns of their unique brain activity belonging to a bigger European project is aiming to use biodynamic indicators and behavior-analysis for monitoring and authentication. The developers plan to create a "general" system synthesizing the different techniques of biometrics which would be more accurate and secure than today's devices.

An electronic security system that identifies people by monitoring the unique pattern of electrical activity within their brain is being tested by European scientists.This novel biometric system should be difficult to forge, making it suitable for high-security applications, claim the researchers behind it. The system was developed by two companies - Starlab in Spain and Forenap in France - in cooperation with researchers at the Centre for Research and Technology Hellas, in Greece. It uses an established method for measuring activity in the brain, called electroencephalography (EEG).EEG measurements identify the location and intensity of millisecond-long fluctuations in electrical activity in the brain via electrodes positioned around a person's scalp. This can help neuroscientists understand the function of different brain areas and may also be used to diagnose and monitor neurological conditions such as epilepsy and dementia. Since an individual's brain activity is determined by the unique pattern of neural pathway in their brain, the same technique can be used for identification, says Dimitrios Tzovaras, who is the coordinator at the Centre for Research and Technology Hellas. "It could be a very good security control," he told New Scientist. he authentication system requires a user to have EEG measurements taken beforehand with further measurements for each authentication test. This is done via a removable cap, which communicates wirelessly with a computer that analyses the data gathered. The cap has fewer electrodes than are normally used for EEG measurements, but can still provide enough information for authentication, according to Tzovaras.

(003/2007)   www.newscientisttech.com

Hip Technologies to keep an eye on

The mobile service providers are continuously bombarding their consumers with new possibilities, as it is demonstrated by a most recent conference. Should you have any doubt that we are only at the beginning of the road, the road of mobilisation, then look at carefully the range of functions listed below. And imagine that such appliances and services being in different stages of implementation will extend mobile life and work in a number and variety, and at a rate beyond what is normal today, in the nex t5-10 years.

A blog that follows you around, a single number for all your phones, and an automated reminder service top the betas on display at O'Reilly Media's Emerging Telephony conference this week in the San Francisco Bay Area. Of course, it's a long way from free beta to booming business (or multi-million-dollar buyout), but here are a clutch that have a good chance to hit it big. Are you ready to be your own telecom mogul? Grand Central lets you use a single phone number to make and receive phone calls from all of your phones: Answer a call to your office number on your home phone, for example, or make a cell-phone call on your office phone. Your number persists as you change your residence, get a new job, or sign up for a new cell account. Other features include integrated voice mail (including the ability to listen into voice messages as they're left, and interrupt the message to take the call), and greetings tailored to a specific person or group. Jaiku goes personal blogging one better by letting people know where you are, what you're doing, how you're feeling, and just about anything else you'd like to share about yourself. Load the free beta service's mobile client on your phone to text presence updates to your shared calendar. Still in private beta is ReQall, a service that lets you place a phone call to yourself--or send yourself an e-mail--to remind you of impending events. You can set the reminders by calling a toll-free number from any telephone, and the service's downloadable applet for Windows XP lets you send and receive reminders via your PC. The conference's mashup winner was After Hours Doctor's Office, Thomas Howe's voice-mail/callback system for phone calls received by doctors from patients when the office is closed. The system uses the human medical experts on duty at Amazon's Mechanical Turk artificial intelligence beta service (www.mturk.com/mturk/welcome) to determine whether the call is a true emergency, or just a "take two aspirin and call me in the morning" situation.

(004/2007)   http://blogs.pcworld.com

Battle of the Web-TVs

There is a new feature of content making, and also there is a battle for the time of the consumer. The users have been become content provider too, besides the professional ones. The usual living room TV sets can remain, there will be connected with Internet via wireless devices.

Technology companies have long envied TV's place at the center of the home. They have encroached upon it with video game boxes and tried, in vain, to replace it with big monitors attached to powerful multimedia PCs. This week, at the annual Consumer Electronics Show in Las Vegas, technology companies finally unveiled the Internet-connected TV set-top boxes that are the key weapons in their bid to control the living room. Seemingly every major tech company ever to enter gaming, computers, or entertainment unveiled a device at CES intended to unite the Internet and television without tethering the TV to the computer with a cable. The list includes iTV maker Apple, Advanced Micro Devices, Microsoft, and Sony, among others. The idea is not entirely new. Akimbo, a privately held company based in San Mateo, California, partnered with RCA several years ago to develop a set-top box that brings on-demand Web programming to the TV. On Jan. 10 Akimbo announced a partnership with Yahoo! that will bring the highest-rated user-generated videos on Yahoo!'s site to its on-demand service. Changing More than Channels While none of the "smart TV" devices have any significant market penetration yet, the sheer number of them shows that tech companies believe they can win the living-room rumble for dominance. If they're right, consumers can expect some big changes to how they watch TV that should go far beyond the ability to view YouTube videos on CBS. (The TV network announced a partnership with YouTube Jan. 10 that will enable computer users to vote for which user-generated video should air during the Super Bowl.)

(005/2007)

www.businessweek.com

Touch screens for many fingers

Researchers have been interested in the "multi-touch" technology since the early eighties, but the previous experiments didn't result any commercial product. Apple's and (rather) Perceptive Pixels' developments hold out the best hopes of radical changes: the era of our familiar peripherals, i. e. the screen, the mouse and the keyboard might come to an end...

When Steve Jobs demonstrated Apple's new phone at Macworld recently, the feature that elicited the most "oohs" and "aahs" from the audience was the touch-screen interface: it allowed more than one touch at a time. This "multi-touch" technology adds functions such as allowing a person to easily zoom in and out of pictures and Web pages by pinching the screen with two fingers. But the full power of multi-touch technology might be unleashed in screens far larger than those on phones. Over the past few years, Jeff Han, consulting research scientist at New York University, has developed an inexpensive way to make large multi-touch screens accommodating 10, 20, or even more fingers. He envisions applications ranging from interactive whiteboards to touch-screen tables and digital walls--any of which could be manipulated by more than just one person. And this month, Han has unveiled Perceptive Pixel, his new company based on the technology. "The new iPhone is too small to be a very interesting multi-touch device," says Han. That's because multi-touch technology implies multiple users. More than one person gathered around a large touch screen "becomes interesting," he says, "because multiple users can then become collaborators." Such collaboration could take many forms, from brainstorming sessions using networked, interactive whiteboards to animation collaborations at which six hands can mould the face of a monster. Perceptive Pixel is set to ship its first wall-size touch screen this month, to an undisclosed U.S. military customer.

(006/2007)

www.techreview.com

Desktop fabricator may kick-start home revolution
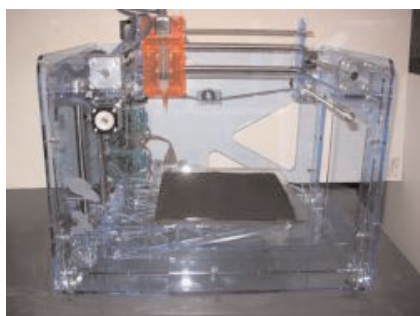
Just imagine a brave, new world where there is no need for long distance, physical movement of goods since we are locally equipped with "manufacturing" devices which can produce and/or assembly complex assets of our life from materials easily and generally accessible. Only their designs, i.e. digital representations, should be transmitted to the required place. No unnecessary emission of contaminating gas, no need for packaging just because of transport. You think it is utopia? It is for sure ... or may we have already stepped onto the road leading to such an alternative of the future?

A cheap self-assembly device capable of fabricating 3D objects has been developed by US researchers. They hope the machine could kick start a revolution in home fabrication - or "rapid prototyping" - just as early computer kits sparked an explosion in home computing. Rapid prototyping machines are already used by designers, engineers and scientists to create one-off mechanical parts and models. These create objects by depositing layer upon layer of liquid or powdered material. These machines typically cost from $20,000 to $1.5 million, says Hod Lipson from Cornell University, US, who launched the Fab@Home project with PhD student Evan Malone in October 2006. The standard version of their Freeform fabricator - or "fabber" - is about the size of a microwave oven and can be assembled for around $2400 (L1200). It can generate 3D objects from plastic and various other materials. Full documentation on how to build and operate the machine, along with all the software required, are available on the Fab@Home website, and all designs, documents and software have been released for free."We are trying to get this technology into as many hands as possible," Malone told. "The kit is designed to be as simple as possible." Once the parts have been bought, a normal soldering iron and a few screwdrivers are enough to put it together. "It's probably the cheapest machine of this kind out there," he adds.The machine connects to a desktop computer running software that controls its operation. It then creates objects layer-by-layer by squeezing material from a mechanically-controlled syringe. Unlike commercial equipment, the Fab@Home machine is also designed to be used with more than one material. So far it has been tested with silicone, plaster, play-doh and even chocolate and icing. Different materials can also be used to make a single object - the control software prompts the user when to load new material into the machine.

(007/2007)   www.newscientisttech.com

Hiding messages in plain sight

For the identification of objects it is possible to use barcodes or RFID tags, but other more sophisticated techniques like steganography may also be helpful. With the help of steganogrpahy it is possible to hide easily 10-20 byte information in images. This hidden information may also be used for identification of objects. E.g. it is possible to place a web address into the picture in an invisible way, which may be later decoded with the help of a cell phone camera.

A technology that can "hide" information in plain sight on printed images has begun to see the first commercial applications. Japanese firm Fujitsu is pushing a technology that can encode data into a picture that is invisible to the human eye but can be decoded by a mobile phone with a camera. The company believes the technology will have spin off implications for the publishing industry. "The concept is to be able to link the printed page into the digital domain," said Mike Nelson, general manager for sales operations at Fujitsu Europe. The technique stems from a 2,500-year-old practice called steganography, which saw the Greeks sending warnings of attacks on wooden tablets and then covering them in wax and tattooing messages on shaved heads that were then covered by the regrowth of hair. Fujitsu's technique works by taking advantage of the sensitivities of the human eye, which struggles to see the colour yellow. "The key is to take the yellow hue in the picture and we skew that ever so slightly to create a pattern," said Mr Nelson."A camera is perfectly sensitive to that yellow hue but the human eye doesn't see it very well. "Any camera, even those in mobile phones, can decode it very easily."

(008/2007)   http://newsrss.bbc.co.uk

Augmented Reality helps kids learn

After Virtual Reality, Augmented Reality will be used for educational purposes as well. The joint project of two North-American universities makes possible that students learn mathematics or elaborate their writing and reading skills by playing. This is not too surprising because one of the existing applications of the AR technology (mixed with GPS systems) is gaming.

The researchers behind a project that incorporates 'augmented reality' (AR) into an educational setting believe it could change the way students learn in the future. The Handheld Augmented Reality Project (HARP) is a joint effort between Harvard, MIT, and the University of Wisconsin that allows students to traverse an actual landscape, gathering information at specific "hot spots." The idea is the result of "trying to think about where society is going, what students will need, what the educational properties of these devices are, and how we can design something interesting with these devices," says Harvard professor of learning technologies Chris Dede. AR, which layers virtual images over actual images on a portable device, can either be place-dependent or place-independent. For the pilot "Alien Contact" project, the researchers designed a place-independent system, thinking that it is much easier for schools to implement if they don't have to travel. High school students were put into groups that walked around the school's athletic field using an AR map on a handheld computer that showed different "hot spots." Each of these locations presented them with puzzles and math problems via AR.

(009/2007)   www.eschoolnews.com

Animal tags for people?

In the US larg number of pets are marked with RFID tags. These tags help veterinarians to maintain the health of the animals and food security Some groups fears that this is just a preliminary step towards tagging human beings. Contras say that using RFID for pets is only a test for developping the technology for human identification.

Under the federally supported National Animal Identification System (NAIS), digital tags are expected to be affixed to the U.S.'s 40 million farm animals to enable regulators to track and respond quickly to disease, bioterrorism, and other calamities. Opponents have many fears about this plan, among them that it could be the forerunner of a similar system for humans. The theory, circulated in blogs, goes like this: You test it on the animals first, demonstrating the viability of the radio frequency identification devices (RFIDs) to monitor each and every animal's movements and health history from birth to death, and then move on to people. While the NAIS remains voluntary on a federal level, and there is no formal people identification system as yet, both executives are moving aggressively to position their companies for the day when chips in animals and people are the norm rather than the exception. Mary Zanoni, a lawyer and critic of NAIS who has written extensively about the system, says that "the microchipping of livestock and pet animals is intended to make tagging more acceptable in helping these companies market their devices for people."

(010/2007)   www.businessweek.com

IBM expands virtual machines on the mainframe
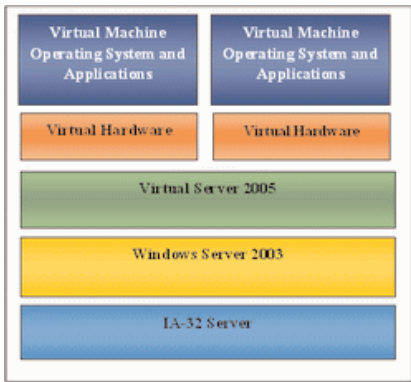
Suddenly as if we went back to the sixties and seventies: users of an iBM mainframe may request their own virtual machines which fit best to their individual tasks to be solved. If you need a machine, you do not necessarily have to buy it as an IT product, nor should you install and operate it. All is provided by the mainframe as a service, and you have to pay only for what you have actually used. The mainframe as a flexibly adjustable computer resource pool, represents one of today's most fundamental directions in virtualisation.

IBM, originator of computer virtualization, is upgrading the ability of virtualization to scale up on its z9 Series mainframes. That's important, says a user at Marist College, because the school is relying on more virtual machines on its mainframe to supply computer science students with the environments they need. It is currently running 600 Linux virtual machines for students on its z9. Its two mainframes, an older z990 as well as a z9, manage both academic and administrative workloads. "Students can have one virtual machine running Apache, another running MySQL, and do work with both," says Martha McConaghy, strategic planner and project manager for the college. "What they've done is expand the boundaries for virtualization on the mainframe past what they've traditionally been." The college started using Linux on the mainframe in 2000 when the school served "as a test bed" for the concept. Five years ago, it ran a dozen Linux virtual machines on its mainframe.The z9 with the 5.3 release of its z/VM operating system can now run virtual machines on 32 CPUs, instead of the previous maximum of 24 CPUs. The z9 comes in versions with 1-54 CPUs. The z/VM operating system also can create a virtual machine that uses up to 128 Gbytes of memory, or apply z/VM's abilities to manage memory for a set of virtual machines to a chunk that large. That allows z/VM to give its guest virtual machines more memory as their workload increases.

(011/2007)

http://www.nhit.hu

Speech recognition technology will change the way you drive

Speech recognition is one of the hottest fields of todays' IT. This technology will be gradually gaining ground in the car industry. It means that in the coming years the driver will be able to simultaneously command different devices by his voice. However, one main obstacle remains to be solved: the systems must differentiate between conversation and commands.

Someday soon, you might find yourself behind the steering wheel of your car and you'll want to dial your phone, find out where the nearest Starbucks is, change the music you are listening to and adjust your heat or air conditioning. And you will be able to do all of this with nothing but the power of your own voice. IBM and a number of its corporate partners gathered at the company's New York City offices to discuss the current state of speech recognition technology and its future. A forum and a series of product demonstrations focused largely on technology allowing drivers to control gadgets without taking their eyes off the road or their hands off the steering wheel. While some of the products are available already, there figure to be many new technologies and improvements on existing ones in the coming years. A product planning manager at Pioneer Electronics discussed the company's AVIC navigation system and upgrades planned for a new version to be released in late March. In the new version, a driver can announce that he or she wants to find the nearest Starbucks and the navigation system will locate the closest one and speak the directions. "If you want to find a Starbucks coffee or McDonald's, you can simply say 'vicinity search Starbucks coffee' and it will take you to your nearest Starbucks, said Ted Cardenas of Pioneer.

(012/2007)

http://www.networkworld.com

A virtual approach for clothing design

Second Life and other virtual worlds has become more and more popular. One of the consequencies of this growing popularity is that fashion designers are working on clothes for avatars. But how? An international research team has developed a new method that seems to be more effective and intuitive than the previous ones. They plan to apply their approach not only in the virtual worlds but in the reality, too.

An international team led by French computer scientists and fashion designers has worked on an intuitive way to design virtual clothing. Their method "determines a garment's shape and how the character wears it based on a user-drawn sketch. The system then uses distances between the 2D garment silhouette and the character model to infer remaining distance variations in 3D." This method could soon be used not only for real garments, but also by the video-game industry. "Modeling dressed characters is known as a very tedious process. It usually requires specifying 2D fabric patterns, positioning and assembling them in 3D, and then performing a physically-based simulation. The latter accounts for gravity and collisions to compute the rest shape of the garment, with the adequate folds and wrinkles. This paper presents a more intuitive way to design virtual clothing. We start with a 2D sketching system in which the user draws the contours and seam-lines of the garment directly on a virtual mannequin. Our system then converts the sketch into an initial 3D surface using an existing method based on a precomputed distance field around the mannequin. The system then splits the created surface into different panels delimited by the seam-lines. The generated panels are typically not developable. However, the panels of a realistic garment must be developable, since each panel must unfold into a 2D sewing pattern. Therefore our system automatically approximates each panel with a developable surface, while keeping them assembled along the seams. This process allows us to output the corresponding sewing patterns."

(013/2007)   http://blogs.zdnet.com

Message from the grave beyond

"Immortal" computing, a name invented by Microsoft researchers, is a research area which makes clear that, with the help of ICTs, communication can be established today not only within space but in time, too. The concept indicates that there may be a need for correct handling of our own personal attributes not only in our life but after death, too.

In this culture of instant information, some Microsoft Corp. researchers are pursuing a radical notion -- the concept of saving messages for delivery in decades, centuries or more. The project, dubbed "immortal computing," would let people store digital information in physical artifacts and other forms to be preserved and revealed to future generations, and maybe even to future civilizations. After all, when looking that far in the future, you never know who the end users might be. "It is definitely a long-term project," said Andy Wilson, the Microsoft researcher whose musings on the ephemeral nature of digital information inspired the research initiative. One scenario the researchers envision: People could store messages to descendants, information about their lives or interactive holograms of themselves for access by visitors at their tombstones or urns. And here's where the notion of immortality really kicks in: The researchers say the artifacts could be symbolic representations of people, reflecting elements of their personalities. The systems might be set up to take action -- e-mailing birthday greetings to people identified as grandchildren, for example.

(014/2007)   http://seattlepi.nwsource.com

Virtual Braille

The virtual braille mentioned in the article is mainly for blind people, and it is cheaper that the previous solutions. But the technology show much more possibilities in the future.

Over the last decade the array of assistive devices that help the visually impaired use computers has grown. However, the prohibitive cost of these products prevents their widespread deployment. Work being done by a group of researchers from McGill University in Montreal may soon change that. The researchers are working on a Virtual Braille or - an appliance that is likely to be a lower-priced alternative to conventional Braille readers. What's more, virtual Braille (VB) technology is expected to open up greater employment opportunities for the blind. The current model the team is working on is called Stimulator of Tactile Receptors by Skin Stretch squared (STReSS2). "By developing a smaller and simpler device with fewer moving parts, we hope to create a far cheaper Braille reader than the ones in the market today," said Vincent Hayward, director, Centre for Intelligent Machines (CIM), McGill University. The prototype is among the research projects exhibited this week by CIM, as part of an event sponsored by Precarn Inc., an Ottawa-based non-profit consortium of corporations and research institutes that support the development of intelligent information and communication technologies.

(015/2007)

www.itworldcanada.com

At Mashup Camp, geeks plot future of WebMashup
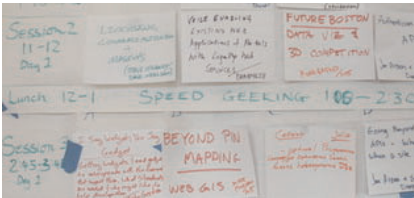
The appearance of mashups create a new conflict area among content owners and web application developers. The open nature of web technologies support the easy reuse of content by innovative web applications, however content may not be reused without permission. This situation on the one hand obviously hinders the development of mashups, and on the other hand creates new worries and risks for content owners.

In his spare time, Alan Taylor builds mashups--Web applications that combine content from more than one source and have caught on as Web providers from Amazon.com to Microsoft make their data programmatically available to outsiders. But while he is breaking new ground on the Internet, he is also pushing legal and business boundaries. His Amazon Light application--a stripped-down site for buying and renting goods through Amazon--attracted two cease-and-desist orders a couple of years back, one from Amazon and another from Google. "I do lots of different development, but the mashups are the most fun just because there's so much potential," said Taylor, one of about 200 developers and techies attending Mashup Camp. "The biggest barriers have been artificial barriers, legal barriers." Because Mashup Camp is considered an "unconference", discussion topics were proposed by attendees and scheduled on the first day of the two-day event. Perhaps as a reflection of their enthusiasm, participants were able to decide on the conference content within 20 minutes. The semi-structured format is particularly well-suited to mashups, which many attendees likened to a grassroots cultural movement. Large software vendors catering to corporate software developers or independent software vendors have spent years establishing a suite of Web services standards and infrastructure software while advocating a modular design, called a sevice-oriented architecture, or SOA.

016/2007)

http://news.com.com

What computers are talking about?
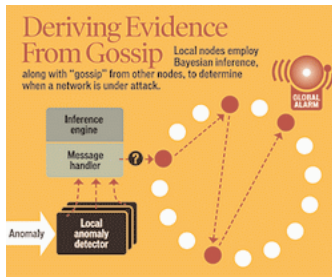
About what wrong may happen to us. Let they share their "fears" among themselves, i.e. information about potential attacks! Let they continuously search for suspicious patterns in the operation of networked computers, and call each other's attention if the level of suspicion coming from different sources crosses a threshold. Let they form a certain information security web against malicious agents.

Intel Corp. is developing a way for networked computers to "gossip" among themselves, sharing their experiences and "beliefs." The idea is to stay a step ahead of hackers. For years, the backbone of computer security has been the use of tools, such as firewalls and virus scanners, that base their actions on knowledge, or "signatures," of past attacks. But this has two problems: The tools generally don't recognize new threats, and they can't be updated rapidly enough to deal with fast-spreading exploits. The answer, IT researchers say, lies in new tools for "adaptive and resilient computing security," the name of a recent workshop sponsored by the Santa Fe Institute and BT Group PLC. Signature-based technology is limited," says Robert Ghanea-Hercock, a research engineer at BT in London and the leader of the workshop. "For cutting-edge day-to-day protection, you'll have to have adaptive things that monitor what's happening on the network in real time." That's just what Intel is developing. "Anomaly detectors" at local nodes on a network look for evidence of worms, such as unusual spikes in activity. A machine that normally makes just a few network connections per second might suspect that something is amiss if it is suddenly instructed to make connections at a higher rate. So, using a peer-to-peer "gossip" protocol, it transmits to other machines its so-called belief, in the form of a probability, that the network may be under attack. If the total number of beliefs that any given machine receives from other nodes is high enough, it will assume that an attack is under way and take some defensive action, such as sounding an alarm or disconnecting from the network. Intrusion-detection systems that look for anomalous behavior are not new. And it's not hard to detect an intrusion by a fast-spreading worm such as the infamous SQL Slammer, which infected more than 10,000 machines per second (response is a different matter). But more recently, hackers have deliberately slowed the spread of their malware so it will pass under the radar of conventional detectors.

(017/2007)

www.computerworld.com

The new media and the advertisers

The number of companies spending important part of their markeing budgets on online advertising is increasing. Whereas the "migration" from the traditional media to the Internet has been under way for a long time, this time the advertisers turn their attention to the previously ignored "experimental" side of the new media (which is on the verge of becoming mainstream): video games, virtual communities (Second Life and others), YouTube and similar videofile-sharing sites.

Nearly 90 percent of all U.S. companies polled in a new study will use part of their marketing budgets to advertise in new media like video games or virtual communities. The survey by the American Advertising Federation underscores the shift in advertising spending away from television, magazines and, particularly, newspapers, which have suffered badly from declining circulation as more media choices have become available. Concluding that "traditionally staid media categories are in need of innovation if they are to remain competitive," the study found that 73 percent of the executives interviewed planned to spend up to one-fifth of their budgets on new media. More than 12 percent of respondents said they would spend as much as 40 percent of their budget on experimentation and new media, according to the survey released this week, which polled nearly 1,000 advertising executives. About half of the respondents picked newspapers as the media category most in need of innovation, and indeed publishers have pressed to strengthen their online presence with more content like blogs and video.

018/2007)

http://today.reuters.com

The Linux Foundation

A Linux Foundation was created by the merger of two major non-profit consortia, the Open Source Development Labs and the Free Standards Group in February 2007. The primary mission of the Foundation is the promotion, protection and standardization of Linux. Besides the Foundation manages the Linux trademarks, operates the Patent Commons Project, and finances the Linux Legal Defense Found.

The Linux Foundation is a nonprofit consortium dedicated to fostering the growth of Linux. Founded in 2007 by the merger of the Open Source Development Labs and the Free Standards Group, it sponsors the work of Linux creator Linus Torvalds and is supported by leading Linux and open source companies and developers from around the world. The Linux Foundation promotes, protects and stanardizes Linux by providing unified resources and services needed for open source to successfully compete with closed platforms. Since OSDL and the FSG were each formed more than six years ago, Linux has grown significantly in server, desktop, and embedded usage around the world. Moreover, the open source model has transformed development by providing faster demand-side learning, higher quality, better security, shorter development cycles, and lower prices than closed platform development models. OSDL and the FSG were important forces behind open source adoption and played key roles in preventing fragmentation of the Linux market. For Linux to remain open and attain the greatest ubiquity possible, important services must be provided, including legal protection, standardization, promotion and collaboration. Successful proprietary software companies, for instance, do several important things well: backwards compatibility, promotion, interoperability, developer support, and more. In the voluntary and distributed world of Linux development, the industry continues to successfully use the consortia model to rapidly improve these value attributes for Linux. The Linux Foundation has been founded to help close the gap between open source and proprietary platforms, while sustaining the openness, freedom of choice and technical superiority inherent in open source software.

019/2007)   www.linux-foundation.org

Shoot 'em up video games improve vision

Videogames are not considered to be usefull. Researchers have some new results, that in some cases these games can als imporve vision. The reason is, that using them frequently, the neuron contacts are developing, and the vision can be more precise. The article shows also the learning process of vision too.

Fast-paced shoot 'em up video games such as Unreal Tournament can improve players' vision, scientists have reported. Researchers at the University of Rochester have shown that people who play action video games for a few hours a day over the course of a month improved their vision about a fifth when it came to identifying letters presented "in clutter"."In essence, playing video game improves your bottom line on a standard eye chart," the scientists reported. Daphne Bavelier, professor of brain and cognitive sciences at Rochester, said: "Action video gameplay changes the way our brains process visual information. "After just 30 hours, players showed a substantial increase in the spatial resolution of their vision, meaning they could see figures like those on an eye chart more clearly even when other symbols crowded in." Professor Bavelier and graduate student Shawn Green tested college students who had played few, if any, video games in the past year. At the outset, the students were given a 'crowding' test, which measured how well they could discern the orientation of a 'T' within a crowd of other distracting symbols. Students were then divided into two groups. The experimental group played Unreal Tournament for roughly an hour a day. The control group played Tetris, a game equally demanding in terms of motor control, but visually less complex. After about a month of near-daily gaming, the Tetris players showed no improvement in sight, but the Unreal Tournament players could tell which way the 'T' was pointing much more easily than they had a month earlier. "When people play action games, they are changing the brain's pathway responsible for visual processing," explained Professor Bavelier.

020/2007)   www.vnunet.com

Emotion-aware teaching software tracks student attention

British and Chinese researchers believe software that is able to determine the emotional state of students will improve the effectiveness of e-learning. Universities around the world are turning to new technologies to deliver lectures and presentations to students over large distances. The main problem is that today's systems are unable to take into account the needs and responses of the student in the same way a teacher in a classroom can. The new tutoring software developed by the British-Chinese team will change this situation.
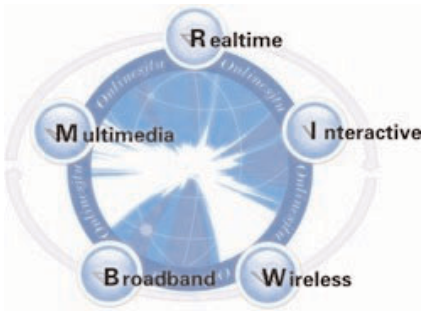
Tutoring software that knows when students' are losing interest in a lesson and can adjust to keep them on track is being tested by researchers in China and the UK. The system keeps track of students' attention by measuring physical signs of emotion. It then varies the speed and content of a lesson based on an assessment of their level of interest. Ultimately, it could improve electronic tutoring programmes, say the researchers involved, thus helping developing countries deliver education to remote areas that lack educational institutions.To use the new learning software, a student wears a ring fitted with sensors that monitor heart rate, blood pressure and changes in electrical resistance caused by perspiration. This data is then transmitted via Bluetooth to a computer that assesses the wearer's emotional state. It judges whether they are interested and keeping up or bored and struggling. "We've built a prototype that can moderate the flow of educational information as a result," Callaghan told. For example, it can slow down or change topic if a student seems disinterested, or appears to be falling behind. The software might also try a different mode of delivery, switching from text to video, for example. "It can also learn that certain types of material are more stressful to the student than others," he adds. This could help the system determine which material is most difficult for a student and requires further focus.

021/2007)   http://www.newscientisttech.com

Preserving printed and digital heritage
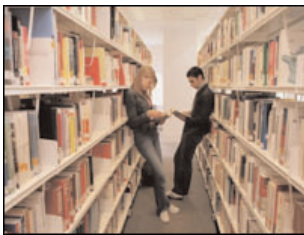
Digital media needs new archivation methods too. There is no more possibility to use the methods of Francois the First, the renaissance king of France, who invented the so-called obligatory example. The popularity of the idea to make a national digital archive where printed media will be replaced by electronic media is growing.

Internet law professor Michael Geist discusses how governments can start building libraries which preserve both printed and digital publications. "In 1537, French King Francis I launched an ambitious initiative to collect and preserve all documents published in France. To achieve his objective, he enacted a law requiring all publishers to submit copies of their publications to the Crown. The practice of mandatory publication deposits, which later became known as legal deposit, caught on as many countries sought to preserve their heritage by establishing similar requirements. The United Kingdom's legal deposit program requires publishers to deposit copies of publications with the British Library, the Bodleian Library at Oxford, the University Library at Cambridge, the National Library of Scotland, the Library of Trinity College in Dublin, and the National Library of Wales. The legislation was last amended in 2003 when it established pilot projects for the submission of electronic publications. An October 2006 report on the pilot projects recommended that a new panel be established to address the technical issues associated with the deposit of electronic publications."

022/2007)   http://news.bbc.co.uk

Isaac Asimov and the Corean border

New Intelligent Surveillance and Security Guard Robots will help to patrol the South-Korean border. They will equipped with self-directing capabilities, which will allow them to make and execute their decisions how to stop people who trespass the border without permission. This development interestingly highlights the naivity of the robototic laws and the idea of robotic self-regulation developed by Isaac Asimov. In practice not robots have to be regulated, but people should be prohibited to create robots, which may harm or kill people.

The new Intelligent Surveillance and Security Guard Robots reportedly will be commercially available later this year and are expected to be deployed along the northern border of South Korea. At an estimated cost of $200,000 each, the units are equipped with daylight cameras capable of identifying targets in a 4km radius, and infra-red night vision offers a range of 2km. Ethicists have always questioned the use of technology in weapons development, but the new robots are causing additional disquiet because of their self-directing capabilities. When science fiction writer Isaac Asimov developed his Three Laws of Robotics back in 1940, the first law was: "A robot may not harm a human being, or, through inaction, allow a human being to come to harm." Asimov later amended the laws to put the needs of humanity as a whole above those of a single individual, but his intention was unchanged: that robots should be designed to protect human life and should be incapable of endangering it. So reports out of Korea of newly developed guard robots capable of firing autonomously on human targets are raising concerns about their potential uses. Although the units allow human intervention through joystick and touchscreen controls, they are also reportedly able to respond autonomously if an intruder fails to provide the correct password. Options include sounding an alarm, using non-lethal force such as rubber bulletts, and firing a rifle or machine gun.

(023/2007)   http://australianit.news.com

Daylight sought for data mining
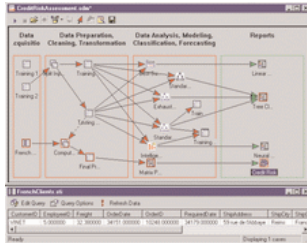
In spite of the fact that predictive data mining cannot catch terrorists because there are too few terrorist patterns to base a model on, American governmental agencies massively use these technologies. Few terrorists have been caught, many innocent people have been targeted. A new bill is aiming to protect the privacy of US citizens against abusive data mining.

Key senators introduced legislation that would require the government to disclose data-mining programs to Congress in an effort to protect Americans' privacy and prevent misuse of personal information. The bill, introduced by Sens. Russell Feingold (D-Wis.) and John E. Sununu (R-N.H.) requires federal agencies to report the development and use of data-analysis technologies to "discover predictive or anomalous patterns indicating criminal or terrorist activity." Lawmakers introduced similar bills twice in recent years, but they languished in a Republican-controlled Congress. The new chairman of the Senate Judiciary Committee, Patrick J. Leahy (D-Vt.), vowed that Congress would take a much more active role in the oversight of government surveillance and data-collection programs. "The American people have neither the assurance that these massive data banks will make us safer, nor the confidence that their privacy rights will be protected," Leahy said at the first in a series of hearings on the subject. He is a co-sponsor of the bill. Leahy said at least 52 federal agencies use data-mining technologies and at least 199 data-mining programs are operating or planned throughout the government, including 14 within the departments of Defense, Homeland Security, Justice, and Health and Human Services. Those do not include programs run by the National Security Agency. According to Leahy's staff, the NSA has not disclosed to the committee what, if any, data-mining programs it is conducting.

024/2007)   www.washingtonpost.com

If a paper were able to talk…

Slowly, neither the paper is what it has once been. Formerly, you could hear about digital paper which can be used as a monitor and shows changing content, and now you could literally hear sounds from a paper. However, it is still the sound of the future whether such a mixing up of classical and modern data media signals a new important phase of media convergence, or just the experimental verification of a fading idea.

Where magicians used flashpaper to create a blaze of glory, Labels That Talk (LTT) introduced the magic of Soundpaper at the O'Reilly Emerging Technology Conference in San Diego. Soundpaper is a remarkable information-carrying technology that's had several millennia to evolve - paper and ink! Durable and cheap, easily replicated and handled in many modes, paper has--until now--been limited in one respect, it could not talk. Through advancement in pattern scanning technology using standard cell phone camera sensor chips, printed labels can embody recorded voice and sound. This is a self-contained technology of secure, encrypted printed audio communication. It does not require external databases to retrieve sounds, so no network connectivity or separate computer is required. Scanning can be done without contact and without critical alignment or sequence requirements. The reader/writer is a handheld device less complex than a cell phone. The functionality can in fact be implemented in a cell phone, camera, webcam-enabled PC, etc.

(025/2007)   http://conferences.oreillynet.com

Chips reanimated like a phoenix
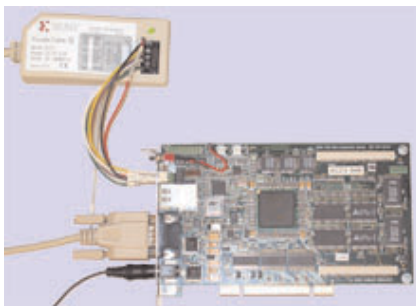
To err is very human but the human made computers make mistakes, too, and quite frequently. For this purpose, and to reduce the recall costs of erroneous chips, the on-the-field reparability of manufactured chips has been already designed into certain microprocessors (Itanium, Crusoe). However, as a result of a new development, the Phoenix system detects errors much better and corrects them much more efficiently in chips which are already sold and installed. It is a pity that this chip "reanimation" has its own costs which still keep manufacturers from designing such phoenix-like capabilities into the chips.

Defective chips can be expensive for computer manufacturers, especially when the hardware is recalled. They can also be a hassle for consumers, as they can cause computers to miscalculate, slow down, and, sometimes, crash. Computer-science professor Josep Torrellas thinks he has found a better way to deal with faulty chips: an efficient repair mechanism that treats hardware more like software, by fixing bugs with downloadable patches. His system is still in development, but he says it could ultimately make chip production faster and cheaper. "We know how to fix software really easily," says Torrellas, a professor at the University of Illinois at Urbana Champaign. "We send patches around. Wouldn't it be nice if you could simply get another patch from the vendor to fix your hardware?" The centerpiece of Torrellas's system is Phoenix: special hardware that resides on the chip and can be programmed to detect defects and implement solutions. The prototype hardware consists of a standard semiconductor device called a field programmable gate array. While such devices are typically a bit slower than chips made for a single application, they have the advantage of being easily reprogrammed--an essential feature of Torrellas's system. In some ways, the system works much like antivirus software, which uses downloaded virus information to identify and eliminate new threats. Similarly, if a defect is discovered on a Phoenix-enabled chip, the manufacturer would automatically transmit the patch to all machines that might be affected. The patch contains a defect signature outlining the specific events that lead to the hardware problem.

(026/2007)   http://www.technologyreview.com

Complexity is killing IT

The increase of complexity in IT seems to be unstoppable due to the fast changing technology and users' needs. In order to prevent from becoming unmanagable, substantial investments are needed in the areas of software development, architecture design and, most importantly, service management. Fortunately, experiences and good practices are readily available to replace reactive firefighting with dominantly proactive fire prevention. Moreover, organisational capability improvement in the areas of software and services has been strengthened with new, up-to-date recommendations in recent years, like Capability Maturity Model Integrated, IT Infrastructure Library version 3. What is left is just to learn how to use them …

IT complexity is getting worse, and no one has a view of the big, picture, according to technology experts at an IBM event. Panellists from across the IT industry at IBM's Navigating Complexity conference in California painted a dire picture of IT systems taking on more and more complexity. Harrick Vin, a vice president at outsourcing giant Tata Consultancy Services, noted that IT departments must deal with many problems, including security compliance, root cause analysis and overlapping functions. "Unfortunately, dealing with these classes of problems is becoming harder and harder over time," said Vin. He cited a top-tier bank with more than 30,000 servers and 200,000 desktops. The situation is compounded by the fact that different people deal with different parts of the overall problem in isolation. "Essentially, what happens is we only have a silo-based understanding of what is going on." Complexity has arisen from evolution, he added. Operating systems, applications and workload types and volumes kept changing. "The requirements that users impose onto these systems also continue to change," Vin said. He added that systems must constantly adapt to changes. "The state of the art really is reactive firefighting," Vin said. Peter Neumann of SRI International's computer science laboratory said old mistakes kept being repeated even if issues like buffer overflow have now been fixed. "The problem is that we keep going through the same problems over and over and over again," Neumann said.

(027/2007)   http://www.techworld.com

Can open source techniques be used to design a car?
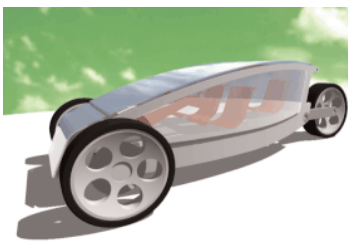
The goal of the OScar (Open Source car) project is to develop a car, which plans and design can be used freely by any manufacturer. The OScar project shows the increasing influence of the open-source idea, which was developed in the field of software development.

Few things seem to excite car designers more than the concept cars they wheel out at international motor shows. Each year gleaming displays of futuristic styling grace the circuit, revealing ever sleeker lines and tantalising technology that promises to do away with the car's deadly addiction to carbon-based fuel. Sadly for environmentalists and futurists alike, these cars rarely go into production. But there's another kind of concept car taking shape on the internet that, one day, just might. Far from the glare of the motor show is a car called the OScar. A concept car with a twist, OScar is being developed by a loose tangle of car designers, engineers and programmers - most working in their spare time - out to challenge the might of the big car makers. OScar is taking shape using a single principle as its guiding light: it's an open source car. The open source idea is borrowed from the software industry that makes its code freely available under licence; the Firefox web browser and the Linux operating system being the most famous examples. In the hard, metallic world of car design this means that instead of protecting OScar designs by use of restrictive patents, as is the norm, the design is effectively open to anyone willing to contribute. And that does mean anyone. Like a much more complicated version of Wikipedia, OScar is being argued over by volunteer car designers, 60% of whom are moonlighting from within the car industry.

(028/2007)   http://technology.guardian.co.uk

GPS is significantly impacted by solar radio burst
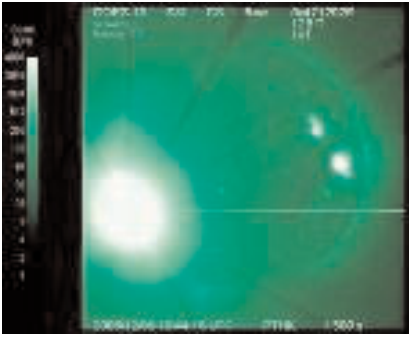
Satelllite positioning systems GPS are very senzitive to the Space-weather. Last december the fault-rate increased in navigation systems, when there were strong solar eruptions. Scientists examine the burst, caused by high energy electrons, and its influence to the landscape telecommunications. Maintain the reliability of global telecommunications needs overall partnership.

During an unprecedented solar eruption last December, researchers at Cornell University confirmed solar radio bursts can have a serious impact on the Global Positioning System (GPS) and other communication technologies using radio waves. The findings were announced today in Washington, D.C., at the first Space Weather Enterprise Forum -- an assembly of academic, government and private sector scientists focused on examining the Earth's ever-increasing vulnerability to space weather impacts. Solar radio bursts begin with a solar flare that injects high-energy electrons into the solar upper atmosphere. Radio waves are produced which then propagate to the Earth and cover a broad frequency range. The radio waves act as noise over these frequencies, including those used by GPS and other navigational systems which can degrade a signal. "Space weather cuts across many different federal agencies and is a particularly fruitful area in which to develop sustained partnerships between government agencies and academia," said Brig. Gen. David. L. Johnson, U.S. Air Force (Ret.), director of the NOAA National Weather Service. "We are, and will continue, to work together to keep the public ahead of nature's storms." "In December, we found the effect on GPS receivers were more profound and wide spread than we expected," said Paul Kintner, Ph.D., professor of electrical and computer engineering at Cornell University. "Now we are concerned more severe consequences will occur during the next solar maximum."

(029/2007)   www.govtech.net

How cell-phone implants work
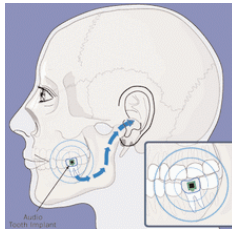
Scinetists in UK are making experiments with implants based on radiotelephony. Miniaturization makes it possible, that phone equipment can be located within the corpus, and the sound could be connected with the inner ears. The Man-machine interface is radically changing, when the machine goes through the biological borders of the human body.

In November 2002, designers at the Royal College of Art in London made headlines after coming up with the world's first cell-phone implant. Their design involved a small chip that housed a receiver and a transducer. The receiver could pick up mobile phone signals, and the transducer could translate them into vibrations. Once implanted in a person's molar, the transducer caused the tooth to vibrate in response to radio signals. The physical structure of the jaw carried the tooth's vibrations to the inner ear, where the user, and no one else, could perceive them as sound. The implant's designers held dramatic demonstrations of this principle using a vibrating wand. Participants confirmed that they could hear crystal clear voices through their teeth. Even though it wasn't actually a working phone, the Royal College of Art project got people thinking about implantable phone technology. Cell phones have gotten a lot smaller since they hit the market, so one that is small enough to fit inside a person seems inevitable. The recent preponderance of tiny, functional Bluetooth earpieces has also made the idea of a discreet, permanent implant seem viable to a lot of people. But even though they're a lot smaller than they used to be, modern cell phones are still far too big to fit inside your body. For this reason, developers had to make numerous modifications to existing cell phone designs to create a complete, working cell-phone implant.

(030/2007)   http://electronics.howstuffworks.com

Core problems and thoughts
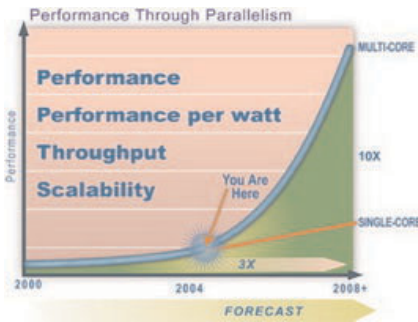
Why have we thought up till now that IT can be divided into two quite distinct parts: hardware and software? That massively parallel architectures should not be considered at the level of processors? Why would the development of parallel software remain exclusively in the area of academic interest? Emergence of multi-core chips is a compulsory new direction in processor design which forces a rethinking of the above questions, and with this, the very fundaments of IT.

With the onset of multi-core processor technology, it has been widely suggested that we are at a turning point in the history and future of computation. Quite simply, we can no longer squeeze more computational capacity out of single-core technology given the current impasse of increasing the speed of individual cores. We have hit the wall, as the saying goes. With the objective of continuing on the quest for a Moore's law type of computational speed-up, the hardware industry has introduced multi-core technology. This will, as recently demonstrated by Intel with their future-oriented 80-core chip, lead from a multi-core to a many-core future. Potentially down the road, assuming a continued trajectory, this could lead to the development of a massive core future whereby one chip could contain thousands of processing cores. With this sea change in the architecture of the hardware, we are witnessing the software community wrestling with a massive shift from serial-based thinking to parallelism. From a cursory reading of recent articles on the topic, the prevailing view affixes a quite blunt and negative reaction to this grandiose trajectory that the hardware community has set in motion. The stakes are quite high and are economically far reaching. The increasing speed up and the promise of more and faster technology, combined with some large portions of institutionalized marketing, propelled a once small industry dedicated to the scientific community into the heights that brought about astonishing change, in such a way that it is typically compared to the industrial revolution.

(031/2007)   www.hpcwire.com

Hypertext of the next century: HTML 5

Many people think that it is time to wipe off the by now decade old dust from the HTML-standard. User-friendly functions, graphical extensions, standardised form processing and the convenience of PC-applications we have got used to, are required in the brave, new world of Web 2.0. It is a big question, however, that Microsoft will insist on its seclusive approach even in this case, or join to those who want the stability of HTML and want to ensure its future on the long run.

If Mozilla, Opera and Apple's Safari browser have their way, the HTML specification could be getting its first major point update in a decade. The three vendors have banded together in a proposal to the W3C for the HTML 5 specification, which includes Web Apps 1.0 and Web Forms 2.0 specifications and that it's also backwards compatible with HTML 4. "HTML5 is about preserving the information people have accumulated over the years," Opera spokesperson Anne van Kesteren told. "By remaining backward and forwards compatible, we hope to ensure that people will be able to interpret HTML for decades if not centuries to come." HTML is the foundation markup language on which the Web was and is built and was originally created by Tim Berners-Lee. The last major upgrade to HTML was in 1997 with the release of version 4.0. The HTML 4.0.1 recommendation was published in 1999. According to Charles McCathieNevile, Chief Standards Officer at Opera, the W3C has effectively abandoned any effort to develop the HTML that has been used on the Web since HTML 4.01. "That specification is still poorly implemented, in part because it is not very clear in a lot of cases how to implement it," McCathieNevile told. "We along with Apple and Mozilla felt that it was important to do something about this." It is unclear whether Microsoft will support the HTML 5 effort with its Internet Explorer browser. If adopted, HTML 5 promises some tangible benefits for both Web users and developers. "HTML 5 will enable better cross-browser compatibility and better support for "Web 2.0"-style Web applications in addition to documents," Brendan Eich, CTO for Mozilla, told. "HTML 5 also allows for better support for multimedia."

(032/2007)   www.internetnews.com

Researchers explore scrapping Internet

Soon after the Internet left the military and research environment it turned out that the protocols are not fully suitable for supporting all user needs in commerce and official communication. The development of a "new concept" of the Internet is supported by the NSF (National Science Foundation) in the framework of the GENI program. This new concept aims to solve these problems by replacing the original principles instead of patching the existing solutions.

Although it has already taken nearly four decades to get this far in building the Internet, some university researchers with the federal government's blessing want to scrap all that and start over. The idea may seem unthinkable, even absurd, but many believe a "clean slate" approach is the only way to truly address security, mobility and other challenges that have cropped up since UCLA professor Leonard Kleinrock helped supervise the first exchange of meaningless test data between two machines on Sept. 2, 1969. The Internet "works well in many situations but was designed for completely different assumptions," said Dipankar Raychaudhuri, a Rutgers University professor overseeing three clean-slate projects. "It's sort of a miracle that it continues to work well today." No longer constrained by slow connections and computer processors and high costs for storage, researchers say the time has come to rethink the Internet's underlying architecture, a move that could mean replacing networking equipment and rewriting software on computers to better channel future traffic over the existing pipes. A new network could run parallel with the current Internet and eventually replace it, or perhaps aspects of the research could go into a major overhaul of the existing architecture. And one day, sensors of all sorts will likely be Internet capable. Any redesign may incorporate mechanisms, known as virtualization, for multiple networks to operate over the same pipes, making further transitions much easier. Also possible are new structures for data packets and a replacement of Cerf's TCP/IP communications protocols.

(033/2007)   www.washingtonpost.com

Building robots builds scientists

In our information society traditional teaching methods and curricula seem more and more out-dated and boring. We ask quite often how could be a topic more interesting for the students. One of the most logical solutions is to give them concrete, creative exercises instead of so much theories. Robotics has always been a fascinating topic in popular culture and sciences - so we should encourage young people to participate in robot developments and competitions.

It's 6 p.m. on a chilly February night in New York City, and the Harlem Knights are racing to meet a deadline. The Knights are a group of about 30 kids participating in an after-school program at the Frederick Douglass Academy high school on 148th Street in Manhattan. Their task is to build a working robot as part of a program called For Inspiration & Recognition of Science & Technology, or FIRST. Founded in 1989 by inventor Dean Kamen, FIRST is trying to tackle what many educators and businesspeople call one of the most pressing educational challenges facing America: inspiring middle and high school students too consumed by pop culture and their digital devices-or scared their jobs will be shifted overseas-to pursue careers in technology and science. "As a math teacher I know that the U.S. is ranked 23rd in the world in math," says Joel Bianchi, one of the FIRST mentors helping the Harlem Knights. "It's shocking. Students can get into math and science here. They're engaged. FIRST could revolutionize the direction of math and science." The Knights are a few weeks away from the New York regional round of the FIRST Robotics Competition, and they have a lot of work to do. This year's competition gives students six weeks to build a robot out of a common set of parts. During the March competition at New York's Jacob K. Javits Convention Center, 53 teams will face off in matches where they score points by using the robots to pick up and hang inflated tubes on a rack. "I have very high expectations," Horan says in the runup to regionals.

(034/2007)   www.businessweek.com

Frustration detector

Affective computing becomes important in informatics. Rosalind Picard, the founder of this specialized area and her fellow researchers are working out a complicated system combining a computer workstation, sensors and other peripherals to detect and solve people's frustration during the learning process. The system was tested and worked with 79 per cent accuracy. However, it won't be extensively applied before its simplification to a standard PC.

Learning online via an interactive website, or using teach-yourself software, is a good way to pick up new knowledge in your own time. What do you do, though, if you don't understand part of the course and get stuck? People are often too proud to press a "help" button and so they just give up. To keep them going, researchers at Microsoft are developing a "frustration detector" that works out when people are having problems and begins a dialogue with them, offering to go back over important points. To sense when someone is about to tear their hair out, Ashish Kapoor at Microsoft in Redmond, Washington, and Winslow Burleson and Rosalind Picard at the Massachusetts Institute of Technology plastered a computer workstation with sensors. They fitted pressure sensors to the back and base of a chair to detect frustrated fidgeting, while a webcam watched the user to spot shaking of the head. The mouse was also fitted with pressure sensors to detect tightening of grip, another sign of frustration. In tests with 24 schoolchildren carrying out a 3D puzzle, the researchers were able to train software to recognise frustration with 79 per cent accuracy and provide tuition feedback when it was needed. If such a system can be made to work using standard PC equipment rather than specially built sensing chairs, the team think their approach could prevent people quitting difficult tasks, without interrupting those who are happily engaged.

(035/2007)   www.newscientisttech.com

Metaverse 2016

The growing popularity of Second Life and other virtual worlds means that we are not too far from the Metaverse described in Neal Stephenson's "Snow Crash". The road to this completely immersive universe where the differences between real and virtual will disappear consists of four different but related scenarios: augmented reality, lifelogging, VR-systems asnd Google Earth-like mirrorworlds.

The Internet in 2016 will be an all-encompassing digital playground where people will be immersed in an always-on flood of digital information, whether wandering through physical spaces or diving into virtual worlds. That was the general picture painted in a draft report obtained by CNET News.com that summarizes the conclusions of several dozen pundits who met at the first Metaverse Roadmap Summit to prognosticate the "pathway to the 3D Web." Within 10 years, the report suggests, people may wear glasses that record everything around them. They will likely see little distinction between their real-world social lives and their interactions in digital, 3D virtual worlds. And they'll increasingly turn to services like an enhanced Google Earth that are able to present data on what's happening anywhere, at any time, as it unfolds. The report offers the first comprehensive look at the predictions of leaders from academia, video game companies, virtual-world publishers, geospatial engineering departments and the media who gathered for two days at SRI International in Palo Alto, Calif. "What happens," the draft report's introduction asks, "when video games meet Web 2.0? When virtual worlds meet geospatial maps of the planet? When simulations get real, and life and business go virtual? When you use a virtual Earth to navigate the physical Earth, and your avatar becomes your online agent? What happens is the metaverse."

(036/2007)   http://news.com.com

Mobile Web searches using pictures

A new search service developed by Microsoft enables the user to search for relevant content on the internet by using pictures instead of keywords. The only minor nuance is that the service requires Internet Explorer.

Searching for information on your cell phone by typing keywords can be cumbersome. But now researchers at Microsoft have developed a software prototype called Lincoln that they hope will make Web searches easier. According to Larry Zitnick, a Microsoft researcher who works on the project, phones equipped with the software could, for example, access online movie reviews by snapping pictures of movie posters or DVD covers and get product information from pictures of advertisements in magazines or on buses. "The main thing we want to do is connect real-world objects with the Web using pictures," says Zitnick. "Lincoln is a way of finding information on the Web using images instead of keywords." The software works by matching pictures taken on phones with pretagged pictures in a database. It provides the best results when the pictures are of two-dimensional objects, such as magazine ads or DVD covers, Zitnick says. Currently, the database contains pictures of DVD covers that link to movie reviews uploaded by Microsoft researchers. However, anyone can contribute his or her pictures and links to the database, and Zitnick hopes that people will fill it with pictures and links to anything from information about graffiti art to scavenger-hunt clues. Right now, Lincoln can only be downloaded for free using Internet Explorer 6 and 7, and it can only run on smart phones equipped with Windows Mobile 5.0 and PocketPCs.

(037/2007)   www.technologyreview.com

Bionic software

Tim O'Really, the writer of the article highlights the importance of a new trend in information management. The so-called "bionic softwares" will optimally combine human and machine activities. His examples (Amazon's Mechanical Turk, Flickr, Bpxxet) demonstrate that artificial intelligence (AI) might be replaced by intelligence amplification (IA). In the latter case the passive human user would become an important part of the application.

Boxxet founder You Mon Tsang recently introduced a new meme into our vocabulary: "bionic software." As You Mon defines it, "Bionics" is the study of living systems with the intention of applying their principles to the design of engineering systems." But recently he used a folksier definition, referencing the seventies TV show The Six Million Dollar Man, which featured Lee Majors as an injured astronaut rebuilt with technology that made him faster, stronger, and more capable. Using this image, a bionic system is one that combines the biological and mechanical systems to create an enhanced system that is more powerful than either alone. It seems that what we're seeing now is just the beginning of a really significant trend, as bionic systems become more widespread and variations on the technique more sophisticated. You Mon's new startup, Boxxet, effectively lets people create a digg-like site for any topic they want to aggregate attention around, with users moderating up content that is initially acquired by a web spider. Whereas a Google Alert, say, lets you harness the power of Google to track any topic that you want to follow, Boxxet lets you create a public, shared space in which to follow a topic you care about, and uses the opinions of your fellow readers to improve the automated results.

(038/2007)   http://radar.oreilly.com

Wiki spreads through Koala

The wiki-based approach captivates newer and newer areas of knowledge. A new development allows for the codification of our procedural knowledge acquired through web-usage for self- and community purposes. Of course, there are questions around. Knowledge of this kind can be extremely useful for somebody, and, for someone else, useable only in certain rare circumstances if at all. It is hoped, however, that the not yet resolved issues like anonimisation of personal data, protection against malicious parties, can be managed through further development and community-controlled regulation.

IBM's Almaden Research Lab is developing a Wikipedia-like tool for how-to knowledge that would help people automate repetitive tasks performed on the Web, such as filling out forms or paying bills. Tessa Lau, a developer demonstrated the technology called Koala at Etech, a four-day conference on emerging technology. "We looked at the boring stuff we have to do on the Web, like checking the Comcast bill every month, and then paying it," she said. Koala "allows you to script really mundane tasks (like that) on the Web and share your script with others. It lets you share knowledge about how to do stuff in the world." Here's how it works: the Koala plug-in shows up in the left-side pane of the Firefox browser. Once the user hits record, the application will create a simple programming script of tasks performed online that appear in that pane. For example, if a person were shopping for a new home in San Francisco, he or she might first go to the Multiple Listing Service Web site for the Bay Area. Koala would record that Web site as a first step in the how-to process. Next, the shopper might input criteria for the home in MLS fields, and Koala would note each data field in the overall script. If an initial search for homes based on certain criteria (e.g., a $1 million, two-bedroom home) didn't yield enough matches, the user might change criteria in the field of the Koala script. That way, Koala would automatically regenerate the search, without the user having to do it. Once the process is finished, the user would save the script and upload it to the Koala wiki so it could be shared with others. Lau said that so far, Koala has more than 70,000 scripts. The result, she said: "We can wiki-ize this process of capturing knowledge."

(039/2007)   http://news.zdnet.com

The new face of emoticons

Whereas we like to use simple emoticons, we think that these little signs are schematic and boring. Sometimes we automatically put them to the end of sentences. The communication would be more colourful and personnal if our partner saw corresponding pictures of us (happiness, sadness, etc.) instead of the well-known symbols. An American team is developing a system called Face Alive Icons that will do these changes.

Computer scientists at the University of Pittsburgh have developed a way to make e-mails, instant messaging, and texts just a bit more personalized. Their software will allow people to use images of their own faces instead of the more traditional emoticons to communicate their mood. By automatically warping their facial features, people can use a photo to depict any one of a range of different animated emotional expressions, such as happy, sad, angry, or surprised. All that is needed is a single photo of the person, preferably with a neutral expression, says Xin Li, who developed the system, called Face Alive Icons. "The user can upload the image from their camera phone," he says. Then, by keying in familiar text symbols, such as ":)" for a smile, the user automatically contorts the face to reflect his or her desired expression. This is not the first time that someone has tried to use photos in this way, says Li. "But the traditional approach is to just send the image itself," he says. "The problem is, the size will be too big, particularly for low-bandwidth applications like PDAs and cell phones." Li's solution is not to send the picture each time it is used, but to store a profile of the face on the recipient device. This profile consists of a decomposition of the original photo. Every time the user sends an emoticon, the face is reassembled on the recipient's device in such a way as to show the appropriate expression.

(040/2007)   www.technologyreview.com

Odysseus and programming languages

In the future, an ithy Odysseus could loose its way in the sea of programming languages. There is no point to speak about the "universal" language of IT. Even Java cannot play this role, although at the onset, it was heralded as the "genetic code" of IT. There will always be different and new modes of usage, new options in man-machine communication which require new syntactical constructs, and assume different semantic relationships. Languages die naturally out when they are not required/used anymore, but new ones may be born when a strong, not yet covered demand so requires.

A group of software gurus gathered at TheServerSide Java Symposium in Las Vegas to discuss the future of programming, saying we should expect to see more dynamic languages and possibly a new major language in the next five years. During a panel discussion titled "2010: A Developer's Odyssey" at the symposium, Eugene Ciurana, an enterprise architect at Walmart.com, said in the next few years he expects to see "more scripting languages added to the JVM [Java Virtual Machine], especially with Java6, and to make it easier and make development a lot faster." Hani Suleiman, chief technology officer at Formicary, said he does not necessarily agree with Ciurana about the scripting languages, "but there will be more componentization in terms of the JVM." "I think we're five years from the next big language-to be where Java is today," said Gil Tene, CTO of Azul Systems, which makes a hardware solution for accelerating Java systems. Suleiman said he thinks domain-specific languages are a great idea, "but in practice, where is it?" Added Adrian Colyer, CTO at Interface21, "In languages I hope we get to something that has a message-based paradigm." At that point, Cameron Purdy, president of Tangosol, which has been acquired by Oracle, asked whether XML would be dead in the next 10 years. "It's underlying so many things at this point, it can't simply go away," Suleiman said. Meanwhile, Ciurana said he expects to see more convergence of Java with other technologies. "We'll see more cooperation with other environments," he said.

(041/2007)   www.eweek.com

Firefox 3.0

Firefox 3.0 will implement a new feature called DOM Storage. This feature enables the web applications to operate on the user computer while they temporary loose internet access. This solution may make the already popular web office applications even more attractive. No surprise that the Web Applications 1.0 specification, which is the basis behind DOM Storage was developed by a Google employee, Ian Hickson.

Mozilla unveiled the third alpha of Gran Paradiso, the code name for Firefox 3.0. If development goes according to plan, this will be the first version of Firefox-or of any browser, for that matter-to have the three key components needed to support offline Web applications: DOM Storage; an offline execution model; and synchronization. That critical foundation will let free or low-cost Web suites compete with Microsoft software and possibly break the company's decades-long domination in office productivity apps. The first of the three support components for offline applications, DOM Storage, relies on the Document Object Model, a programming-interface spec developed by the W3C that allows programs and scripts running in a Web application to update the content, structure, and style of HTML and XML documents. DOM Storage lets Web apps save and retrieve efficiently data that will persist across multiple browser sessions. "Our ultimate goal is to make it so that Web applications are not discernable from any other applications running on your desktop," Mike Schroepfer, vice president of engineering for Mozilla, explained during a recent interview. With these browser capabilities based on open standards, any developer willing to take on the challenge can put together apps and have them run in Firefox 3.0 (or a specialized derivative), not just online but offline as well-a key to acceptance of Web-based applications.

(042/2007)   www.pcmag.com

Innovation factory

Collective knowlledge has been appeared at the "Big Blue rose" too. Innovations are made in social network type web 2.0.based on Lotus. New generation prefers these social networks than Emailes. Participation of jung users in long term development are needed mainly.

IBM Labs launched a collaboration initiative designed to help companies speed product development by harnessing social networking. Innovation Factory, which Big Blue is employing in its labs, uses social-networking technologies to help companies quickly conceive and test new products and services, promising to reduce a product's launch process from years to only days. Alistair Rennie, vice president of development and technical support for Lotus software, framed the changes as vital to keeping up with the next-generation workforce. People coming out of school expect to come into the workplace and use modern collaboration tools," Rennie said. "E-mail is for our generation, (instant messaging) is for college students, and high-school students will come in already used to Web 2.0-style social networking." Rennie's sentiment was reflected in many of the Lotus products, some of which had been debuted at Lotusphere in January. "Collaborative research that is very applied and very user-facing is in need of being open and close to customers and end users," Irene Greif, IBM fellow and director of the collaborative user experience at IBM Research, said at a press conference. "Because usually, widely deployed things are always behind what we are seeing in the labs."

(043/2007)   http://news.zdnet.com

Numbers show big decline of women in IT
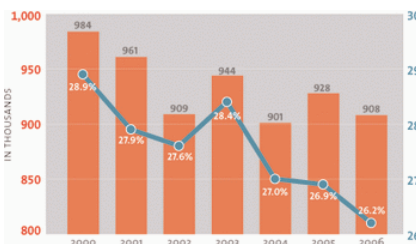
There can be several reason that in US IT sector thenumber of employed women as informatic expert has been declined. The dot-com crisis caused staff releases, and women might be dropped out in a higher proportion. The tasks made previously by women has been passed into foreign cheaper outsourcng partners. Technologists would need continous self-learning due to rapidly changing technologies. A women has less chances to do this self-learning even is US.

The proportion of employed women business technologists has fallen through the decade, a CIO Insight analysis of government data shows. It's true: Fewer women work in IT today than they did in 2000. Not only that: Women make up a smaller proportion of employed IT professionals in the United States, according to analysis of government labor data by CIO Insight. In 2000, 984,000 women worked in eight IT occupation categories tracked by the Department of Labor's Bureau of Labor Statistics: managers, computer scientists/systems analysts, programmers, software engineers, support specialists, database administrators, network/computer systems administrators, and network systems/data communications analysts. That year, women made up 28.9 percent of the nearly 3.41 million employed IT workers. Fast-forward to 2006, a year in which overall IT employment hit a record of nearly 3.47 million. In 2006, 76,000 fewer women work in IT than in 2000. The 908,000 women working in the profession last year represented 26.2 percent of employed IT pros. That's a 7.7 percent drop from 2000. The decline in women IT pros wasn't a straight-line drop. In 2003, when the economy rebounded from the dot-com bust, women employment in IT rose by 35,000 from 2002, but then dropped off by 43,000 in 2004. But for most of the past half-dozen years, fewer women seem interested in making IT their career.

(044/2007)   www.cioinsight.com

Second Life ploy for Paris garden

The reconstruction of Les Halles, one of the most popular district in Paris downtown close to Centre Georges Pompidou is a new example of the "transgression" between real and virtual worlds. The best project made in Second Life will be displayed in the real town hall.

A Paris residents' association is using the virtual world of Second Life to get the town hall to press on with plans to redevelop a central area of the city. Residents have until 1 June to suggest ideas for a new garden for Les Halles in the centre of the French capital. Mayor Bertrand Delanoe revealed plans in 2004 to revamp the area. Les Halles was the central wholesale market for the Paris region until the 1970s when it was razed to the ground to make way for a shopping centre. It is also a major underground hub and redevelopment plans for the area include renovating the garden. But local residents' association Accomplir (Accomplish) says residents have not been consulted over the gardens which they say are at the heart of local life. The association is urging locals to come up with their own ideas for the area's gardens and post them in the online world of Second Life, where people create virtual doubles of themselves called avatars. Accomplir will shortlist five of the best projects, which will then be displayed on an island in Second Life. The winner will be announced at the end of June and receive a reward of 275,000 linden dollars (785 euros, L530), the currency used in Second Life. Accomplir will then go to the town hall with the winning idea, aiming to put pressure on officials to speed up the redevelopment process.

(045/2007)   http://news.bbc.co.uk

Teenager moves video icons just by imagination

New element of the man-machine interface is the brait-machine interface. There could be a normal situation, when a teenager plays a videogame. If an epileptic boy plays without arms, and controls the symbols only by brain waves: this is really a big result. The head of the boy is full of senzors, whics are sensing and transmitting the orders from his brain.

Now, a St. Louis-area teenage boy and a computer game have gone hands-off, thanks to a unique experiment conducted by a team of neurosurgeons, neurologists, and engineers at Washington University in St. Louis. The boy, a 14-year-old who suffers from epilepsy, is the first teenager to play a two-dimensional video game, Space Invaders, using only the signals from his brain to make movements. Getting subjects to move objects using only their brains has implications toward someday building biomedical devices that can control artificial limbs, for instance, enabling the disabled to move a prosthetic arm or leg by thinking about it. The teenager had a grid atop his brain to record brain surface signals, a brain-machine interface technique that uses electrocorticographic (ECoG) activity - data taken invasively right from the brain surface. It is an alternative to a frequently used technique to study humans called electroencephalographic activity (EEG) - data taken non-invasively by electrodes outside the brain on the scalp. Engineers programmed the Atari software to interface with the brain-machine interface system. Eric C. Leuthardt, M.D., an assistant professor of neurological surgery at the School of Medicine, and Daniel Moran, Ph.D., assistant professor of biomedical engineering, performed their research on the boy who had the grids implanted so that neurologists and neurosurgeons can find the area in the brain serving as the focus for an epileptic seizure, with hopes of removing it to avoid future seizures. To do this, the boy and his doctors, Dr Mathew Smyth and Dr John Zempel, had to wait for a seizure.

(046/2007)   http://news-info.wustl.edu

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Robot Ethics Charter
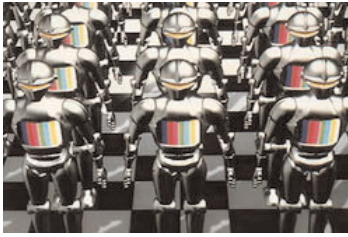
Most of the future forecasts say that robotics will be the next revolution in infocommunication technologies. Its importance can be compared to that of the PCs in the eighties. Corresponding to the forecasts, in the scientific (and less scientific) on- and offline press we can read more and more article about robot rights. Soth Korea goes even further: they are writing a Robot Ethics Charter.

By the end of this century, mankind will live peacefully with the first alien intelligence that it has ever encountered: robots. These robots will not be involved in intergalactic rebellions or dimension hopping like R2-D2 or the Terminator, heroic tin cans we've all come to love. Instead, think more along the lines of a hybrid between "superhuman law-enforcer" RoboCop and "I just want a hug" Bicentennial Man. To cut to the metallic, circuit-filled core of the matter, robots will be citizens. South Korea, a technological powerhouse of the 21st century, has started to construct a visionary Robot Ethics Charter that will be released later this year. The charter will be an ethical GPS-system for the roles and functions of robots in our society. The South Korean government is pouring millions of dollars into the increasingly popular field of robotics research. Government reports show that robots will develop strong intelligence in the near future. The United Kingdom Office of Science and Investigation Horizon Scanning Centre, a group with more parts to its name than scraps of metal on Haley Joel Osment in the film Artificial Intelligence, aims to spot the implications of emerging technology. The report "Utopian dream or rise of the machines?" predicts that robots could demand human rights in 50 years. The study believes that our society will undergo a monumental shift if robots are able to reproduce, improve and develop artificial intelligence on their own.

(047/2007)   www.dailyillini.com

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Biggest threat to Internet could
be a massive virtual blackout
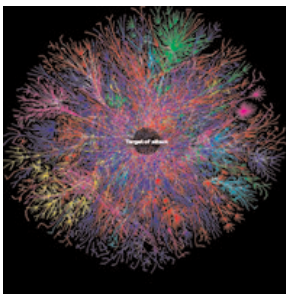
More and more often experience the root domain name servers, which belong to the basic infrastructure of the Internet DDOS (distributed denial of service) attacks. The reasons a motivations are still unclear, however the threat of such attacks is becoming more imminent as the size of so-called "routing tables" increases to accommodate the next-generation Internet known as IPv6.

The most serious threat to the Internet infrastructure in the 21st century is a massive virtual blackout known as a "distributed denial of service attack," an outspoken board member for the group that administers Internet addresses said Thursday at a Hudson Institute briefing. This type of high-tech ambush, which occurs when multiple compromised systems flood the bandwidth or resources of a targeted server to make Web pages unavailable, could be devastating for global online communication, said Susan Crawford of the Internet Corporation for Names and Numbers. The most significant attack in recent years came on Feb. 6, when six of 13 root-zone servers were slammed by an army of "zombie computers," which were compromised by hackers, the Cardozo Law School professor said at the think tank event. Prevention of DDOS attacks will eventually mean "having fewer zombies out there," she said. "People are turning millions of PCs into weapons... and we don't have a lot of data about what is happening. Researchers are often operating in the dark," Crawford said. She added that improvements in routing security, which is "how packets go from one place to another," are also needed. A hacker could inject phony paths into a routing algorithm in order to intercept packets or trigger a DDOS attack. The susceptibility for such an assault grows as the size of so-called "routing tables" increases to accommodate the next-generation Internet known as IPv6, she said.

(048/2007)   www.govexec.com
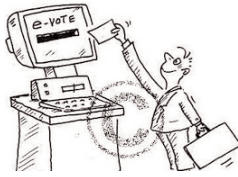
Open-source project aims to erase e-voting fog

Joseph Kiniry (University College Dublin) develops a new open-source e-voting system. The main goal is to create a secure, easy-to-use reference application in the field of e-voting solutions.

Joseph Kiniry, a computer science lecturer at University College Dublin, seems an unlikely candidate to work on open-source voting software. He believes e-voting is risky and current e-voting software is substandard. Nonetheless, e-voting is here to stay, and governments around the world have sunk big money into systems that have been roundly assailed by computer security experts as insecure. "I think governments feel like if they're not being modern, there's something wrong with them," said Kiniry, who describes himself as half mathematician and half software engineer. "They think that computers are somehow infallible, forgetting that people are the ones who create and use computers." That's why Kiniry and a team of researchers have built an e-voting software system that they hope will provide a foundation for future secure systems. The code is open source, a decision made to ensure the platform can be widely scrutinized by peers, and should be released in July. The back-end software, written in Java, will run on Linux or Apple's OS X. The user interface, viewed through a Web browser, is "Google simple," Kiniry said. Here's how it works: Voters register to remotely vote at a government office and pick a PIN code. A unique ballot is mailed to the voter that can only be used by that voter. On election day, users go to the Web site, type in a voter ID code and their PIN, and vote. The ballot has a number next to each candidate that is different for every voter, a type of pre-encryption. When a vote is cast, that unique number is transmitted to the server and decoded into the correct candidate.

(049/2007)   www.infoworld.com

U.S.-based servers host majority of malicious code

In spite of the generally accepted presumption most of the malicious codes are not residing on servers operated in less developed countries but in the US. In fact this finding should not be a big surprise, since a higher internet traffic brings a higher chance to be downloaded. So it is reasonable to put malicious code on servers with high traffic than on servers with relatively low usage.

Forget China, Russia or eastern European countries. When it comes to malicious code, U.S.-based servers host an overwhelming majority of it, according to security vendor Finjan Inc. That conclusion is based on an analysis of more than 10 million URLs collected from live end-user traffic in the U.K using Finjan's content inspection engines, said Yuval Ben-Itzhak, chief technology officer Finjan. Unlike some other studies, which look at domain names to make assumptions on where a server is based, Finjan's research tracked each IP address to its exact geographical location, Ben-Itzhak said. "Most people think of Russia and China when you talk about malicious code," he said. "However, it appears this fact is no longer valid. What we found was that about 80% of the malicious code comes from servers hosted in the U.S." The other top countries hosting malicious code are the U.K., with 10%, and Canada, Germany and Italy, Ben-Itzhak said. "The results of this study shatter the myth that malicious code is primarily being hosted in countries where e-crime laws are less developed," he said. The Finjan report also notes a continued trend toward the appearance of malicious code on legitimate sites frequented by business users and consumers. Unlike in the past, when most malicious code was found on questionable sites such as those hosting porn, users are now just as likely to get infected when visiting finance and travel sites, for instance.

(050/2007)   http://computerworld.com

Waves in nanowires

Searching for new direction in chip design seems to be an eternal subject of research. One of these directions is the size reduction of chip interconnects where the practical objective is now to achieve nanoscale. However, in order to implement data transfer on this level, new principles and approaches are needed.

Recently scientists have been working on a new technique for transmitting optical signals through minuscule nanoscale structures. In the 1980s researchers experimentally confirmed that directing light waves at the interface between a metal and a dielectric (a nonconductive material such as air or glass) can, under the right circumstances, induce a resonant interaction between the waves and the mobile electrons at the surface of the metal. (In a conductive metal, the electrons are not strongly attached to individual atoms or molecules.) In other words, the oscillations of electrons at the surface match those of the electromagnetic field outside the metal. The result is the generation of surface plasmons--density waves of electrons that propagate along the interface like the ripples that spread across the surface of a pond after you throw a stone into the water. Over the past decade investigators have found that by creatively designing the metal-dielectric interface they can generate surface plasmons with the same frequency as the outside electromagnetic waves but with a much shorter wavelength. This phenomenon could allow the plasmons to travel along nanoscale wires called interconnects, carrying information from one part of a microprocessor to another. Plasmonic interconnects would be a great boon for chip designers, who have been able to develop ever smaller and faster transistors but have had a harder time building minute electronic circuits that can move data quickly across the chip.

(51/2007)   http://www.sciam.com

Controlled quantum states
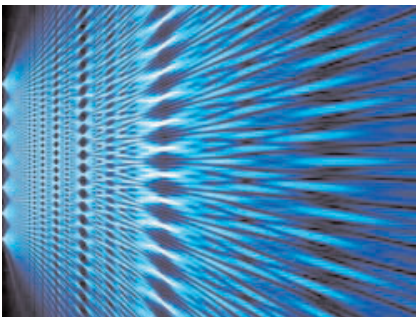
 The quantum computer may herald achieving maturity of quantum physics. Today, we can only provide explanations for misterious phenomena, we are able only to understand quantum effects, and we can develop only simple devices (e.g. electron microscope) with the help of it. However, we might be able to create large and complex quantum systems or quantum „worlds" in the future where we can compute, analyse and forecast the states of such systems. We are just at the very beginning of this road with many potential dead ends but we shall also be surprised where we get actually if we get somewhere on this road.

Scientists in Japan have made a key step toward the development of a quantum computer -- a still largely hypothetical device that would be dramatically more powerful than today's supercomputers -- according to Japanese electronics giant NEC Corp. In what they claimed was a world first, researchers at NEC and the state-funded Institute of Physical and Chemical Research successfully demonstrated a circuit that can control the state of a pair of elemental particles and how strongly they interact with one another. Being able to control these particles -- called "qubits" -- in this fashion may help scientists to build a quantum computer, though actually developing one still lays many years in the future, research team member Yasunobu Nakamura said. "These results do not change the fact that there are still many difficulties to be resolved." The team has already made several major steps toward developing a quantum computer, including getting elementary particles to interact with one another and controlling their ability to seemingly be in many places at the same time, a concept known as "superposition" in quantum physics. Earlier this year, Canadian company D-Wave Systems Inc. demonstrated a machine it claims uses quantum mechanics to solve certain types of problems. However, independent quantum physics researchers have said they are dubious of some of the company's claims as its findings have yet to be submitted for peer review -- a standard step for gaining acceptance in scientific circles. D-Wave itself acknowledged that even it isn't entirely sure the machine -- which the company claims to be the "world's first commercial quantum computer" -- is performing true quantum calculations.

(52/2007)   http://www.chinapost.com

Nanoscale LEDs
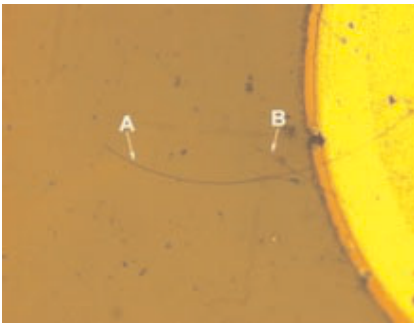
Who records pictures of the real world still chemically on light-sensitive materials? A similar technique, the photolitography, however, is extensively used in chip manufacturing to create complex patterns e.g. in silicon. A potential reuse of this approach might have been found on even lower scales - in the nano world. The principle is the same but the result is somehow different: the information is not just recorded onto the material passively but, using electromagnetic field, light emitting nanowires are carved into it, and they can dynamically show any kind of information.

Researchers at the National Institute of Standards and Technology, in collaboration with scientists from the University of Maryland and Howard University, have developed a technique to create tiny, highly efficient light-emitting diodes (LEDs) from nanowires. As described in a recent paper, the fabricated LEDs emit ultraviolet light—a key wavelength range required for many light-based nanotechnologies, including data storage—and the assembly technique is well-suited for scaling to commercial production. he current nanowire LEDs are created using tedious nanowire manipulation methods and one-by-one fabrication techniques, which makes them unsuitable for commercial realization. The NIST team used batch fabrication techniques, such as photolithography (printing a pattern into a material using light, similar to photography), wet etching and metal deposition. They aligned the nanowires using an electric field, eliminating the delicate and time-consuming task of placing each nanowire separately. A key feature of the new nanowire LEDs is that they are made from a single compound, gallium nitride (GaN). Each LED consists of an "n-type" GaN nanowire placed on the surface of a "p-type" GaN thin film. "N-type" and "p-type" refer to semiconductors with, respectively, an abundance of electrons and an abundance of positively charged electron vacancies called holes. P-n junctions made from the same basic compound yield more efficient LEDs than those made with different compounds, and so can operate at lower power.

(53/2007)   http://physorg.com

Ambient intelligence, intelligent buildings
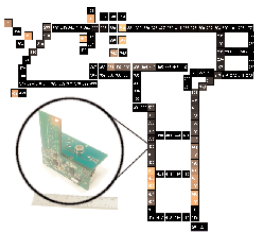
Intelligent buildings increasing productivity, efficiency and security are unimaginable without sensor networks. These networks should be effective, scalable, relatively low-priced, easily installable and simply maintenable. Mitsubishi's new hybrid sensor networks applying a particular approach perfectly suit these requirements.

Sensor networks have the potential to allow the development of truly intelligent buildings that improve productivity, efficiency, safety, and security. To be practical, such networks must be efficient, scalable to very large spaces, and economical to manufacture, install and maintain. One answer is networks of passive infrared motion detectors. Sensors could be manufactured onto building infrastructure elements that Mitsubishi Electric manufactures, such as light fixtures. "We are developing technology that enables cost-effective networks to recognize, predict, and index human activity in building-scale environments", project coordinator Christopher R. Wren wrote. A key component of the cost for such systems is the installation, configuration, and operating costs. Sensor networks present complex perceptual challenges. "It is imperative that the systems we develop can be installed by electricians, ventilation engineers, and system integrators. In "Functional Calibration for Pan-Tilt-Zoom Cameras in Hybrid Sensor Networks" we present a completely self-calibrating system that drives a pan-tilt-zoom camera from a simple sensor network." This reduces operational cost by eliminating the need for a human operator to be dedicated to the camera. It reduces installation cost by eliminating the need for a skilled technician to perform a complex calibration. It also improves system performance by allowing the camera to autonomously adapt to changes in the way the building is configured or used.

(54/2007)   http://www.merl.com

Nationwide Internet2 network in the US

Real time coperation among research centres and universities need large network capacities. IP based technology is able to build up fast these connections in US. This news shows also the concept of network capacity duplication each years.

Internet2 announced that the first East to West Coast span on its new nationwide 100 Gigabit per second (Gbps) network has been completed and is providing production IP and circuit services. This deployment marks another major milestone in bringing leading-edge networking resources to the research and education community in the United States. Since beginning its network build out plans in fall 2006, Internet2 has worked with Level 3 Communications, the Global Research Network Operations Center (GRNOC) at Indiana University, and the regional network connectors to rapidly deploy the enhanced optical and packet network platform. In April 2007, Internet2 announced that the first major phase of the deployment was complete which included nodes in the Northeast and Midwest regions. With today's announcement, Internet2 and Level 3 have now completed deployment of important nodes across the northern span of the network including those in Washington DC, Chicago, IL, Kansas City, MO, Salt Lake City, UT, and Seattle, WA. Additionally, network rings have been completed from Washington DC to Atlanta as well as from Kansas City to Atlanta. "The announcement marks another key milestone in bringing more advanced network technology to the research and education community," said Steve Cotter, Internet2 director of network services. "Through collaboration with Level 3, the GRNOC, and the regional network connectors, we have been able to continue to deliver on our aggressive roll out schedule and make the transition to this new backbone seamless for our members."

(55/2007)   https://mail.internet2.edu

Cognitive radio

Cognitive radio helps to provide more services, in the existing and overloaded frequency range. Technology of distributed frequency has been already known for a while. The demand for mobility has leaded to develop completely new systems. Frequency Management could be changed.

Cognitive radio promises to make future wireless communication devices "smarter." A device with cognitive radio capability could survey the electromagnetic spectrum, find the channels in use and those that are free, share this knowledge with nearby devices, and then select the best channel to use based on data throughput, signal strength, government regulations, and other factors. For his contributions to this emerging field, Carlos Cordeiro, a 31-year-old Brazilian engineer was chosen in February by the U.S. National Engineers Week Foundation as one of its 15 New Faces of Engineering for 2007. The distinction recognizes young engineers whose work has an impact on society. Cordeiro's tasks at Philips Research, the R&D arm of Royal Philips Electronics of Eindhoven, The Netherlands, include seeking commercial applications for cognitive radio and establishing Philips's relationships with academia and industry. He's also a participant in the IEEE 802.22 Working Group developing standards for wireless broadband services operating at frequencies originally allocated for TV broadcast. The new services had to be designed to not interfere with the TV channels, and that's why cognitive radios are necessary. They'll monitor the spectrum and use only idle channels. To demonstrate such a control scheme, Cordeiro's team put together a prototype consisting of one computer streaming video to another. The researchers then activated equipment that simulates a TV station's transmitter, generating a signal at the same frequency as computer–computer video. Ordinarily, the interference would disturb the streaming video. "But because the computers are equipped with cognitive radios," Cordeiro says, "they rapidly detect the presence of the TV signal and seamlessly jump to another channel, without interrupting the video transmission."

(56/2007)   http://www.theinstitute.iee.org

Startup lets people create TV networks

As a consequence of convergence, Nokia has also started with mediainformatics. This shows that this multinational firm is proactive. Nokia has puchased the firm Kyte, which is a image and video provider, and it tries tointegrate mobile services and community networks and content made by users.

Kyte, a photo- and video-sharing startup received funding from the private equity and venture capital arm of Nokia, the world's No. 1 cell phone maker. Nokia Growth Partners invested in Kyte to help with the distribution of Kyte's video service, kyte.tv, which allows Internet users to create their own TV channel and broadcast it on Web sites, blogs, social networks, and cell phones. People can share Kyte channels with others or have other people take part in their shows by adding their own content, voting, and chatting live with other viewers. Kyte is funded by top venture capital firms, including Draper Fisher Jurvetson, Draper Richards, and Atomico, whose principal visionary, Niklas Zennstrom, co-founded trendy startups like Skype and Joost. The vision is to "bring together social networking, user-generated content, and mobile services," said Rob Trice of Nokia Growth Partners, in a statement. YouTube, which was purchased by Google in November, already brings those pieces together through a popular video-sharing service that receives over 100 million video views and more than 65,000 new videos uploads daily. Earlier this year, Nokia struck a partnership with YouTube that lets Nokia customers view YouTube content on their cell phones via broadband links. Nokia also developed new application software called Nokia Video Center for finding, viewing, and storing video on Nokia N-series multimedia phones. Video-sharing and social-networking services have proven to be a huge success among Internet users, and the latest trend is delivering such content on cell phones.

(57/2007)   http://www.informationweek.com

Virtual reality helps MS patients walk better
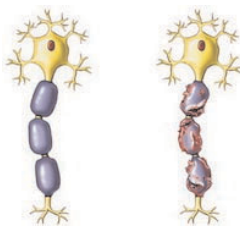
The research application of the Technion-Israel Institute of Technology is a promising example of the next generation practical augmented reality applications. It also combines the virtual vision of the nearby environment with auditory feedback, which altogether significantly improves the movements of patients suffering from Multiple Sclerosis.

Technion-Israel Institute of Technology scientists have created a virtual reality device that combines auditory and visual feedback to improve walking speed and stride length in patients suffering from Multiple Sclerosis (MS) and Parkinson's disease. According to lead researcher Professor Yoram Baram of the Faculty of Computer Science, the device combines a wearable, cell phone-sized audio component – which measures body movement, processes it and sends feedback to the user through earphones – with a visual feedback apparatus he developed for Parkinson's patients 10 years ago. The visual component presents users with a virtual, tiled-floor image displayed on one eye via a tiny piece that clips onto glasses worn by the user. This allows the user to distinguish between the virtual floor and real obstacles, making it possible to navigate even rough terrain or stairs. Baram and Prof. Ariel Miller of the Faculty of Medicine and the Multiple Sclerosis and Brain Research Center at the Carmel Medical Center in Haifa examined the effects of the patented device on the gait quality of MS patients. The researchers found that auditory feedback significantly improved the gait of both MS and Parkinson's patients (though the improvement was less pronounced in Parkinson's patients). With regard to walking speed, patients showed an average improvement of 12.84% while wearing the device. There were also positive residual short-term therapeutic effects (18.75% improvement) after use. Average improvement in stride was 8.30% while wearing the device and 9.93% residually. "Healthy people have other tools, such as sensory feedback from muscles nerves, which report on muscle control, telling them whether or not they are using their muscles correctly," says Baram. "This feedback is damaged in Parkinson and MS patients and the elderly, but auditory feedback can be used to help them walk at a fixed pace."

(58/2007)   http://www.newswise.com

Practical holographic video

The holographic video system, which is built from everyday commercial products at MIT shows that in few years 3D monitors will replace a great deal of our recent two dimensional displays.

The tyranny of two-dimensional computer and TV displays could soon be over. A team of MIT researchers has proposed a way to make a holographic video system that works with computer hardware for consumers, such as PCs with graphics cards and gaming consoles. The display, the researchers say, will be small enough to add to an entertainment center, provide resolution as good as a standard analog television, and cost only a couple hundred dollars. A holographic video display could provide another way to view medical images such as MRIs and CT scans, as well as sets of complex, multidimensional data and designs for furniture and cars, says V. Michael Bove Jr., director of the consumer electronics program, CELab, at MIT. And the system would be a natural fit for displaying video games and virtual worlds. Most games now have sophisticated three-dimensional models sitting deep within their software, "but you don't see them because [the images are] rendered as a two-dimensional picture," Bove says. The new system, called Mark III, is the third generation (following Mark I and Mark II) of MIT-designed holographic video displays that date back to the late 1980s. Mark III is based on the earlier systems but has three major differences. First, explains Bove, the new system processes three-dimensional images on a standard graphics processor rather than on specialized hardware. Second, the team has redesigned a gadget called an acousto-optic modulator, commonly found in telecommunications systems, to direct light from lasers to form the hologram. Third, the researchers have eliminated some of the clunky optical components that made the Marks I and II as large as a dining-room table.

(59/2007)   http://www.technologyreview.com

Better Touch screens for mobile phones

The man-machine interface is is also new in the personal communications tools. The touch-screen is also used in mobiles. Some reaction from the machine is needed, wether it has got the signal. It is made with different kind of vibrations.

For all its designer appeal, Apple's forthcoming iPhone is lacking. While the touch-screen interface looks beautiful, it will most likely suffer from the same drawback that plagues many other mobile gadgets with touch screens: no tactile feedback. A button on a flat, slick display simply doesn't feel like a button, and as a result, people are prone to making errors with them. But within the next few years, those faux touch-screen buttons could feel more like real buttons, thanks to research at a handful of universities and companies that are investigating touch-based feedback from gadgets. By feeling a buzz when they press a button correctly, people become more accurate typists on touch-screen keyboards, says Stephen Brewster, professor of computing science at the University of Glasgow, in the United Kingdom. Brewster and his team have found that people err--mistype, double-press, or slip from one button to another--up to 25 percent less frequently when vibrations are used to let them know that they've pressed a button correctly. "The basic thing we show," Brewster says, "is that having tactile feedback makes [mobile devices] more useful and usable." Without tactile feedback, he says, people are still going to have usability issues no matter how well the touch screen is designed to ignore extra touches or accidental taps. In addition to trying to get rid of errors, Brewster and his team are exploring how well different types of vibrations convey various kinds of information, such as the urgency of an e-mail.

(60/2007)   http://www.technologyreview.com

Respectful monitoring cameras

At the beginning, there were lack of information. Man, however, created the era of wealth of information where we can collect information from everywhere and in any form which is imaginable or not yet imaginable for us. This wealth causes problems, too. It does not only lead to information overproduction but endangers also our information sovereignty: much too information can be accessed by unauthorised people just as a side-effect. Therefore, man needs to create technologies to hide information systematically and accurately. However, the battle with information wealth seems to be insurmountable sometimes: e.g. if the face of a person can be recognised just for a moment on a video record, i.e. hiding its face has not been 100% successful, then such a technology is yet practically unusable.

A camera developed by computer scientists at the University of California, Berkeley, would obscure, with an oval, the faces of people who appear on surveillance videos. These so-called respectful cameras, which are still in the research phase, could be used for day-to-day surveillance applications and would allow for the privacy oval to be removed from a given set of footage in the event of an investigation. In its current state of development, the camera is only able to obscure the faces of people who are wearing a marker, in the form of a yellow hat or a green vest. The camera system was developed by the National Science Foundation-funded Team for Research in Ubiquitous Secure Technologies, and it currently works in real time with Panasonic's robotic security cameras operating at 10 frames per second and a resolution of 640-by-480-pixel videos. The researchers use a statistical classification approach called adaptive boosting to train the system to identify the marker in environments with a high degree of visual noise. But they also combined this classifier with a tracker, which takes into account the subject's velocity, along with other interframe information. At a construction site where the researchers tested their camera with the vest, the system correctly identified the marker 93 percent of the time. Under more-uniform lighting conditions in their lab environment, they report 96 percent success at identifying the hat, even when two marked individuals cross paths.

(61/2007)   http://www.technologyreview.com

Language for security policy
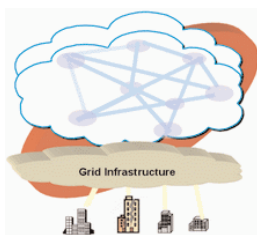
The continuous control of access in distributed, heterogenous systems has been for long a big challenge for IT service providers. Therefore, the ragged prestige of Microsoft as „manufacturer of secured software" might be quickly recovered if this research ended with success. Lest the technique be used in Microsoft-systems only again!

Microsoft has released details about its SecPAL project to encourage collaboration from the grid computing community on methods for greater security and access controls. Microsoft created SecPAL, or Security Policy Assertion Language, as a research project to develop a language for expressing decentralized authorization policies. The project also investigates computing language design and semantics as well as related algorithms and analysis techniques. Microsoft hopes the SecPAL project will lead to developing a simpler, more accurate way of expressing decentralized authorization policies in a grid environment through a logic-based security policy language. The software firm hopes that making available the implementation and design information from its SecPAL project will encourage the security and grid research communities to test and experiment with it. "One of the issues in grid computing is delegation of access rights. This is a key issue for enterprise users, who have trouble managing grid security," said Blair Dillaway, lead software architect for Microsoft. Microsoft began researching a security language policy for grid computers about two years ago. The need for improved security language protocols results from an increasing interest in enterprise circles for grid computing. Different solutions evolved by various researchers, but none of the security and access solutions was very encompassing. SecPAL is designed to be broadly applicable, according to Dillaway. "We made it flexible enough to work with several grid platforms. We have been experimenting with SecPAL internally for one year. I feel very positive about this progress," he said.

(62/2007)   http://www.technewsworld.com

Small is beautiful in software, too

Key enterprise trend in 2007: Opening SOAs to the cloud

 Application development means, more and more, a combination or integration of software modules. It is not identical to the reuse of technologically outdated (legacy) systems, rather it is increasingly a typical development approach of new applications. Embarrassing questions of this development style like „why is it so important to know the source code in detail" or "why is it not enough to ensure interoperability using standard interfaces" will hopefully get answered once in the not so distant future. This or other way, however, the loop is getting closer and closer around Microsoft's usual business model based upon frequent update of the operating system.

When Bill Clinton said a decade ago that "the era of big government is over," it turns out he was a big premature. But now with Web 2.0, SOA and web services, it may be true that "the era of big software is over." Modules can be developed independently by small teams of open source developers. The same module can be re-used by many different applications. The value no longer remains resident in the software but how you mash up these services together to create new innovative solutions. It's this process, rather than the legalities of open source licenses and patents, which is the real, ongoing threat to Microsoft. Open source fits better into this world than proprietary software does. The visibility of open source code lets you see how modules will fit together. "With open source, there's a component utilization model which engineers and organizations are embarking on," Black Duck Sofware's CEO Doug Levin says. Companies are evaluating upgrades of big programs far more closely as a result. When you're building solutions based on parts, you upgrade based on modules, or by combining modules. You're reluctant to change what sits below the modules because that impacts all the dependencies above. So you don't. And that will kill Microsoft faster than any open source contract ever could.

(63/2007)   http://blogs.zdnet.com

Japanese robot likes sushi, fears president

 Japan is without any doubt the leader in the development of humanoid robots and androids. The more human-like the robots are and signs of a kind of "consciousness" are given, the less we averse them. (At least to a certain extent called the Uncanny Valley.) This aversion should decrease for two main reasons: on the one hand Japan's population is ageing, on the other hand immigration is a very sensitive issue in the insular country. Therefore in the not so distant future robots will not only perform routine tasks but more demanding jobs too.

Kansei frowns when he hears the word "bomb", smiles at "sushi" and looks scared and disgusted when someone says "president" -- and he isn't even human. Japan's latest robot, called Kansei and created by a university research team, can pull up to 36 different facial expressions based on a program which creates word associations from a self-updating online database of 500,000 keywords. The English keywords then trigger the most appropriate facial expression, which ranges from happiness to sadness, anger and fear. "What we are trying to do here is to create a flow of consciousness in robots so that they can make the relevant facial expressions," said project leader Junichi Takeno, a professor at Meiji University's School of Science and Technology. "I believe that's going to be a key to improving communication between humans and robots," he said. The robot has 19 movable parts underneath the silicone face mask. When the robot hears the word "president", the online database picks up associated words such as "Bush," "war" and "Iraq" and creates an expression which the researchers said is meant to mix fear and disgust. Takeno says that in a few years, Kansei will also have speech abilities and will be able to convey feelings, which could be useful in places such as nursing homes for the elderly.

(64/2007)   http://www.reuters.com

Researchers chart Internet's 'black holes'
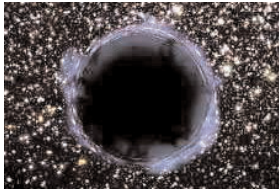
Black holes do not only exist in the endless universe but on the seemingly endless internet as well. However, an American experiment shows that these less distant black holes are more easily mapped and the - mainly routing - problems caused by them can be fixed within hours.

Despite its robust appearance, more than 10 percent of the internet flickers out like a candle every day, according to researchers who unveiled an experimental tool that probes the network's dark places. Ethan Katz-Bassett, a computer science Ph.D. candidate from the University of Washington introduced Hubble -- a network of deep cyberspace probes scattered around the internet –- at the meeting of the North American Network Operator's Group in Bellevue, Washington. For two weeks Hubble queried a sample of 1,500 internet prefixes (a small subsection of the net) every 15 minutes. In the end it found that 10 percent of those prefixes couldn't be reached from certain corners of the internet. Sometimes certain blocks of the internet weren't reachable at all, Katz-Bassett reported, while other times only traffic coming from particular portions of the net fell into what's called a "routing black hole." When that happens, packets sent from one computer to another -- whether a request for a web page, or an e-mail message -- are somehow diverted to the wrong location, where they're lost forever. The researchers hope to build a tool that will chart these black holes in real time, by monitoring the dialogue that takes place between routers about the best path for particular traffic, and by building a permanent system of remote sensors that can send pings from various spots around the internet. Routing problems can be caused by a number of factors, ranging from problems with a particular router, often a new one, to ironic problems with a technique called "multi-homing " -– which supposed to make it easier for packets to reach their destination by allowing an internet site to simultaneously have a number of different addresses and network connections.

(65/2007)   http://www.wired.com

Rome Reborn 1.0

Virtual Rome and similar projects to come serve for two main purposes: researchers can easily test new cultural, political and other theories on these sites, but more importantly, education will also benefit from the simulated worlds. Project leaders emphasize that Rome Reborn 1.0 is just the first step in the creation of a virtual time machine, which future pupils will use to study history.

Rome's Mayor Walter Veltroni officiated at the first public viewing of "Rome Reborn 1.0," a 10-year project based at the University of Virginia and begun at the University of California, Los Angeles (UCLA) to use advanced technology to digitally rebuild ancient Rome. An international team of archaeologists, architects and computer specialists from Italy, the United States, Britain and Germany employed the same high-tech tools used for simulating contemporary cities such as laser scanners and virtual reality to build the biggest, most complete simulation of an historic city ever created. "Rome Reborn 1.0" shows almost the entire city within the 13-mile-long Aurelian Walls as it appeared in A.D. 320. At that time Rome was the multicultural capital of the western world and had reached the peak of its development with an estimated population of one million. "Rome Reborn 1.0" is a true 3D model that runs in real time. Users can navigate through the model with complete freedom, moving up, down, left and right at will. They can enter important public buildings such as the Roman Senate House, the Colosseum, or the Temple of Venus and Rome, the ancient city's largest place of worship. As new discoveries are made, "Rome Reborn 1.0" can be easily updated to reflect the latest knowledge about the ancient city. In future releases, the "Rome Reborn" project will include other phases in the evolution of the city from the late Bronze Age in the 10th century B.C. to the Gothic Wars in the 6th century A.D.

(66/2007)   http://www.sciencedaily.com

Mobile phone game developed to combat culture shock

The growing popularity of mobile phone games is not surprising, but the fact that they are not only used for shooting and killing the evil ennemy is a good news. As a matter of fact these games can serve communication and (even more) educational purposes too. The potential is limited only by our own imagination. A British example illustrates extremely well that mobile gaming might help in frustrating unfamiliar situations such as the so-called "culture shock". It seems that mobile game technology's naive childhood is definitely over.

A mobile phone game developed by academics at the University of Portsmouth will be used to help international students cope with 'culture shock' and university life in Britain - including moments of cultural awakening such as going to the pub and watching people being affectionate to each other in public. The game - called C-Shock - is the brainchild of University of Portsmouth academic and games technology expert Nipan Maniar who, himself, arrived in the UK from India five years ago as an international student. Nipan said the game would act as an 'e-mother' or 'mobile mummy' for new students. The game follows an international student arriving in the UK for the first time. The aim of the game is to reduce the character's 'culture shock' rating from a default of 100 to zero by performing a series of tasks that introduce culture shock-inducing incidents and images. The game's opening scenario is a student's first day at university in the UK. The student is shown a map of the campus and is given tasks to find specific locations. Clicking on images along the way warns the student about what to expect in terms of culture shock - for example, it is acceptable for students to drink alcohol and it is okay for people to display affection in public. The game also includes important information such as police and emergency telephone numbers. Nipan expects the idea of using mobile phone games technologies to communicate with students to be adopted by other universities in the UK.

(67/2007)   http://www.port.ac.uk

Sounding out the future of SMC

 A European consortium has drafted a roadmap to help the field of sound and music computing (SMC) which provides the core technologies for the ongoing revolution in the electronic music industry. Digital musical instruments, CDs, MP3s, etc. owe a great debt to this special branch of science. The initiative will identify, characterise and propose strategies for tackling the key research challenges facing the field in the next ten to fifteen years.

he European Commission's Information Society Technologies (IST) research initiative has drafted a roadmap to establish Europe as a leader in the field of sound and music computing. Part of the Sound to Sense, Sense to Sound project (S2S2), the roadmap identifies, characterizes, and proposes strategies to approach the key research challenges in SMC over the next 10 to 15 years, including uniting current fragmented efforts and creating a common research agenda for European output. Composer Nicola Bernadini, coordinator of the two year IST-funded S2S2 project, says SMC research is trailing behind the music industry, and that the roadmap is intended to show what research into SMC could provide. The roadmap highlights five key challenges--designing better sound objects and environments; understanding, modeling, and improving human interaction with sound and music; training multidisciplinary researchers in a multicultural society; improving knowledge transfer; and addressing social concerns. Following three scenarios, the roadmap explains how SMC research will impact European society and economies in the future. Bernadini says the scenarios show how advances in SMC technology, such as sonic environments, interactive music devices, and expert music companions, will change our surroundings.

(68/2007)   http://istresults.cordis.europa.eu

Simpler programming for multicore computers


```
add VLD(QC, PT1, PT2);
add splitjoin {
    split roundrobin(N?B, V);
    add pipeline {
        add ZigZag(B);
        add IQuantization(B) to QC;
        add IDCT(B);
        add Saturation(B);
    }
    add pipeline {
        add MotionVectorDecode();
        add Repeat(V, N);
    }
    join roundrobin(B, V);
}
add splitjoin {
    split roundrobin(4?(B+V), B+V,
B+V);
```

Some think that software may be a real obstacle in exploiting the full potential of multicore processors and thus will change the overall dynamics of the Moore law. However MIT researchers proved that parallel programing can be made easy and developed a solution, which also provides a solution for commercial chips used in PlayStation 3.

The number of cores--or number-crunching units--in microprocessors is doubling with each generation, providing enormous computing potential for desktops, laptops, and, eventually, handheld gadgets. Current quadcore machines, for example, are particularly useful for such computation-hungry applications as video processing and gaming. However, the new multicore machines are basically small-scale supercomputers, and in order to take full advantage of the computing power they offer, software must be written with multiple cores in mind--a time-consuming and difficult task known as parallel programming. And many experts believe that unless parallel programming can be made easier, computing progress will come to a grinding halt. Researchers at MIT are looking for a way to ease the pain of parallel programming. They have designed a computer language and a compiler--a specialized tool that converts the language into computer instructions--that essentially hides the parallel-programming challenges, yet takes advantage of the power of multiple cores. The language and compiler, called StreamIt, were developed by Saman Amarasinqhe, a professor of electrical engineering and computer science at MIT. StreamIt currently runs on a specialized multicore machine built at MIT, but by this summer, Amarasinghe expects to have the software ready to run on commercial chips made by IBM, Sony, and Toshiba found in Sony's PlayStation 3 machines.

(69/2007)   http://www.technologyreview.com
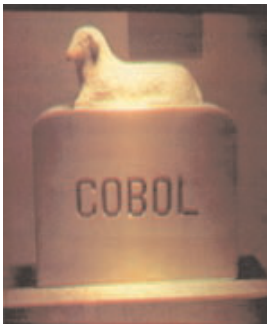
About the nature of IT dinosaurs

By now, it has turned out that the languages used to create new software, are called neither COBOL, nor FORTRAN – neither in banks, nor in scientific communities. Just a decade ago or so, however, this was a fairly wide-spread belief. Be careful! The dinosaurs of IT may die out from one day to the other without further notice or any apparent cataclysm. Some nostalgy toward them, may only remain within in the IT archeologists when arranging their remains carefully.

Those in search of eternal life need look no further than the computer industry. Here, last gasps are rarely taken, as aging systems crank away in back rooms across the U.S., not unlike 1970s reruns on Nickelodeon's TV Land. So while it may not be exactly easy for Novell NetWare engineers and OS/2 administrators to find employers who require their services, it's very difficult to declare these skills -- or any computer skill, really -- dead. In fact, the harder you try to declare a technology dead, it seems, the more you turn up evidence of its continuing existence. Nevertheless, after speaking with several industry stalwarts, we've compiled a list of skills and technologies that, while not dead, can perhaps be said to be in the process of dying. Obsolescence is a relative -- not absolute -- term in the world of technology. Y2k was like a second gold rush for Cobol programmers who were seeing dwindling need for their skills. But six-and-a-half years later, there's no savior in sight for this fading language... As the Web takes over, C languages are also becoming less relevant. C++ and C Sharp are still alive and kicking, but try to find a basic C-only programmer today, and you'll likely find a guy that's unemployed... Today, PowerBuilder developers are at the very bottom of the list of in-demand application development and platform skills, with pay about equal to Cobol programmers... Today you don't have to look far to find Certified NetWare Engineers retraining themselves with other skills to stay marketable. It seems like it happened overnight... With the accelerating move to consolidate Windows servers, some see substantially less demand for PC network administrators... A rough translation of OS/2 could be "wrong horse." Initially created by Microsoft and IBM and released with great fanfare in 1987, the collaboration soon unraveled, and after repeated rumors of its demise, IBM finally discontinued sales in 2005...

(70/2007)   http://www.computerworld.com

Communicating billboards

Audience oriented advertising on billboards is nothing really new, but advanced technology may improve its effectiveness. The Australian research result is promising, but still needs improvement. Although it is important to know whether someone is paying attention at all, but it is more important to know what he or she is interested for.

Imagine watching an advertisement that is watching you. Sound creepy? Some billboards can already communicate by text or photo message with passersby, and researchers are now endowing these signs with artificial intelligence that can take cues from viewers' behavior. Scientists at National Information and Communications Technology Australia, a government-funded research lab, have developed a billboard technology that watches body language and can tell when you're bored and when you're paying attention. The idea is to entice people who are well placed to make impulse purchasing decisions—pedestrians in shopping malls, in department stores, at airports or on sidewalks. This is the future of "agile retail" technology, one of the fastest-growing areas of advertising. It includes digital billboards that can be easily changed throughout the day, allowing commuters to see ads for breakfast cereals in the morning and television shows in the afternoon. Advanced versions can deliver added information about the product. Here's how the next generation will work. The system consists of an LCD screen playing a promotional video, and a camera to monitor people who come within five meters of the screen. In less than half a second, the software can determine if a face is turned toward the screen or away from it. If the viewer shows interest and does not walk away instantly, the system extends the video's playing time. But if the viewer begins to turn away, the sign switches to a video advertising a different product in the hope of grabbing back the viewer's attention.

(71/2007)

Researchers show off virtual human in 4D
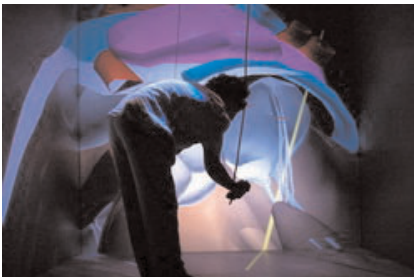
Caveman, the 4D virtual human is a unique model which will certainly be used both in medicine and education. Don't let you deceive by the fact that we can zoom in and move it as a game character: our man is obviously not for monster hunting, but for scientific purposes. Among other things Caveman would help to deepen our knowledge about diseases (cancer, etc.). According to this concept, the next step of the project will include developing versions to sell to hospitals around the world.

Canadian researchers say they have developed the most detailed model of a human yet, a movable "4D" image that doctors can use to plan complex surgery or show patients what ailments look like inside their bodies. Called Caveman, the larger-than-life computer image encompasses more than 3,000 distinct body parts, all viewed in a booth that gives the image height, width and depth, the researchers said.Caveman also plots the passage of time--the fourth "D." Scientists can layer on the unique visuals of patients, such as magnetic resonance images, CAT scans and X-rays, giving physicians high-resolution views of the inner workings of the body while it appears to float within arm's reach. It will help researchers study the genetics of diseases such as cancer, diabetes, muscular sclerosis and Alzheimer's, said officials at the University of Calgary Faculty of Medicine, which has worked on the system for six years. "Today, this kind of a model is unique in the world. It's the only one that is complete," said Christoph Sensen, director of the medical school's Sun Center of Excellence for Visual Genomics. "We have components of models. We could make this thing with 50 different brains because everybody makes their own brain model. What we didn't have was a whole, complete body." Caveman, seen through 3D glasses in a booth, appears to stand in front of the viewer. As in a video game, the controller can manipulate it and focus on body parts--skin, bones, muscles, organs and veins. The closer the image gets, the further into the body the viewer appears to travel. It is difficult to resist trying to touch it.The image can also be loaded on to regular computers, to be viewed off site.

(72/2007)

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Tech companies set goals for energy efficiency

Firms worried about the climate changing are engaged to provide energy saving solutions in tha future. Multinationals of IT sector are interested to provide products and services, which are considered as energy savers. Vut they also expected to save energy.

A group of some of the biggest U.S. technology companies said they've committed to a plan to improve the power efficiency of equipment they make and use. The Climate Savers Computing Initiative, which includes companies such as Google Inc., Microsoft Corp., Intel Corp., Hewlett-Packard Co., Dell Inc. and Sun Microsystems Inc., aims to improve the efficiency of power sources for computers and servers and encourage end users to take advantage of underused power management techniques. For example, only about 50% of the power that leaves a power outlet reaches a PC because inefficient power cords leak energy, Google's senior vice president of operations, Urs Holzle said. Climate Savers has defined a series of standards for power supply efficiency in servers and PCs that it suggests members adopt between now and July 2010. By 2010, the Climate Savers standard will define a power supply that is better than 95% efficient, Holzle said. The program calls on manufacturing members to build products to the standard and asks companies to pledge to buy products that have the improved power supplies. The improvement doesn't require the development of new technologies. "This is all doable today with technology we have and know," Holzle said. The reason that vendors haven't deployed more-efficient power cords is because such cords cost more. A PC with a more-efficient power cord would cost around $20 more, and a server would cost an additional $30, he said.

(73/2007)   http://www.computerworld.com

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File-sharing sites are being subverted for web attacks

Experience shows that P2P solutions built without strong focus on security considerations may also be used to initiate DDOS attacks. It is important to realize this problem and warn developers of such solutions to their increasing responsibility.

Peer-to-peer (P2P) file-sharing networks, which let users trade movies, music and software online, are increasingly being used to trick PCs into attacking other machines, experts say. Computer scientists have previously shown how P2P networks can be subverted so that several connected PCs gang up to attack a single machine, flooding it with enough traffic to make it crash. This can work even if the target is not part of the P2P network itself. Now, security experts are warning that P2P networks are increasingly being used to do just this. "Until January of this year we had never seen a peer-to-peer network subverted and used for an attack," says Darren Rennick of internet security company Prolexic in an advisory released recently. "We now see them constantly being subverted." Early in 2006, Keith Ross and Naoum Naoumov at the Polytechnic University, in Brooklyn, New York, demonstrated that P2P networks could be used to launch an attack without hijacking any PCs, in a published study of the eDonkey P2P network. "In all file-sharing systems, you need a database to locate where these files are," Ross says. "The trick is to poison the database, to put bogus entries in that say that a very popular file is located at some target address that you want to attack." Thousands of computers will then start contacting the target computer requesting. A more recent study shows that BitTorrent, one of the most popular file-sharing networks, can be misused the same way.

(74/2007)   http://www.newscientisttech.com

Cyberwar?
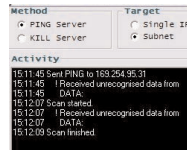
The persistent and vigilant attacks against Estonian governmental IT infrastructure brings up many interesting questions, but the most important one is possible the following: Do we know where are our borders in cyberspace, which we need to defend?

Estonis, this small Baltic country, one of the most wired societies in Europe, has been subject in recent weeks to massive and coordinated cyber attacks on Web sites of the government, banks, telecommunications companies, Internet service providers and news organizations, according to Estonian and foreign officials here. Computer security specialists here call it an unprecedented assault on the public and private electronic infrastructure of a state. They say it is originating in Russia, which is angry over Estonia's recent relocation of a Soviet war memorial. Russian officials deny any government involvement. The attacks have disrupted government e-mail and led financial institutions to shut down online banking. As societies become increasingly dependent on computer networks that cross national borders, security experts worry that in wartime, enemies will attempt to cripple those networks with electronic attacks. Estonian officials said they traced some attackers to Internet protocol (IP) addresses that belong to the Russian presidential administration and other state agencies in Russia. The attacks began on April 27, a Friday, within hours of the war memorial's relocation. On Russian-language Internet forums, Estonian officials say, instructions were posted on how to disable government Web sites by overwhelming them with traffic, a tactic known as a denial of service attack. The Web sites of the Estonian president, the prime minister, Parliament and government ministries were quickly swamped with traffic, shutting them down.

(75/2007)   http://www.washingtonpost.com

New software can identify you from your online habits

Our habits to use internet are as relevant as our behaviour or personal data. Recording our virtial profile might disturb our provacy too. The sistem is developed in Asia, where the privacy is something unknown in the local culture.

If you thought you could protect your privacy on the web by lying about your personal details, think again. In online communities at least, entering fake details such as a bogus name or age may no longer prevent others from working out exactly who you are. That is the spectre raised by new research conducted by Microsoft. The computing giant is developing software that could accurately guess your name, age, gender and potentially even your location, by analysing telltale patterns in your web browsing history. But experts say the idea is a clear threat to privacy - and may be illegal in some places. Previous studies show there are strong correlations between the sites that people visit and their personal characteristics, says software engineer Jian Hu from Microsoft's research lab in Beijing, China. For example, 74 per cent of women seek health and medical information online, while only 58 per cent of men do. And 34 per cent of women surf the internet for information about religion, whereas 25 per cent of men do the same. While each offers only a fairly crude insight, analytical software could use a vast range of such profiles to perform a probabilistic analysis of a person's browsing history. From that it could make a good guess about their identity, Hu and his colleagues told the World Wide Web 2007 conference in Banff, Canada. Ross Anderson, a computer security engineer at the University of Cambridge, thinks the idea could land Microsoft in legal trouble. "I'd consider it somewhat pernicious if Microsoft were to deploy such software widely," he told.

(76/2007)   http://www.newscientisttech.com

Storing light

New computing technique is on the rise where sizes are expressed in molecules, the algorithms are executed as state changes of atoms and elementary particles, and the speed of communication reaches the speed of light. To rule the macroworld, man enters into deeper and deeper layers of microworld but he cannot yet control it as required. So far, the untameability and transient nature of light have created particularly difficult problems when designers wanted to speed up communication within and between processors.

A microscopic device for storing light developed by researchers at Cornell University could help free up bottlenecks in optical communications and computing. This could potentially improve computer and communications speeds by an order of magnitude. The new device relies on an optically controlled "gate" that can be opened and closed to trap and release light. Temporarily storing light pulses could make it possible to control the order in which bits of information are sent, as well as the timing, both of which are essential for routing communications via fiber optics. Today, such routing is done, for the most part, electronically, a slow and inefficient process that requires converting light pulses into electrons and back again. In computers, optical memory could also make possible optical communication between devices on computer chips. Switching to optical routing has been a challenge because pulses of light, unlike electrons, are difficult to control. One way to slow down the pulses and control their movement would be to temporarily confine them to a small continuous loop. But the problem with this approach is getting the light in and out of such a trap, since any entry point will also serve as an exit that would allow light to escape. What's needed is a way to close the entryway once the light has entered, and to do so very quickly--in less time than it takes for the light to circle around the loop and escape. Later, when the light pulse is needed, the entryway could be opened again.

(77/2007)   http://www.technologyreview.com

Imaging system brings skeleton to life in 3-D

Higher level of services can be provided ieven n the computerbased health care-systems, combining inhomogeous systems. A 3D program put tugether the information from the computer tomograph and the multiple Xray system, and bones in motion can be scanned,

For most of us, the phrase "super x-ray vision" conjures a pair of spiral-print cardboard spectacles ordered from the back of a cereal box. But now an imaging system developed at Brown University delivers the real thing, combining computed-tomography (CT) scanners, x-ray video and computer software to give doctors and researchers a three-dimensional look at bones in motion. Although several medical-imaging technologies already exist for peering into living things, each one compromises either speed, resolution or depth. CT scans, for instance, offer detailed 3-D views, but scanning is slow and requires the subject to stay completely motionless. A technique called fluoroscopy can create video by taking multiple x-rays in rapid succession, but it's limited to producing two-dimensional images and has much lower resolution than CT. The new process, known as CTX imaging, combines both of these technologies to produce 3-D animations of bones in motion -- walking, running, jumping. Though still in prototype form, the room-size system is already helping researchers to answer tough questions about animal biomechanics, such as how flight evolved in birds. It could also be a valuable tool for orthopedic surgeons, who might use it to plan better treatments for bone-, ligament- and joint-related injuries. Elizabeth Brainerd, the biomechanics professor at Brown leading the CTX program, says that although the technology won't fit into a pair of glasses anytime soon, a commercial version of the system that produces real-time video should be ready by 2010.

(78/2007)   http://edition.cnn.com

Desktop supercomputing in software crisis
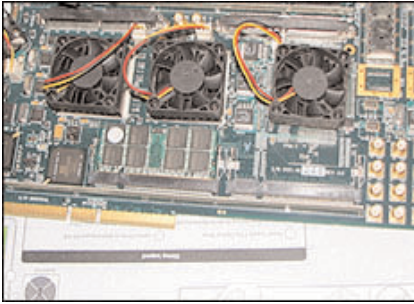
After running out of extensive ways of performance increase, multicore processors have started to appear which have been designed in a more intensive way with finely coordinated, chip level parallel architectures. However, when massively parallel architectures are being tested for desktop or notebook computers then what has been, so far, a hardware problem, seems to turn suddenly into a software problem. May we face with a new software crisis as a consequence of this? Or may not?

A prototype of what may be the next generation of personal computers has been developed by researchers in the University of Maryland's A. James Clark School of Engineering. Capable of computing speeds 100 times faster than current desktops, the technology is based on parallel processing on a single chip. For years, the personal computer industry achieved advancements in computer clock speed, the fundamental rate at which a computer performs operations, thanks to innovations in chip fabrication technologies and miniaturization. Moore's Law—which dictates that the number of transistors on integrated circuits in computers will double every 18 to 24 months—was coupled with a corresponding improvement in clock speed. But no advancements in clock speed have been achieved since 2004. From an early stage, Vishkin foresaw that Moore's Law would ultimately fail to help improve clock speed due to physical limitations. This has guided his perseverance over his professional career in seeking to improve computer productivity by distributing the load among multiple processors, accomplishing computer tasks in parallel. The prototype device's physical hardware attributes are strikingly ordinary—standard computer components executing at 75 MHz. It is the device's parallel architecture, ease of programming and processing performance relative to other computers with the same clock speed that get people's attention. "This system represents a significant improvement in generality and flexibility for parallel computer systems because of its unique abilities," said Burton Smith, technical fellow for advanced strategies and policy at Microsoft.

(79/2007)   http://www.eng.umd.edu

Babbage inspired nano chips

Quantum computing promises ultra fast execution of complex computations but it turned to be yet extremely difficult to create and maintain the required quantum mechanical circumstances. But there are other criterias to consider than just speed, e.g. low price, robustness, lower dissipation. The principle of mechanical computing implemented on the nano level allows for rather slow but extremely reliable computers to be built which fit very well for certain specific applications.

The blueprint for a tiny, ultra-robust mechanical computer has been outlined by US researchers. The energy-efficient nano computer is inspired by ideas about computing first put forward nearly 200 years ago. The scientists say the machine would be built from nanometre-sized components, just billionths of a metre across. Chips based on the design could be used in places, such as car engines, where silicon can be too delicate, they said. "What we are proposing is a new type of computing architecture that is only based on nano-mechanical elements," said Professor Robert Blick of the University of Wisconsin-Madison. "We are not going to compete with high-speed silicon, but where we are competitive is for all of those mundane applications where you need microprocessors which can be slow and cheap as well." In addition to high-temperature automotive applications, Professor Blick envisaged nano-mechanical chips being used in everything from toys to domestic appliances. Mechanical computers are nothing new. The remains of a 2,000 year old analogue computer known as the Antikythera mechanism were discovered in Greece in 1902. And during the 19th Century, English mathematician and engineer Charles Babbage designed various steam-powered mechanical computers. His "difference engine" consisted of more than 25,000 individual levers, ratchets and cogs and weighed more than 13 tonnes. Although none of his designs were ever finished, recent reconstructions by London's Science Museum show they were capable of carrying out complex calculations. The US team's proposal owes a debt to these concepts. "It's inspired by Babbage's ideas but these days we can scale it down," Blick said. "Now, we are able to process devices on the nano scale."

(80/2007)   http://news.bbc.co.uk
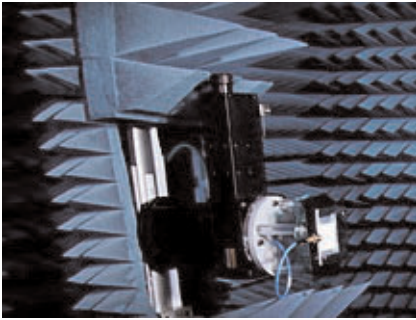
Multi-gigabit wireless access could soon make the wires obsolete between computers and peripherals

Using the unlicenced band of 60 GHz, the wireless transmission rate is to be multiplicated for short distance. Personal devices will be able to communicate with each others using this wireless channel. The jungle of the wires around of our personal computers can also be eliminated.

New research at the Georgia Institute of Technology could soon make that tangle of wires under desks and in data centers a thing of the past. Scientists at the Georgia Electronic Design Center (GEDC) at Georgia Tech are investigating the use of extremely high radio frequencies (RF) to achieve broad bandwidth and high data transmission rates over short distances. Within three years, this "multi-gigabit wireless" approach could result in a bevy of personal area network (PAN) applications, including next generation home multimedia and wireless data connections able to transfer an entire DVD in seconds. The research focuses on RF frequencies around 60 gigahertz (GHz), which are currently unlicensed -- free for anyone to use -- in the United States. GEDC researchers have already achieved wireless data-transfer rates of 15 gigabits per second (Gbps) at a distance of 1 meter, 10 Gbps at 2 meters and 5 Gbps at 5 meters. "The goal here is to maximize data throughput to make possible a host of new wireless applications for home and office connectivity," said Joy Laskar, GEDC director. GEDC's multi-gigabit wireless research is expected to lend itself to two major types of applications: data and video. Very high speed, peer-to-peer data connections could be just around the corner, available potentially in less than two years. Devices such as external hard drives, laptop computers, MP-3 players, cell phones, commercial kiosks and others could transfer huge amounts of data in seconds. And data centers could install racks of servers without the customary jumble of wires. At 10 Gbps, we could download a DVD from a kiosk to our cell phone in five seconds, or we could quickly synchronize two laptops or two iPods.

(81/2007)   http://www.gtresearchnews.gatech.edu

Playing piano with a robotic hand

Whereas thought-driven robotic hands don't yet play piano in concerthalls, after succesfull monkey-experiments it seems that decoding some movement-related electric signals of the brain (neural activity patterns) leads to significantly better quality prosthetic hands. After at least partially discovering our intentions these systems will be able to "simulate" the complex and sophisticated activity of our fingers.

By tapping directly into the brain's electrical signals, scientists at John's Hopkins University, are on their way to developing a prosthetic hand more dexterous than ever before. They have demonstrated for the first time that neural activity recorded from a monkey's brain can control fingers on a robotic hand, making it play several notes on a piano. "We would hope that eventually, we'll be able to implant similar arrays permanently in the motor cortex of human subjects," says Mark Scheiber, a neuroscientist who is working on the project. However, researchers caution that a practical human version of the neural interface is still a long way off. Most prosthetic hands currently available are limited to a clawlike grasping motion. A significantly improved version, which went on the market in July, uses muscle contractions in the arms to individually control fingers. While this type of design is a huge boon to amputees, translating their intention to move into action via muscle activity requires conscious effort. In the long term, scientists would like to develop a prosthesis that is effortlessly controlled by the user's thoughts. "If you can tap into the brain, you can record from the brain itself the intent of hand and finger movement," says Nitish Thakor, a neuroengineer at John's Hopkins, who is working on the project. To make the neural interface, researchers recorded brain-cell activity from monkeys as they moved their fingers in different ways. The scientists then created algorithms to decode these brain signals by identifying the specific activity patterns linked to particular movements. When the decoding system was connected to a robotic hand and fed new neural-activity patterns, the fingers on the hand performed the intended movement 95 percent of the time.

(82/2007)   http://www.technologyreview.com

Tangible display makes 3D images touchable

People may stay at home, without loosing first hand experiences With the new 3D system of NTT the images can be tangibles, through a "haptic glove". The business people will be able to shake hands across the Globe. The visitors may touch the exhibition from long distance.

A system that makes three dimensional images solid enough to grasp has been unveiled by Japanese firm NTT. It could let businesspeople shake hands from across the globe or allow museum visitors to feel precious exhibits that are normally out of reach, the company says. The prototype Tangible 3D system combines a 3D display with a "haptic glove". The display creates lifelike images appear in just in front of a flat screen. It creates the illusion of depth by showing slightly different images to each of the viewer's eyes. This means no special glasses are needed. Attached to the display is a haptic glove. Once inside, a user's hand is touched by numerous force-feedback components to make it feel as if it interacting with something solid. The system can also translate real-world objects into virtual representations. Two cameras image the items in 3D so that they can be displayed on the screen. A connected computer then processes the 3D image to generate a tactile representation of the object. This set up means that if the object being filmed is moved, the three-dimensional image also moves in real-time and the user will feel the movement with their hand. NTT engineer Shiro Ozawa, who developed the system, envisages various applications. "You would be able to take the hand, or gently pat the head, of your beloved grandchild who lives far away from you," he says. Anthony Steed, who works with haptic systems at University College London, UK, says the real-time image capture made possible by the Tangible 3D system is especially interesting.

(83/2007)   http://www.nrewscientisttech.com

Could tiny sensors detect bridge crises?

Slow decaying processes can also lead to catastrophes. Such as a decay of a bridge, sinking os a building, deterioration of materials or structures used for critical fubctions. Networks of sensors can measure and summ the slow changes and the risk can be modelled.

Researchers are hoping small sensors put on bridges - about the size of a credit card and costing only $1 apiece - could provide an early warning to potential failures like the one in Minneapolis. Los Alamos National Laboratory scientists, in collaboration with the University of California at San Diego, say such a system would provide enough lead time to either shut down a bridge or perform preventive maintenance to avert serious failures. "The idea is to put arrays of sensors on structures, such as bridges, and look for the changes of patterns of signals coming out of those sensors that would give an indication of damage forming and if it is propagating," said Chuck Farrar, a civil engineer at the lab. The electronic sensors would be powered by microwaves or the sun and would send data via radiotelemetry to a computer for analysis. The sensors detect electrical charges emitted by stress on material, such as steel-reinforced concrete. Researchers are trying to incorporate the sensors with microprocessors and wireless telemetry systems so they can work as stand-alone monitoring devices, Farrar said. One hitch is how to power the sensors. Researchers are looking at small, remote-control helicopters to do the job. They would send a pulse to provide power to the sensor, help take a reading and broadcast it back to the chopper. The helicopter also could carry a light source that would be focused through a lens to a small solar array on the sensor node. Much work still remains to be done. Civil engineers must work with electrical engineers and computer scientists to bring the technology together. "The hard part is getting data from damaged structures to use in the study. Nobody wants to give you a very expensive bridge to just test a data integration algorithm," Farrar said.

(84/2007)   http://www.washingtonpost.com

Web services embedded in sensors

Semantics and Service Discovery

Object and Data Representation

Communication Media

Physical Devices

While the world seems to fall apart into communities and sociaties uncapable of cooperating with each other, IT has entered into the third millenium with advocating integration. Application integration today, often makes custom application development unnecessary, and information integration solutions provide alternative for constructing a dedicated data base. In addition, the more and more intelligent tools and the embedded systems appearing in our environment, increase the need for integration. It is not suprising then that such integration platforms like service-oriented architectures (SOA) which, so far, only large data centres have experimented with, are tried to be extended onto the objects of our everyday life.
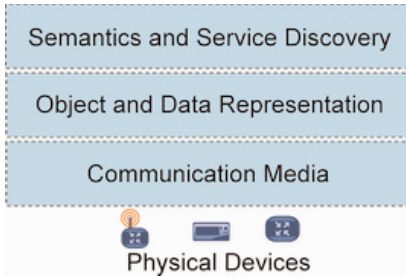
Integrating networks of sensors has been a goal for years, from the creation of device profiles and industrial networking standards through to the adoption of ad hoc wireless sensor and control networks. Web services promise to ease the integration of these disparate and distributed elements. "Why can't I just connect a collection of different sensors together and have them just work?" This seemingly naive question should give pause to providers of sensor-related technology. Why is ease of integration—an increasingly common expectation—so hard to achieve in practice? The expectation of easy integration is natural, given the increasingly sophisticated interconnects that are built into our instruments, meters, and gauges. However, the design space of sensors is so diverse, with so many subtle specializations, that it is very difficult to represent the information that they produce in anything like a plug-and-play fashion. Sensors have become embedded physical information servers. Starting from this observation, we may draw insights from the IT community's long-standing efforts to cope with integrating diverse sources of distributed information. Today, every large enterprise, major supply chain, and significant Web portal integrates many different kinds of data sources from physically distributed dynamic processes. They do this by using a software-based service oriented architecture (SOA) built upon a relatively straightforward foundation of Web services. The same lesson can be applied to embedded Web services as a framework for integrating diverse sensor networks.

(85/2007)   http://www.sensorsmag.com

Open source semantic desktop is coming

NEPOMUK research project is developing an open-source specification and middleware. The ultimate goal is to make it easier to share personal knowledge beyond the desktop. The success and wide acceptance of the solution, which is called semantic desktop, can diminish the relatively sharp boundaries between the central and local information resources.

PC users have volumes of information saved on their computers, most of it disconnected and disparate save for a basic directory system. The answer to connecting all the information into a local semantic Web of information is closer than you might think. Thanks to the open source NEPOMUK (Networked Environment for Personalized, Ontology-based Management of Unified Knowledge) effort, the Semantic Desktop isn't a dream; it's an emerging reality and will be here with the upcoming release of KDE 4 for the Linux desktop. "NEPOMUK is a project attempting to address what we see as a major missing component of the open source environment -- what we call 'semantic capabilities,' which you can think of as the ability to define and take advantage of the relationships between different items and types of data throughout the desktop and beyond," Stéphane Lauriere, Semantic Web activities coordinator at Linux distribution told. The Semantic Desktop is more power than just using Google Desktop search, according to Lauriere since existing desktop search tools are limited to full text indexing. "The Semantic Desktop makes it possible to store relations, and then to search for specific ones," Lauriere explained. For example, a Semantic Desktop will store the relationship between a file saved on the computer and the e-mail it originates from. According to Lauriere the Semantic Desktop merges the document and database approaches by converting all the documents present on the computer into a gigantic graph of data that can be queried and enhanced from all the desktop applications. NEPOMUK isn't just about the desktop, though; the larger vision behind it is to be an enabler of the Semantic Web.

(86/2007)   http://www.internetnews.com

Developer expectations run high for Google Gears

One of the barriers in the fast acceptance of web applications is that they do not work when ther is no internet connection available. The open-source browser plug-in developed by Google aims to solve this problem. Gear is one of the new series of applications, which clearly show the downfall of the barriers between the web and the PC.

Developers have big plans for Gears, the Google Inc. browser plug-in designed to provide offline access to Web-hosted applications. Although Gears has only been available for a while in an early-stage version, many developers have rushed to give it a test drive and brainstorm for new ways to use it. Justin Hand is looking at Gears for a Web application he is creating for an American Red Cross chapter in Tallahassee, Florida. The application must have an offline component so that it can be used even if a major disaster knocks out Internet access. The application will be used to manage the list of local Red Cross volunteers, and will contain these people's contact information along with their skills. Once completed and implemented in the Red Cross' Capital Area Chapter of Florida, the application will be pitched for adoption in Red Cross offices nationwide. "Ensuring that a Web application such as this works during a disaster regardless of the outside [Internet access] networks being down is of top priority," Hand, a Red Cross volunteer IT coordinator, said via e-mail. Gears, an open source browser extension, contains three components. The first is a local server for caching and delivering "application resources" like HTML and JavaScript without a server connection. The second piece is a database that will allow for storing and accessing data from within the browser. The final component is what Google calls "a worker thread pool," designed to boost Web applications' responsiveness by carrying out operations in the background. Before Google released Gears at the end of May, Hand was considering hosting the volunteers' database physically in the Red Cross offices for offline access.

(87/2007)   http://www.infoworld.com

Rat-brained robot thinks like the real thing
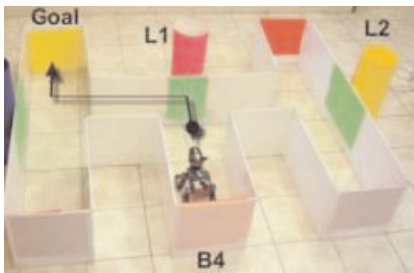
A new experiment demonstrates the stimulating effect of biological modells on robotics. A machine driven by simulated rat brain worked really well in complicated navigational tasks: in simultaneous localisation and mapping. It behaved like a real rat. In contrast with former "rodent-robot" experiments, the specifically reprogrammed Mexican Aibo did not perform in simulated but in real environment (in a maze).

A robot controlled by a simulated rat brain has proved itself to be a remarkable mimic of rodent behaviour in series of classic animal experiments. The robot's biologically-inspired control software uses a functional model of "place cells". These are neurons in an area of the brain called the hippocampus that help real rats to map their environment. They fire when an animal is in a familiar location. Alfredo Weitzenfeld, a roboticist at the ITAM technical institute in Mexico City, carried out the work by reprogramming an AIBO robot dog, with the rat-inspired control software. When placed inside a maze, the robot learnt to navigate towards a "reward" in a remarkably similar way to real rodents, using landmarks to explore. Weitzenfeld found that the robot could recognise places it had already visited, distinguish between locations that looked alike, and figure out roughly where it was when placed in an unfamiliar part of a maze, after just a single training session. "Our work is unique in that we are trying to reproduce with robots actual experiments carried out on rats," Weitzenfeld told. He is also working closely with neuroscientists who are experimenting with real rats. "Our goal is to extend our current models by testing new hypotheses in robots," he says, "and by performing corresponding new experiments with real rats that may lead to further understandings in rat spatial memory and learning." One of the challenges in robot navigation is to enable machines to create maps of their surrounding environment, while working out their location at the same time – a challenge known as simultaneous localisation and mapping or SLAM. "We believe this work will also inspire, in due time, new robotic approaches to SLAM and learning in robots," Weitzenfeld adds.

(88/2007)   http://www.nrewscientisttech.com

Virtually trustworthy

Avatars of the 3D virtual worlds will have realistic movements and gestures in addition their realistic outfit in the near future. Our virtual selves may be always relaxed, happy and understanding. This change can help the acceptance of the non-gaming oriented virtual world applications.

Avatars may closely resemble a person, or they may be fantastical creations such as aliens or talking lizards. Their online use dates back to the mid-1980s, when they were used in games such as Ultima and in the online social space Habitat. As technology has advanced, they have gone from being static 2D images to complex 3D animations, complete with realistic gait, fashionable clothing, and dynamic facial expressions. The challenge in creating more sophisticated avatars lies partly in the domain of computer graphics, such as better rendering of hair and fabric or more lifelike gait kinematics. Yet there is also a substantial social element: getting the avatar to interact with others gracefully and realistically. For example, if an avatar is rendered with detailed eyes, then appropriate gaze direction is essential. All such behaviors, which are taken for granted in face-to-face interaction, must be explicitly coded into the avatar. Today's online graphical interactions are still rather awkward. Behavioral sophistication lags behind rendering skill, so we have avatars whose appearance raises high expectations of humanlike behaviors but whose gaze and gestures are relatively primitive. However, it is quite conceivable that in a few years avatars whose behavior is nearly imperceptible from humans' will be available. Yet this raises important questions about the reliability of the impressions we form in avatar-mediated interactions. As behavioral software becomes more sophisticated, are we creating avatars that will be increasingly attractive and seemingly friendly but are in fact the ideal mask behind which a dishonest or manipulative person can operate?

(89/2007)   http://www.sciencemag.org

What makes you smile
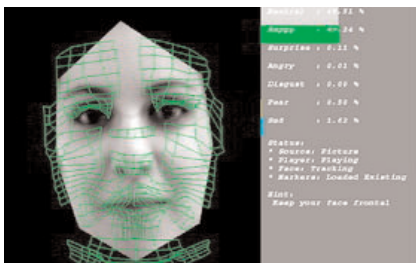
IT penetrates into our everyday life, and it consumes every piece of information. Information systems will be capable of not only processing, or even „understanding", the human way of structured information communication (natural language speech and text) but also analysing the human emotions and signs of metacommunication. Moreover, such „emotion recognising" softwares which were highly resource demanding up till now, can be implemented now on a PC and used in commercial applications.

A computer program that reads human expressions may bring an about-face in marketing. Dutch researchers using the software recently for a consumer test project seconded what wise men have always known: Sweets are the surest way to make a woman smile. Some 300 women in six European countries were filmed as they ate five foods: vanilla ice cream, chocolate, cereal bars, yogurt and apples. Not surprisingly, ice cream and chocolate produced the most happy expressions across the Old Continent. Researchers chose women -- who tend to be more expressive than men -- at universities, shopping malls and city centers to test foods at face value. Cameras first recorded volunteers noshing, then participants provided a "posed" version of the expression they felt to give a more emphatic face for comparison. Marketers increasingly use technology to determine what gives consumers bliss. But how does software analyze emotion? When we smile, frown or grimace, thousands of tiny facial muscles are at work. Emotion-recognition software, or ERS, creates a 3-D face map, pinpointing 12 key trigger areas like eye and mouth corners. Then a face-tracking algorithm matches the movements to six basic expression patterns, corresponding to anger, sadness, fear, surprise, disgust and happiness, or a mixture of them. The ERS used in the taste test is a kissing cousin to programs created by MIT and CMU. Unlike those projects, the Dutch software, which works in real time and runs on a standard PC and webcam, is built with commercial applications in mind.

(90/2007)   http://www.wired.com

Robotic insect takes off
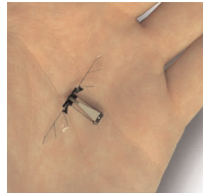
Insect-size tiny flying robots will take important part not only in the warfare of the future but in the protection of the environment too. If they manage to avoid the obstacles and they have lightweight chemical and other sensors, these mechanic flyes will be able to detect toxic materials.

A life-size, robotic fly has taken flight at Harvard University. Weighing only 60 milligrams, with a wingspan of three centimeters, the tiny robot's movements are modeled on those of a real fly. While much work remains to be done on the mechanical insect, the researchers say that such small flying machines could one day be used as spies, or for detecting harmful chemicals. "Nature makes the world's best fliers," says Robert Wood, leader of Harvard's robotic-fly project and a professor at the university's school of engineering and applied sciences. The U.S. Defense Advanced Research Projects Agency is funding Wood's research in the hope that it will lead to stealth surveillance robots for the battlefield and urban environments. The robot's small size and fly-like appearance are critical to such missions. "You probably wouldn't notice a fly in the room, but you certainly would notice a hawk," Wood says. Recreating a fly's efficient movements in a robot roughly the size of the real insect was difficult, however, because existing manufacturing processes couldn't be used to make the sturdy, lightweight parts required. The motors, bearings, and joints typically used for large-scale robots wouldn't work for something the size of a fly. "Simply scaling down existing macro-scale techniques will not come close to the performance that we need," Wood says. At the moment, Wood's fly is limited by a tether that keeps it moving in a straight, upward direction. The researchers are currently working on a flight controller so that the robot can move in different directions.

(91/2007)   http://www.technologyreview.com

Virtual world sharpens mind-control

Virtual reality is becoming a popular tool for physical or psychological rehabilitation (i.e. phantom limbs, etc.), and a brand new system could offer novel possibilities: in the controlled environment patients can perceive themselves performing any manner of task. They perform physical tasks and stimulate their brains without any physical movements.

A simulated world that can be explored simply by thinking about putting one foot in front of the other might offer new rehabilitation possibilities for disabled patients. This is the vision behind a project that connects a brain-computer interface (BCI) to an immersive virtual world. One team, from the Graz University of Technology in Austria, specialises in measuring signals from the brain, via electrodes or implants. The other, from University College London (UCL), UK, focuses on building highly immersive virtual reality worlds. Electrodes are attached to a person's scalp and electroencephalogram (EEG) equipment is used to monitor electrical activity within their brain. In this way, the system can be trained to identify the distinctive patterns of neuronal activity produced when they imagine walking forwards, or think about moving either their left or right arm. These thoughts can then be used to navigate or make an on-screen character, or avatar, move forwards or turn left or right. n addition, there is no need for the operator to wear a head-mounted display – they sit inside a room (located at UCL) inside which stereo video footage is projected onto three walls and the floor. A pair of shuttered glasses creates the illusion of 3D to intensify the overall feeling of being inside the simulated reality. After having a healthy volunteer test the system, the researchers asked a man paralysed almost entirely from the neck down to try it out. He was asked to walk up to different virtual characters and wait for each character to say hello. The subject was able to do so about 90% of the time.

(92/2007)   http://www.newscientisttech.com

Jesuits say take word of God to Second Life

It has longtime become evident that virtual worlds are not only and not first and fortemost for the entertainment. Their economies have more and more influence on real financial systems, we can study at virtual universities, the presence of civil (and military) organizations has become significant. The appearence of the religions was only a matter of time. And here we are: the Jesuits have arrived. It will be interesting to see that such a new and sophisticated environment like the Second Life will be able (or not) to medernize these very conservative organizations.

Catholic missionaries have always trekked to dangerous parts of the Earth to spread the word of God -- now they are being encouraged to go into the virtual realm of Second Life to save virtual souls. n an article in Rome-based Jesuit journal La Civilta Cattolica, academic Antonio Spadaro urged fellow Catholics not to be scared of entering the virtual world which may be fertile ground for new converts wishing to better themselves. "It's not possible to close our eyes to this phenomenon or rush to judge it," Spadaro said. "Instead it needs to be understood ... the best way to understand it is to enter it." "Is there (cyber) space for God?" Spadaro aaka in his article which says there are already virtual churches and temples serving countless religions. He quotes a Swedish Muslim who says his avatar prays regularly as he prays in real life. Spadaro warns the uninitiated that "the erotic dimension is very present" in Second Life, that people can buy genitalia for their avatars in a world that is "open to any form of erotic stimulation from prostitution to pedophilia." While the virtual world might be a refuge for some people seeking to flee the real one, it is also full of people seeking something more from life, including, possibly, religious enlightenment, he said. "Deep down, the digital world can be considered, in its way, mission territory," he said. "Second Life is somewhere where the opportunity to meet people and to grow should not be missed, therefore, any initiative that can inspire the residents in a positive way should be considered opportune."

(93/2007)   http://uk.reuters.com

Jaron's World: Computer Evolution

By analysing the progress of programming and the limits of our nowadays technologies, the author of this article, virtual reality pioneer Jaron Lanier thinks that softwares could better handle the problem of complexity if their developers copied biological models, i. e. the evolution. How can we avoid the unpredictable and so frequent bugs, system errors, etc.? For the development of sphisticated systems being able to handle these issues (of complexity) he proposes softwares made of modules that are responsible for identifying each other with pattern recognition.

There's a new book called Dreaming in Code, which centers on a group of engineers struggling to create a piece of personal productivity software. The book is an examination of the stressful mysteries of software.why do some software projects sail to completion while so many others seem cursed? The solution may be found in another kind of dream called "phenotropics," a word that roughly translates to "surfaces relating to each other." One way to understand it is to start by noticing that computer science has been divided by a fundamental schism. One side is characterized by precisely defined software structures. This is the approach to computers that requires you to make up a boundless number of silly names for abstract things, like the files on your hard drive. This was the only kind of computer science that was possible on the slow computers we were stuck with until fairly recently.On the other side of the schism there is an emerging kind of programming that has been practiced by diverse people like robot builders, experimental user-interface designers, and machine-vision experts. These people had to find ways for a computer to interface with the physical world, and it turns out that doing so demands a very different, more adaptable approach. The core idea of phenotropics is that it might be possible to apply statistical techniques not just to robot navigation or machine vision but also to computer architecture and general programming. Suppose software could be made of modules that were responsible for identifying each other with pattern recognition. Then, perhaps, you could build a large software system that wouldn't be vulnerable to endless unpredictable logic errors.

(94/2007)   http://discovermagazine.com

Tech design's new philosophy

PCs, cell-phones, and radios in the cars usually have more functionalities then its owners actually use. One of the key drivers behind the better exploitation of these functionalities is the design of the outlook and user software interface of these equipments. A big part success of the success of the iPod and iPhone can be attributed to the fact that its developers put an extra emphasis on the design issues.

Apple's breakthroughs with the iPod and iPhone, for example, weren't just about sleek exteriors or easy-to-use touch screens, design experts say. Apple also mastered the intangible of design--the underlying software engine that connects people to an iTunes music library, or to videos from YouTube or a home photo collection. The design, for the most part, frees people to forget about wonky things like software or licensing agreements with Hollywood studios. "Design isn't frosting or gravy, something you add at the end, but something you weave into the process," says John Maeda, a designer and professor at MIT's Media Lab. "That's the challenge of design in the future." More than ever, that idea is pervading the development and manufacture of consumer electronics, home appliances, automobiles, and Web services--any product that requires a chip and software. The shift toward making design a top priority is driven by the fact that microprocessors are turning up in an increasingly large array of everyday devices, from home entertainment systems to kitchen appliances to automobiles (which are so infused with electronics that they are, essentially, computers on wheels). Consumers don't want to deal with the complexity of networking these devices--they just want things to work. That's one area of focus for designers. The other is making devices visually attractive: for some extra money, people will pay for looks and brand image, and that creates a lucrative business opportunity for many companies. "There's much more of an emphasis now on thinking holistically about the design experience and how all these media connect," says Lisa Strausfeld, a designer at New York-based Pentagram Design, which is working on the design for the $100 laptop.

(95/2007)

http://www.cnet.com

European Commission backs new e-skills body
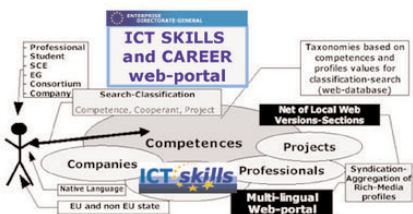
Multinational firms think Globally: about themselves and also abot their business environment. Major IT busines players are lobbying together to the European Comission. The goal is, to develop the knowledge basis of Information technologies in EU. Best practice will be shared among these coopetitors.

Leading IT vendors, training firms and certification bodies have joined forces with the European Commission in an attempt to develop solutions to Europe's growing IT skills crisis. The new e-Skills Industry Leadership Board will co-operate with the European Commission and consists of representatives from a range of stakeholders, including Cisco, Microsoft, Oracle, exam bodies CompTIA and Exin, and IT training provider Global Knowledge. Richard Pryor-Jones, EMEA President at Global Knowledge, said that the aim of the new group was to provide a forum for all the relevant bodies capable of addressing the IT skills crisis to trade ideas and initiatives. "We want to reflect on what is happening in different countries and start to establish some best practice sharing across different countries and companies," he explained. "The aim will be to pick out some of the best skills programmes and try to spread them out for wider adoption." He added that the new board would aim to have some recommendations back to the European Commission by the autumn and then seek backing to roll out some of the programmes from both the European Union and individual companies. "We will focus on practical delivery ideas and the board will be steeped in a practicality, rather than all the conceptual stuff, which is perhaps where some of the existing IT skills initiatives have fallen down." In particular, Pryor-Jones said that the board would focus on initiatives designed to make IT more appealing as a career choice. "I don't think we need anymore qualifications," he observed. "We need to address why people don't find IT sexy and why even computer science graduates are leaving the sector. We will look at schemes that can address those issues."

(96/2007)

http://www.channelweb.co.uk

Future promises 'insanely simple' technology

Sometimes, it seems as if the outlines of our brave, new (information) world be clearer. Beyond hurray optimism, however, it is worth to pay attention to the threats of being always on, virtual adventures and information overdose. Can people living in a constant stream of fascinating but useless information, be turned into willingless „zombies" if marketing experts so wish? Or can we unwillingly disclose information during our virtual trips which may be utilised by somebody to threaten our real, physical-biological existence if this is his or her interest. Dark clouds appear in the sky of our brave, new world.

Despite a future filled with seamless always-on connectivity and more personalisation of devices and services, the positives won't be completely pain free, according to Phil McKinney, vice president and chief technology officer of HP's personal systems group, who outlined his view of future computing. Our objective [in HP Lab] is not to define an exact end point but to define possible futures." Social dynamics will change between now and 2025, with virtual collaboration ramping up between now and 2015 and virtual worlds like Second Life becoming increasingly central to business and consumer activities in 2020 before gaining legal status in 2025, according to McKinney. The world of personal entertainment and the continued emergence of smart devices will also feature heavily in the years to come as will the move towards intelligent networks and seamless connectivity. "This opens up a Pandora's Box though, as you'll have more smart devices and how do you get those devices to work together? I'd love everyone to have my house as it's all HP but not everyone buys technology from one supplier so we need to look at how we make it easier for consumers to buy devices that work cohesively together," said McKinney. We're doing a lot of work with standards organisations... Enterprise customers or consumers don't care what wireless technology a device is using, they just want the experience of being always connected. We believe that in the next two to three years consumers will have that always-connected experience." What lies ahead will throw up a number of issues such as privacy and the danger of information overload, according to McKinney who believes that the answer is to create devices that are "insanely simple to use."

(97/2007)   http://www.itpro.co.uk

Watching virus behaviour could keep PCs healthy

Identifying viruses and other malicious sofwares is not an easy task, especially if we talk about previously unknown viruses or new variant of known viruses. A new approach developed by researchers of the University of Michigan opens new way in handling these problems.

Michael Bailey and colleagues at the University of Michigan, US, showed that five leading AV (anti-virus) programs could identify only between 50 and 80 per cent of a large sample of malware. And the programs struggled to agree on what they had found – the identifications often did not match. Bailey and his team say their approach is superior and have used it to develop a prototype AV system that is significantly better at identifying viruses once they are detected. The team set loose the malicious software on a quarantined computer, recording all the files and strings of instructions (processes) created and modified by the malware. They then created software that uses a database of these "fingerprints" to identify malware. It can also define clusters of malware that operate in similar ways, and generate a kind of family tree showing how superficially different programs have similar modi operandi. In tests on the same malware, the new software could identify at least 10 per cent more of the sample than any of the other AV software. It also always correctly linked different pieces of malware that behave in the same way – the best AV program spotted only 68 per cent of such doubles. The new approach could reduce the number of updates needed for conventional AV systems, suggests Richard Overill, a researcher at Kings College London, UK. "Instead of having separate patches for each virus, this could be more efficient and reduce the size of updates that must be downloaded."

(98/2007)   http://www.newscientisttech.com

Digital detective to track 30 billion fraud

Catch fraud in health care would lead to huge savings in the EU. There are new method to catch them. Methods are based on textmining and analysis, then detalied controll can be much more effective.

The iWebcare project is training a computer investigator to detect cases of the estimated 30 billion in healthcare fraud carried out across Europe each year. It will mean that the long arm of the law will have a few new, high-tech tricks up its sleeve. It is a huge problem. According to the Counter Fraud Service (CFS) of the UK's National Health System, EU expenditure on public healthcare is estimated to be 1 trillion per year. Fraud accounts for almost 3% of public healthcare expenditures in the UK and 3% to 10% of annual expenditures, both private and public, in the USA. Total fraud across Europe could be 30 billion, or even more if fraud rates in some countries match those in the USA. Worse, healthcare costs are set to surge as Europe's population ages. Tackling fraud effectively could free funds for more healthcare. Once it was established, the CFS reduced fraud by 45%. It may be possible to even exceed that figure by building better tools. That is where the iWebcare project comes in. Current detection methods rely on the experience of a human fraud detective combined with data mining tools, but these tools are comparatively ineffective, because they are based on very general rules. "They often offer results like a 'one percent probability of fraud', which is useless," notes Stefan Rüping of the Fraunhofer Institute in Germany. "It means a lot more work for fraud detectives and that a lot fewer cases of potential or probable fraud are detected. You really want to get results like '90% chance of fraud'."That may soon be possible. Fraunhofer and partners are working on a series of elements to create self-learning programs to data-mine, or analyse, healthcare transactions.

(99/2007)   http://istresults.cordis.europa.eu

File Sharers Protected in Civil Cases

The European Court will deliver its decision about the question whether EU rules allow or not the disclosure of the name and address of internet subscribers with copyright law enforcement organizations. According to the opinion, which advocate general Juliane Kokott has submitted to the court, EU regulation does not allow this.

Copyright groups may not be able to demand that telecom companies hand over the names and addresses of people suspected of swapping music illegally online, a senior legal adviser to the EU's highest court said. Advocate General Juliane Kokott, advising the European Court of Justice, said that EU law directs governments to resist the disclosure of personal data on Internet traffic in civil cases - unlike criminal cases, where compliance would be required. Promusicae, a nonprofit group of Spanish music producers, made a legal complaint against Spain's largest Internet provider, Telefonica, for not handing over the names and addresses linked to computers the group believes used the peer-to-peer file-sharing tool Kazaa to distribute copyrighted songs. A Spanish court hearing that case had asked the EU court for guidance on what EU law allows. Kokott's legal opinion is meant to help judges at the EU court come up with a recommendation, which the Spanish court can use to rule on the case. The EU court decision could then be cited by other national courts throughout the 27-nation bloc. Telefonica says the law only allows it to share personal data for criminal prosecutions or matters of public security and national defense. Separately, a Belgian court ruled in June that a local Internet provider, Scarlet, must filter or block file-sharing software to prevent users downloading music owned by Belgian copyright owners. It has six months to comply or faces daily fines.

(100/2007)   http://www.forbes.com

Nanotube forests on silicon chips
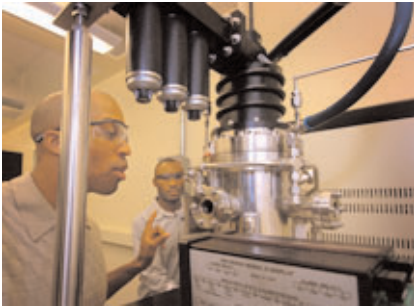
There are carbon nanotubes with single wall, with multiple walls and with more walls. Certain types are conductive, others behave as semiconductors, have great stability, and can be operated on high temperature. Nanotubes have already been utilized in a variety of areas, e.g. in batteries, displays. Theoretically, nanotubes have also excellent heat conducting properties, reaching the level of diamond and zapphire. Therefore, it is possible to create highly efficient, but inexpensive heat conductor material of large surface.

Engineers have shown how to grow forests of tiny cylinders called carbon nanotubes onto the surfaces of computer chips to enhance the flow of heat at a critical point where the chips connect to cooling devices called heat sinks. The carpetlike growth of nanotubes has been shown to outperform conventional "thermal interface materials." Like those materials, the nanotube layer does not require elaborate clean-room environments, representing a possible low-cost manufacturing approach to keep future chips from overheating and reduce the size of cooling systems, said Placidus B. Amama, a postdoctoral research associate at the Birck Nanotechnology Center in Purdue's Discovery Park. Researchers are trying to develop new types of thermal interface materials that conduct heat more efficiently than conventional materials, improving overall performance and helping to meet cooling needs of future chips that will produce more heat than current microprocessors. The materials, which are sandwiched between silicon chips and the metal heat sinks, fill gaps and irregu-larities between the chip and metal surfaces to enhance heat flow between the two. The method developed by the Purdue researchers enables them to create a nanotube interface that conforms to a heat sink's uneven surface, conducting heat with less resistance than comparable interface materials currently in use by industry, said doctoral student Baratunde A. Cola. Better thermal interface materials are needed either to test computer chips in manufacturing or to keep chips cooler during operation in commercial products. "In a personal computer, laptop and portable electronics, the better your thermal interface material, the smaller the heat sink and overall chip-cooling systems have to be," Cola said.

(101/2007)   http://news.uns.purdue.edu

Paper gets smarter

As we know, IT had begun its penetration into our everyday objects. It is expected that more and more objects will appear in the near future that are sensitive to changes in the environment, reactive to these signals and interactive. The paper can be no exception. It is used for information storage and transmission for thousands of years, therefore, it seems very natural that there are plans to make it even „smarter".

Boxes that sense the weight of their contents and books that talk back when pages are turned could be developed using technology being tested by researchers at MIT in the US. They are making paper with wires, sensors, and computer chips embedded, a technology dubbed 'Pulp-based' computing. Marcelo Coelho, now at MIT's Media Lab in Boston, US, presented progress on the project. Swedish researchers have previously used a slightly different technique have made interactive paper for billboard adverts. Other research groups are also working on so-called electronic paper - flexible displays designed to make computer screens more like traditional paper. But Coelho and Patti Maes at MIT and colleagues at Concordia University in Montreal, Canada, are instead blending traditional paper-making skills with electronic components. Although paper-making is an ancient process, "only now we have developed the material technology to make paper sheets that are responsive and interactive," says Coelho, who began the project while at XS Labs, a department within Concordia University that receives some external funding. To make electronically-enhanced paper the team produces a layer of paper pulp and lays down wires or patterns of conductive ink on top. Adding another layer of pulp, pressing and drying it leaves electronics embedded within the paper. This can give the paper a range of new abilities. For example, a spiral of conductive ink can act as either a speaker or a touch sensor, the researchers show. Current running through the speaker spiral makes the paper vibrate and produce sound. The quality is not yet good enough to produce speech, but Coelho says it "works well enough for feedback sounds and simple melodies used already in software."

(102/2007)   http://technology.newscientist.com

When the clouds go raining numbers

At least we can have a real feeling of what are actually the IT utility services. As far as the technique is concerned, they are provided through gigantic, hypercomputer-like data centres with thousands of processors. From a usability point of view, they are composed of anywhere, anytime and quickly accessible IT functions hosted in these data centres. For the users, they are gifts from the „heaven" – especially, if they don't have to pay for it. For the providers, it is chance to try out their new busioness models but in the end, no doubts about it, somebody will pay the entire bill someday.
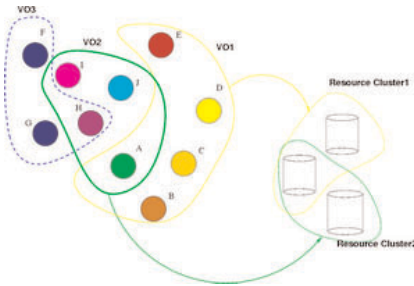
Even elite universities do not provide the technical training needed for the kind of powerful and highly complex computing Google is famous for. So Google and I.B.M. announced a major research initiative to address that shortcoming. The two companies are investing to build large data centers that students can tap into over the Internet to program and research remotely, which is called "cloud computing." Both companies have a deep business interest in this new model in which computing chores increasingly move off individual desktops and out of corporate computer centers to be handled as services over the Internet. Google is the leader in this technology. But companies like Yahoo, Amazon, eBay and Microsoft have built Internet consumer services like search, social networking, etc. that use cloud computing. In the corporate market, I.B.M. and others have built Internet services to predict market trends, tailor pricing and optimize procurement and manufacturing. Behind these services are data centers that use thousands of processors, store countless libraries of data and engage specialized software to tackle Internet-scale computing challenges. This new kind of data-intensive supercomputing often involves scouring the Web and other data sources in seconds or minutes for patterns and insights. Most of the innovation in cloud computing has been led by corporations, but a shortage of skills and talent could limit future growth. Google is building a data center that will contain more than 1,600 processors. I.B.M. is also setting up a data center for the initiative. The centers will run an open-source version of Google's data center software. I.B.M. is contributing open-source tools to help students write Internet programs and data center management software.

(103/2007)   http://www.nytimes.com

Controlling Bandwidth in the Clouds

Some problems may be caused, when the mirror computer is far away, and the accupation is completely different than tha original one. There is a nemw algorithm to solve these kind of problems: it is able to handle the bandwith idividually and it is rather robust too. The global system provides flexibly the bandwith, according to the demand.

If half your company's bandwidth is allocated to your mirror in New York, and it's the middle of the night there, and your sites in London and Tokyo are slammed, that New York bandwidth is going to waste. UC San Diego computer scientists have designed, implemented, and evaluated a new bandwidth management system for cloud-based applications capable of solving this problem. The UCSD algorithm enables distributed rate limiters to work together to enforce global bandwidth rate limits, and dynamically shift bandwidth allocations across multiple sites or networks, according to current network demand. "With our system, an organization with mirrored Web sites or other services across the globe could dynamically shift its bandwidth allocations between sites based on demand. You can't do that now, and this lack of control is a significant drawback to today's cloud-based computing approaches," said Barath Raghavan, the first author on a new paper describing the work, and a Ph.D. candidate in the Department of Computer Science and Engineering at UCSD's Jacobs School of Engineering. The "flow proportional share" algorithm the UCSD computer scientists created enables the coordinated policing of a cloud-based service's network traffic, and therefore, the cost associated with this traffic. The TCP-centric design is scalable to hundreds of nodes, runs with very low overhead, and is robust to both loss and communication delay, making it practical for deployment in nationwide service providers, the authors write. TCP (Transmission Control Protocol) is the Internet protocol that establishes a connection between two hosts and ensures that packets travel safely from sender to receiver; TCP is used for the vast majority of Internet traffic.

(104/2007)   http://jacobsschool.ucsd.edu

Faster wireless in works to transfer movies, other large files from gadget to gadget
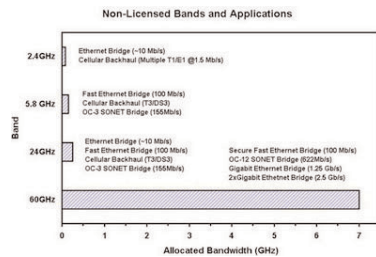
Fast growth is expected in near field data transmisson, mainly in the wireless systems using non-licenced frequency bands. In these highfrequency bands the transmission can be built up within 100 meters. The transmission capacity is rather high. This transmission may change completely the media technology.

With a wave of his hand over a homemade receiver, Georgia Tech professor Joy Laskar shows how easily - and quickly - large data files could someday be transferred from a portable media player to a TV. Poof! "You just moved a movie onto your device," Laskar says. While Wi-Fi and Bluetooth have emerged as efficient ways to zap small amounts of data between gadgets, neither is well suited for quickly transferring high-definition video, large audio libraries and other massive files. Laskar and other scientists at the Georgia Electronic Design Center have turned to extremely high radio frequencies to transfer huge data files over short distances. The high frequencies - which use the unlicensed 60 gigahertz band - have been a mostly untapped resource. Researchers say it could one day become the conventional wireless way to zap data over short distances. Laskar hopes it could soon become a rival to other wireless technologies. Getting government permission to use the spectrum would not be a problem, since that radio band, much like the one used for Wi-Fi, in unlicensed. Because the range will likely be less than 33 feet, interference is less likely and transmissions could be more secure.A similar short-range technology, known as ultra-wideband, is just now reaching the market after several years of wrangling between different companies and engineering bodies. It exploits another unlicensed band, reaching up to 10.3 GHz. The research is far from over, Laskar said, but he hopes those challenges can be overcome in the next year or so. If so, the hardware for transferring files could be available by 2009, and new TV sets could be built with the chips the next year.

(105/2007)

http://www.thetandd.com

The art of drawing in the air
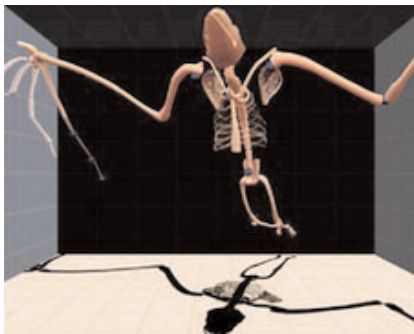
For centuries, it was the privilege of sculptures and craftsman to realise (in the true sense of the word) the objects of our internal „virtual" reality, i.e. our imaginations, dreams, in the 3D world. Equipped with the tools of the virtual reality which are external to us and our mind but consciously created, anybody can soon implement objects of its own imagination easily, or, at least, make their digital specification. It is then a question of another technology how and at what price we can manufacture these objects in the real space (e.g. 3D printing), if it is needed at all.

By putting on a virtual reality mask, holding a stylus in one hand and a tracking device in the other, an artist can draw 3D objects in the air with unprecedented precision. This new system is called "Drawing on Air," and researchers have designed the interface to be intuitive and provide the necessary control to illustrate complicated artistic, scientific, and medical subjects. Computer scientists Daniel Keefe, Robert Zeleznik, and David Laidlaw from Brown University have presented it in the IEEE Transactions on Visualization and Computer Graphics. The technique introduces two new strategies, using one hand or two hands, to give artists the tools they need for drawing different types of curves, and for viewing and editing their work. While other drawing techniques that use virtual reality allow artists to draw rough sketches, Keefe hopes that Drawing on Air will take the technology to a new level with its ability to achieve a higher degree of control. "First, think about a curve found in some interesting 3D shape—the handlebar of a road bike is a good example because it follows a smooth 3D curve," he explained. "Ok, now take your index finger and try to trace that curve out in the air in front of you. If you were able to leave a trail of paint behind your finger as it moves through the air, what you would notice from this exercise is that drawing a nice shape is really hard to do. First, you would probably notice that your drawing is quite wobbly. Second, you would probably find that the 3D proportion of the form is off." Keefe explained how the system uses drawing guidelines, force feedback, two-handed interaction to help artists draw this type of curve more precisely. The system then transfers the 3D drawing into the computer for use in 3D modeling, design, and illustration programs.

(106/2007)

http://www.physorg.com

Sensor rise powers life recorders

The growing capacity of data storaging may lead to life long data recording. The whole human life, memories, health care data can be stored in a small chip. Some people are worried about it, because there is always possibility of missuse the over stored information.

A person's entire life from birth to death could one day be recorded by a network of intelligent sensors, according to a senior scientist. By 2057, Martin Sadler of PC firm Hewlett Packard, said there could be at least 1m devices for every UK resident. Predicted advances in storage and cameras coupled with decreasing costs would allow this explosion, he said. But, he warned, the amount of personal data that could be collected would lead to difficult ethical dilemmas. "Maybe the first time you know you are pregnant is when a targeted piece of advertising comes through on your computer screen offering you some baby clothes because somehow the smart toilet, or some other aspect of your environment, leaked that information," he said. Already we live in a world surrounded by sensors and recording devices, said Professor Sadler, director of the Trusted Systems Lab at Hewlett Packard. Current uses include CCTV, wildlife monitoring, mobile phone cameras and GPS devices. A lot of the applications would be innocent and harmless but there would be potential to misuse the networks and the data they collected. We will hit some of these scenarios when people suddenly think, "Oh, I didn't really intend to go there". There will be a lot of after-the-event working out what we do about some of the more invasive uses of the technology. As a result, people needed to make decisions now about the future use if the technology. "We have some real choices that we can make over the next few years about how much we benefit from all this information... or how much it presents some sort of dark future for us," Sadler said.

(107/2007)   http://news.bbc.co.uk

Common AJAX platform for mobile and desktop computers

There are two main usage platforms. On one side, there are the mobile phones and PDAs, and we can find desktop and notebook computers on the other. Despite that we would like to see the same information on both (and whatever) platform, they substantially differ in key parameters from a usage point of view: screen size, keyboard etc. Their evolution has been associated with side ways and dead ends (e.g. WAP). Hopefully, the development of technologies for presentation, interaction and content production which ensure uniform handling of platforms, will be enabled in the near future.

Anticipating one Web emerging for both mobile and desktop access, dignitaries at a mobile AJAX workshop also saw a common AJAX platform emerging across both mediums. That's the trend. That's what appears is happening," said Jon Ferraiolo, manager of operations for OpenAjax Alliance and a Web architect at IBM. The views generally reflected a shared vision that a common AJAX platform will provide the industry with a universal content and application platform. This platform will be the Web on mobile, not on a separate mobile Web. The platform arising is based on two open-source browser projects, WebKit and Mozilla, as well as on the Opera browser. A role also is anticipated for the Windows Mobile technology. The need for AJAX interactivity on mobile devices has become especially critical as more and more people are beginning to access the Web via these devices. In the short term, despite the rise of WebKit, there is likely to be more fragmentation on devices than on the desktop. AJAX on mobile devices has its own special requirements and opportunities, such as limited screen size, keypad, CPU, memory, and bandwidth. Critical areas to address included JavaScript access to device APIs, offline and disconnected operation, widgets, mashups, and security. Also, a model for the future was described in which the existing Web moves to mobile AJAX in two waves. In the first wave, desktop content is made to work on devices even if the browser interface is suboptimal. Device manufacturers need to include a full-featured browser. With the second wave, content developers would adjust Web sites for a better user interface on mobile systems once they realize how large a percentage of users access their sites from these small-screen devices.

(108/2007)   http://www.infoworld.com

New night vision system reduces car accidents

Sensors and multimodal man machine interfaces can provide some help to night driving. The signals of infrared cameras are processed in realtime in a research program sponsored by the EU. This system is a good example, how to extend human capabilities in intelligent environment.

About 42% of fatal car accidents happen at night, according to the European Commission for the Automobile Industry. This figure is extremely worrying bearing in mind that there is about 60% less traffic during at night time. This is largely due to the reduced visual acuity and field of vision at night as a consequence of the illumination from the headlights — these factors are currently being studied by a group of researchers from the Department of Computer Architecture and Technology at the University of Granada. This group created an electronic system that significantly improves driving ability at night by using information extracted automatically from night visors. Researchers are working within a European project called DRIVSCO, whose participants include researchers from different countries who work on real-time vision and its application to the car industry. The UGR developed a microchip which, when installed in a car, makes it easier to extract the information from cameras to elements involved in driving (bends, pedestrians, cars, etc.) which may be present on the road. In other words, this system will inform drivers by means of visual, acoustic or other signs about the obstacles appearing in their way, making intelligent cars even more sophisticated than is currently the case. The researcher who carried out this study is Eduardo Ros Vidal, who explained that the aim of this chip is to support the illumination of the car, which is insufficient for ideal vision. The system uses two infrared cameras placed on the car which record the scene even further than the illumination of conventional headlights. Therefore, the chip extracts information about factors such as movement or depth in real time to improve the detection of specific elements and situations of interest.

(109/2007)   http://www.eurekalert.org

Fast ancestry identification based on DNA samples
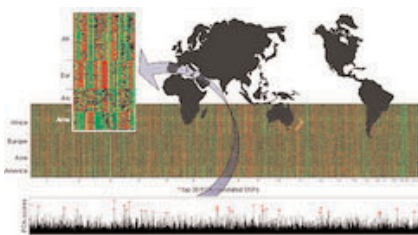
Through thousands of years up to the 21. century, man had believed that its past was reserved only in monuments, archeological findings and written documents. Today, we know that information is scattered around the world: whereever we turn we find traces of creatures, their DNS-specifications, which themselves bear imprints of the past, and tell stories of the past. The world is a vast open book about the evolution of life. With the increasing help of information technology, we just have recently started to learn its language, and to read its pages.

A group of computer scientists, mathematicians, and biologists from around the world have developed a computer algorithm that can help trace the genetic ancestry of thousands of individuals in minutes, without any prior knowledge of their background. Unlike previous computer programs of its kind that require prior knowledge of an individual's ancestry and background, this new algorithm looks for specific DNA markers known as single nucleotide polymorphisms, or SNPs (pronounced snips), and needs nothing more than a DNA sample in the form of a simple cheek swab. The researchers used genetic data from previous studies to perform and confirm their research, including the new HapMap database, which is working to uncover and map variations in the human genome. "Now that we have found that the program works well, we hope to implement it on a much larger scale, using hundreds of thousands of SNPs and thousands of individuals," said Petros Drineas, the senior author of the study and assistant professor of computer science at Rensselaer Polytechnic Institute. "The program will be a valuable tool for understanding our genetic ancestry and targeting drugs and other medical treatments because it might be possible that these can affect people of different ancestry in very different ways." Understanding our unique genetic makeup is a crucial step to unraveling the genetic basis for complex diseases. The program was more than 99 percent accurate and correctly identified the ancestry of hundreds of individuals.

(110/2007)   http://news.rpi.edu

Zeno could be next robot boy wonder

Zeno demonstrates well the state-of-the-art of contemporary robotics: as well as little children he often needs help and communicates this need towards the users. The recent results of artificial intelligence researches and the universe of theatre fictions unify in him and by this union he seems more self-aware than most of the other robots. This kind of fusions will result that robotics later or sooner will become an artform, too.

David Hanson—the genius inventor, father of "Frubber" life-like robotic skin, and the man who brought us a robotic Albert Einstein head - introduced a prototype of what could become the next must-have personal robot: a 17-inch-tall, 4.5-pound humanoid robot boy named Zeno. The prototype is described as an intelligent "conversational robot" and will ultimately be part of Hanson's "Robokind" line of personal, interactive bots. Zeno is still at least two years from commercial availability, but even at this early stage, the child-like robot apparently has some impressive features. Zeno's face is covered in Frubber, but Hanson explained it's a more "sophisticated version" than what's found on "Einstein," and is more durable and toy like. Unlike Einstein's face, there aren't any pores or wrinkles; Zeno is, ultimately, a cartoon character with a smooth, almost doll-like visage. Underneath the flexible skin are 12 motors (it has 18 more in its body) that provide Zeno with a wide range of expressions. Behind one of its large eyes is a camera that the robot uses to recognize faces. "[Zeno] recognizes faces better than people do, according to the latest facial recognition tests," said Hanson. Zeno's voice is generated via text-to-speech both dynamically and from prescript information. In fact, Zeno also tells stories and will recount adventures with its friends in the year 2027. While Zeno may eventually ship with a charging station, the current lithium-polymer prototype needs to be plugged in every hour or so. When low on power, Zeno cries and complains that it's tired. "So kind of an infant-like character. It's where robots are now: they're kind of helpless and it's natural that they should ask for our help," explained Hanson.

(111/2007)
http://www.pcmag.com

Wikipedia 2.0 - now with added trust

The accountability of Wikipedia articles was often questioned since the launch of the free online encyclopedia. To overcome this weakness the introduction of different editorial controls and restrictions are recently on the agenda. However users of Wikipedia are seemingly used to and accepted the hazards and risks of the open-source collective content creation. It is therefore justified to ask, whether there is a real need for better accountability of Wikipedia articles.

Wikipedia's entry on Albert Einstein looks good. Covering each phase of the physicist's life, from childhood to death, it tells readers about his politics, religion and science. Honours named after him and books and plays about his life are listed. But there is one snag: there is no way to tell whether the information is true. It is a problem that dogs every Wikipedia entry. Because anyone can edit any entry at any time, users do not generally know if they are looking at a carefully researched article, one that has had errors mischievously inserted, or a piece written by someone pushing their own agenda. As a result, although Wikipedia has grown in size and reputation since its launch in 2001 - around 7 per cent of all internet users now visit the site on any given day - its information continues to be treated cautiously. That could be about to change. The changes could help transform the encyclopedia from a rough guide into a trusted authority. But they might also erode the very freedoms that encourage people to contribute to the encyclopedia in the first place. Either way, the stage appears set for Wikipedia 2.0. The shift is a dramatic one for the encyclopedia. For now, edits to an entry can be made by any user and appear immediately to all readers. In the new version, only edits made by a separate class of "trusted" users will be instantly implemented. To earn this trusted status, users will have to show some commitment to Wikipedia, by making 30 edits in 30 days, say. Other users will have to wait until a trusted editor has given the article a brief look, enough to confirm that the edit is not vandalism, before their changes can be viewed by readers.

(112/2007)
http://technology.newscientist.com

Google testing "My World" for launch this year
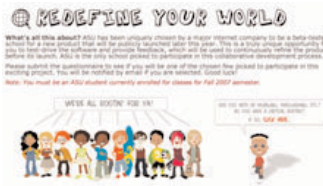
There is a stong strive for the interconnection of virtual environments with real world places since the appearance of the first virtual worlds. The 3D version of Google Maps is certainly among the most promising candidates, which can help to realize this dream.

Rumors of Google's plans to create a virtual world that rivals that of Second Life have popped up once again. The company could now be collaborating with Arizona State University to test the 3D social network, which may be tied into Google's current applications of Google Earth and Google Maps. ASU students received a questionnaire and screenshots. Specifically, the questionnaire intro says that students will be able to test a product that will be publicly launched later this year by a "major Internet company," and the graphic makes reference to 3D modeling, video gaming, and avatars. It proceeds to ask questions about students' involvement with social networks like MySpace and whether they have Gmail accounts. The social network referenced by the questionnaire is currently being dubbed "My World." It seems that a virtual world is natural progression of Google Earth and its 3D representations of... well, the Earth. Users could create avatars, like those in Second Life. The "street view" feature of Google Maps could be incorporated, as well as Google SketchUp, with avatars being able to walk around on actual streets and enter real buildings to check out what's inside and socialize with other avatars. But the purpose wouldn't be to rival Second Life and all of its fantasy, sex, and moneymaking schemes. Google Earth CTO Michael Jones insisted in January that Google Earth would always remain true to the real world and not dive into the type of fantasy world that Second Life has become. Therefore, Google's implementation would be more like "First Life," but in virtual form. If "My World" turns out to be a virtual representation of real life, however, it seems natural to question the purpose of launching such a service.

(113/2007)   http://arstechnica.com

Interoperable virtual worlds

The new initiative of the virtual world operators and IBM to create an interoperability standard in order allow the interconnection of the different virtual world services is not the first try. One can only hope that not only our virtual selfs will enjoy the practical results in the distant future.

IBM and Linden Labs, the operator of the Second Life virtual world, said they will work on ways to eventually let people use a single online persona in different online services. Interoperability is emerging as a key goal of the nascent virtual world industry, which attracting hundreds of millions of dollars in investment on the hopes that video-game graphics and rich 3-D environments will supplant flat Web pages. Currently, people who create a character, or avatar, in one virtual world cannot take that identity into another service. Designing a detailed avatar can take well over an hour, so a closed system discourages customers from abandoning that investment. But it is also a barrier to growth since few people bother to start the process anew in multiple virtual worlds. An open system would let people create one avatar that would keep the same basic appearance and customer data no matter where it was in cyberspace. "It is going to happen anyway," said Colin Parris, IBM vice president of digital convergence. "If you think you are walled and secure, somebody will create something that's open and then people will drain themselves away as fast as possible." Linden Labs is betting that an open system will reward interesting worlds with more customers and punish dull ones with an exodus of users. But such a virtual passport system may be years away, if it doesn't first fall prey to the kind of conflicting interests that occasionally bog down efforts to draw up standards in the fast-changing technology industry. IBM's Parris said the effort would first focus on studying situations where the ability to travel between virtual worlds is most in demand. The nuts and bolts of how to make different software work together will come later.

(114/2007)   http://www.msnbc.msn.com

Virtual lessons stimulate students
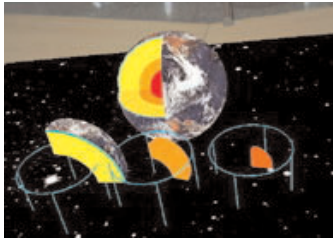
Since a while different synthetic worlds and virtual reality systems have not only been functioning for military and entertainment purposes but they have been used in economics and recently in education too. Apart from the fact that these systems are more enjoyable than the traditional ones, experiences proove that (as teaching aids) they stimulate students to have better results.

A virtual reality system which allows children to manipulate planets or watch flowers spring to life has become a big hit in Singapore primary schools. A system being trialled in the South-east Asian city state, called "mixed reality", displays graphics as three-dimensional images in the classroom. The child wears a small headset which allows them to see moving, interactive images of the Solar system or plants as if they were in front of their eyes, but, instead of having an entire world generated inside a big helmet, the images appear as if they are in the class with the other children. "The mixed reality classroom is a combination of our mixed reality technology with educational theory," said Wei Liu, of the Mixed Reality Lab which developed the system. The system works through boards laid out on a desk. When a user looks at the board through their head-mounted display, the headset registers the board and displays objects. With the solar system, they can see planets and move them into the correct order, or "dissect" the Earth to see what is inside. Meanwhile the virtual plants can germinate, to allow students to observe how they reproduce - complete with virtual bees. The display also includes a camera so other students can view what the user is seeing on a big screen. Ms Wei said that child feedback on the mixed reality system had been very positive. She explained that in order to test the effectiveness of the tool, teachers split their classes into some children who used the system, and others who were taught using traditional learning methods such as lectures and online information. After the school term the children were tested, and the ones who had used the mixed reality did better.

(115/2007)   http://news.bbc.co.uk

Computer gaming requirements spurring scientific advances

Apart from the fact that the rapid development and increasing demands of the videogame indusry have resulted a serious interdisciplinary (computing science, biology, chemistry, material sciences, etc.) approach (and teamwork), this evolution has had a huge impact on the basic researches, too. On the other hand technologies developed for gaming will be used in distant fields as well. However, for the successful use of these technologies, academic agendas should be considerably changed.

A revolution to greatly speed the pace of scientific and technological advances will unfold in the next few years, and it comes directly from the needs of the computer game business. In a talk at an international meeting in Urbana, David Kirk, chief scientist of Nvidia Corp., a semiconductor-chip concern in Santa Clara, Calif., described how the multimedia chips his company designs for the video game industry are being adapted for scientific research. For video games to display fast-moving, three-dimensional graphics, they require chips that are massively parallel, meaning they break computations down into numerous subparts performed simultaneously. Graphics chips run about 100 times faster than conventional microprocessors, and engineers are finding ways to adapt them to solve problems that go beyond realistic renditions of pirates hacking off one another's heads. For chemists, this will mean staging experiments on the computer to do a bunch of them very fast, looking for interesting results that can then be tried in the real world. Same thing goes for biologists, materials scientists and the rest. Kirk calls this "the democratization of supercomputing," but it won't happen unless universities change the way they teach students because it will require new skills to write the software needed to harness this power for scientific research. The University of Illinois at Urbana-Champaign is doing this, said Kirk, who is co-teaching a class there. In September Kirk talked to a conference sponsored by the university's coordinated science laboratory, where he was joined by scientists from many countries to consider how changes in information technology are challenging universities.

(116/2007)   http://www.chicagotribune.com

Online worlds to be AI incubators

Virtual worlds and online games start to function as kind of artificial intelligence incubators and testbeds: more and more characters are controlled by artificial intelligence programs. These programs decide the way the characters act in different situations. The popularity of virtual worlds dramatically increases the demand for smarter virtual beings.

Online worlds such as Second Life will soon become training grounds for artificial intelligences. Researchers at US firm Novamente have created software that learns by controlling avatars in virtual worlds. Initially the AIs will be embodied in pets that will get smarter by interacting with the avatars controlled by their human owners. Novamente said it eventually aimed to create more sophisticated avatars such as talking parrots and even babies. "The virtual world provides the body," said Dr Ben Goertzel, founder and head of Novamente. He said the company had developed a "Cognition Engine" that acted as the thinking part of the artificial intelligences it wanted to create. This engine had some partially scripted behaviours and goals for the avatar under its control but was also capable of reasoning to work out novel ways to achieve its aims. Dr Goertzel said business and research reasons drew Novamente towards using virtual worlds for its AI development. There was likely to be a ready market for smart virtual pets in worlds such as Second Life and many others, he said. "There are a lot of virtual pets out there and none of them have much intelligence," he said. Many of the computer controlled characters in games are driven by basic AI programs that dictate how they behave when attacked, when they spot a player's character or how they interact.On the research side, said Dr Goertzel, virtual worlds also solved the problem of giving an AI a relatively unsophisticated environment in which it could live and learn. "I'm one of many AI theorists who believe that embodiment is important," he said. "Typing stuff back and forth does not give the AI much to go on in terms of understanding the world around it, or itself or its place in that world."

(117/2007)   http://news.bbc.co.uk

Japan's robot industry forecasts strong growth

In spite of the fact that according to South-Corean plans in 2020 every households will be equiped with at least one robot, for many years Japan will be the leading world power in robotics. Their selling and poduction indices have been risen year after year and considering the increasing (especially South-American) demands, this trend will not change in the near future.

Japan's robotics industry is expected to show robust growth and remain the world leader thanks to growing exports to emerging economies, an industry group said. While Japan has become famous for its cutting-edge humanoid robots, the industry's sales are almost all for industrial robots, particularly those that help manufacture cars, electronics and other products. Japan in the calendar year 2007 is set to produce a record 760 billion yen (6.5 billion US dollars) worth of robotics, a rise of 4.1 percent from the previous year, the Japan Robot Association said. The industry is expected to post growth of another 3.9 percent next year, with production seen hitting one trillion yen by 2010. The growth will be sustained by growing production of flat panel and liquid crystal display televisions, whose sales are rising as competition brings down prices for consumers, the robot association's chairman Kensuke Imura said. The association, which groups 138 companies, said that exports of Japanese robotics will continue to expand, boosted by firm demand from emerging markets in Asia and Latin America. "Investment in China is increasing due to growing demand for personal computers, cell phones, digital electronic products and flat screen televisions," Imura said. The association said that Japan would remain the world leader in robotics "for some time," brushing aside the growing research and development from South Korea, China and India. "Unlike foreign firms that buy up technology and leave it to a second party to manufacture, Japanese firms produce products from the bottom-up, leading to high-quality products," said the group's executive director Tokuo Iikura.

(118/2007)   http://www.smh.com.au

New service eavesdrops on Internet calls

A phone call via Internet is not absolutely free, because we have to hear unneccesary adverticements, and also some notes can be made about our talks and also our linkages.

A startup has come up with a new way to make money from phone calls connected via the Internet: having software listen to the calls, then displaying ads on the callers' computer screens based on what's being talked about. For instance, a caller talking about going for dinner might see ads to local restaurants and restaurant review sites, while someone pondering whether to buy a new computer might see ads for computer stores. Relevant unsponsored links also appear. That is, if the system works. It's notoriously difficult for computers to recognize speech. A test of Puddingmedia's beta software was a mixed success: Relevant ads appeared when this reporter talked about restaurants and computers, but the software was oddly insistent that he should seek a career as a social worker, showing multiple ads and links pointing to that field. "Sometimes crazy things pop up. It actually enriches the conversation, which is very cool," said Ariel Maislos, chief executive of Puddingmedia. The company's aim is not to be an independent provider of ad-financed Internet phone calls, but to license its speech-recognition service to other companies that use Voice over Internet Protocol, or VoIP. Puddingmedia said it was talking to several possible partners but can't name any yet. Outfits like eBay Inc.'s Skype unit would be possible partners. Skype provides free calls between computers but charges for calls to phone numbers so it can recoup connection fees charged by phone companies. Those costs could possibly be offset with an advertising model like Puddingmedia's. Maislos stressed that the calls are not stored in any way, nor does Puddingmedia keep a record of which keywords were picked up from a particular call.

(119/2007)   http://www.msnbc.msn.com

'Smart homes' could track your electrical noise

Connection of the home elecronic machines through a computer is only the next step. But every household works with different rithm. Computers are able to hear the noise of the home machines. So they are able to learn home task series. Based on this, smart home can exist without sensors and cameras. This system may watch also the activity level of old age people.

Your computer could one day track your movements around the house by monitoring the electrical noise made by household appliances as you switch them on and off. Such a system could be cheaper and simpler to operate than the suite of sensors that researchers currently envisage. Scientists and visionaries have long imagined smart homes that could cater to our every whim. But their ideas all rely on cameras, microphones or other sensors in every room to track the locations of the occupants. The new method relies on a device plugged into a single standard wall socket that monitors noise in the electrical supply caused by electrical devices being switched on and off. A computer monitoring the device can then infer that a person must be in that location. "The problem I see with a lot of ubiquitous computing research is that it requires the creation of new infrastructure and technology" says Gregory D Abowd, a computer scientist at the Georgia Institute of Technology. In a paper he and colleagues show that they could train a computer to distinguish between activity in different rooms as their lights were switched on and off, or to tell the signature of microwave oven from that of a ceiling fan. To do this, they used a laptop to analyse the frequencies of noise created in the home power line as appliances were switched on and off. They trained the computer to recognise specific appliances by turning them on and off. They tested 19 different electrical devices in six different homes and achieved accuracies between 85 and 90%. The system could be useful for a home-automation system that turns heating or sound systems on and off as people enter and leave rooms, for instance. It might also be useful for monitoring the activity levels of older people.

(120/2007)   http://technology.newscientist.com

Dangers of using ICT implants for games
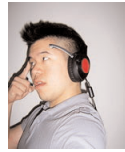
The first wide scale application area of non-invasive ICT implants will be computer games and not health care. We might have to say good by to our bellowed mice in a few years.

Your brain might be your next videogame controller. That might sound pretty awesome, but the prospect of brain-controlled virtual joysticks has some scientists worried that games might end up controlling our brains. Several makers of brain-computer interfaces, or BCIs -- devices that facilitate operating a computer by thought alone -- claim the technology is poised to jump from the medical sector into the consumer gaming world in 2008. Companies including Emotiv Systems and NeuroSky say they've released BCI-based software-development kits. Gaming companies may release BCI games next year, but many scientists worry that users brains' might be subject to negative effects. For example, the devices sometimes force users to slow down their brain waves. Afterward, users have reported trouble focusing their attention. "Imagine that somebody uses a game with slow brain-wave activity and then drives a car while still in that state," says Niels Birbaumer, a leading independent researcher in medical applications of BCIs. "You could have an accident. I think it's a rare possibility, but it should be tested before people do this." Consumer BCIs use noninvasive electroencephalogram (EEG) sensors attached to the scalp to detect brain-wave patterns. The signals are amplified and digitized, so a computer can process the information. BCIs can allow game players to move around and manipulate objects within virtual game environments, using thought alone. They can also detect and monitor the brain-wave patterns associated with a person's emotional state and stress levels.

(121/2007)   http://www.wired.com

Study finds human-robot attachment

Computers play an important part in our daily life. It seems that soon robots will be important, too. Or, are they already? A recent American study suggests that we will be more and more attached to them. Furthermore the well-known humanoids were not in the study. Since the researchers have only concentrated on 'practical' robots, they only interviewed Roomba-owners. After all, Roomba is a faceless vacuum-cleaner and not a lovely machine doll. What will be our attitude to those developed considering the results of affective computing?

People give them nicknames, worry when they signal for help and sometimes even treat them like trusted pets. A newly released Georgia Tech study shows that some Roomba owners become deeply attached to the robotic vacuums and suggests there's a measure of public readiness to accept additional robots in the house - even flawed ones. "They're more willing to work with a robot that does have issues because they really, really like it," said Beki Grinter, an associate professor at the school's College of Computing. "It sort of begins to address more concerns: If we can design things that are somewhat emotionally engaging, it doesn't have to be as reliable." Grinter enlisted Ph.D. student Ja Young Sung, who studies "emotional design" - the theory that certain types of design can influence consumers to become emotionally attached. First, Sung Young monitored an online forum devoted to Roombas, which revealed people who named them and traveled with them and one owner who introduced the machine to his parents. Others reported their efforts to "Roomba-ize" their homes so the robot can roam the floors more easily. Some bought new rugs, pre-cleaned the floors to clear the robot's route and purchased new refrigerators with a higher clearance so their machines could clean under them easier. Next she studied 30 committed Roomba users and found that 21 had named their robots. Another 16 referred to the robot as "he," arbitrarily assigning the robot a gender. The third phase of the study focused on more traditional users. Polling 379 U.S. users, it found that some would pre-clean their homes before using the machine, and that it seemed to make males more excited about the chore of vacuuming.

(122/2007)   http://www.examiner.com

Adaptive playgrounds

Games which adapt to the abilities of the player may be useful for children. However it is more important that machines provide us with as much information as we can process. Intelligent playgrounds are ideal for the research of such adaptive applications.

The weakest children may no longer be left out of playground games. New technology may help to put kids on a more level playing field, which may in turn motivate them to learn and encourage competitiveness. Using modern artificial intelligence and robotics, new playground games can recognize a child's behavior and respond accordingly -- in real-time -- to make the game harder or easier. The industry calls it augmented cognition, or 'aug cog', a technology that is also being developed by the armed services to reduce mental overload in the battlefield. For example, fighter pilots helmets can be equipped with sensors to distinguish when the brain is becoming overdosed. When that happens, a computer will adjust the level of incoming stimuli, dimming the interface and lowering the volume of messages. The end goal is that a computer will eventually be able to judge whether incoming material is important enough to interrupt your current activity. The research aims to create more effective military personnel but it could be used by anyone who has to cope with multiple information streams, for example stock brokers under stress. Aug cog is also being studied for its applications in the gaming world. It can be utilized in video games to raise or lower difficulty levels, thereby ensuring that a player is sufficiently stimulated but not overwhelmed. It may be children who are experiencing the benefits of aug cog first. Researchers at the University of Southern Denmark at Odense have built special playgrounds at two schools, two kindergartens and two youth clubs in the city. Henrik Hautop Lund, professor of robotics, says he wants to transform playgrounds for the new millennium. "It has been incredible to see how immediate children respond to them," Lund says.

(123/2007)   http://edition.cnn.com

Online game helps people recognize Internet scams

Phishing is one of the most common forms of computer crime. These attacks attempt to trick people into revealing personal information or bank or credit card account information. Often, they involve emails that appear to be from a bank, etc. and try to direct recipients to visit fraudulent Web sites. We follow the instructions and soon will be surprised... What can we do against these attacks? For example we prepare ourselves by playing computer games.

Carnegie Mellon University computer scientists have developed an interactive, online game featuring a little fish named Phil that can teach people how to better recognize and avoid email "phishing" and other Internet scams. In testing at the Carnegie Mellon Usable Ptivacy and Security (CUPS) Laboratory, people who spent 15 minutes playing the Anti-Phishing Phil game were better able to identify fraudulent Web sites than people who spent the same amount of time reading anti-phishing tutorials or other online training materials. Now, the CUPS Lab wants to see how Anti-Phishing Phil performs when he swims in a bigger, more diverse pond. As part of a field test, researchers ask people to visit Phil's website and click on the "Play the game!" link. Participants will be asked to take a short quiz, play the game and then take another quiz. Phishing attacks attempt to trick people into revealing personal information or bank or credit card account information. Often, they involve emails that appear to be from a legitimate business, such as a bank, and direct recipients to visit a Web site that likewise appears to belong to that business. There they are asked to "verify" account information. In addition to spoof emails and counterfeit Web sites, some attacks even mimic parts of a user's own Web browser. "We believe education is essential if people are to avoid being ripped off by these phishing attacks and similar online scams," said Lorrie Cranor, director of the CUPS Lab. "Unlike viruses or spyware, phishing attacks don't exploit weaknesses in a computer's hardware or software, but take advantage of the way people use their computers and their often-limited knowledge of the way computers work."

(124/2007)   http://www.cmu.edu

Cross-border eGovernment services in the EU

According to the Lisbon Ministerial Declaration on eGovernment the support of the development of cross-border eGovernment services will be a priority objective in the EU in the coming years. This aim will also be supported with an action plan.

The Lisbon Ministerial Declaration on eGovernment, signed on 19 September 2007, reconfirms the commitment of the EU Member States to the continued development of eGovernment and outlines a number of priorities for the future. The Ministerial eGovernment Conference 'Reaping the Benefits of eGovernment', which took place 19-21 September 2007 in Lisbon, Portugal, brought together Ministers and ministerial representatives from all EU Member States. It also attracted over 1 000 conference participants, demonstrating the high level of interest in this key area. Pointing out the growing importance of eGovernment, Siim Kallas, Vice-President of the European Commission in charge of Administrative Affairs, Audit and Anti-Fraud noted that: "eGovernment is becoming mainstream, which means that eGovernment expenditures have become an integral part of the policy budget." The conference provided the opportunity to take stock of progress made in the 'National Progress Report on eGovernment in the EU27+'. As Commissioner and Vice-President Kallas noted, "We have come far – but we still have some way to go."

(125/2007)   www.epractice.eu

Consumer protection plays key role in IT security

Investigation

Since the beginning of this year the U.S. Federal Trade Commission (FTC) is applying penalties to organizations that are in noncompliance with their own information security and privacy promises.

Of all the U.S. government regulatory oversight agencies, the Federal Trade Commission (FTC) is the most active and aggressive in looking for and applying penalties to organizations that not only are in noncompliance with laws and regulations, but also those who are not in compliance with their own information security and privacy promises; in other words, those that are practicing "unfair and deceptive trade practices." FTC Chairman Deborah Platt Majoras said October 1 in a speech kicking off the 2007 National Cyber Security Awareness Summit that the FTC plans to continue actively going after organizations that do not have appropriate information security programs and practices in place. It is important for your business leaders to understand this clearly; the FTC can, and will, apply penalties against organizations that do not have proper information security and privacy practices and programs in place, even if there has not yet been a breach. A breach will certainly put the FTC's spotlight of scrutiny upon an organization, though, and make it that much more likely to undergo an FTC investigation. Business leaders must understand that the best way to prevent FTC penalties and the associated bad publicity is to avoid an information security incident in the first place by having appropriate security in place.

(126/2007)   www.realtime-itcompliance.com

Winner: The Ultimate Dielectric Is...Nothing
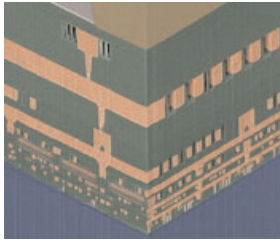
One of the key issues of continuing development of microchips is the insulation of the cables connecting the transistors inside the chip. IBM'S researchers managed to develop a production procedure, which uses the best insulator, vacuum for the separation of the wires. The chips made with the new technology may appear on the market already in 2009.

The running joke at IBM's site in East Fishkill, N.Y., is that engineers who have been working there for 30 years still have trouble locating their own offices. And sure enough, finding your way through the low hedge of cubicles in the 300 Building is very nearly impossible. That's because the architect designed it to reproduce the tortuous wiring scheme inside a microprocessor. That's the rumor, anyway. Now imagine having to insulate such a tangle, but in microcosm: many kilometers of -nanometer-scale copper conductors in a sliver of semiconductor the size of a child's thumbnail. That was the challenge facing IBM Fellow Dan Edelstein, who 10 years ago led an industry-wide switch from aluminum to copper chip wiring that has enabled every micro-processor since 1998. Now Edelstein is hatching his next revolution. With his colleague Satya Nitta, he is surrounding the conductors in IBM's bleeding-edge microprocessors with holes. He thinks his competitors will have little choice but to follow his lead in the infinitesimal realms he is staking out. Those holes—IBM calls them air gaps—are actually cavities of vacuum embedded in the insulation that surrounds the chips' wiring. Air gaps may well be the solution to a problem that has been tripping up chip manufacturers for almost a decade: when you cram nearly 10 kilometers of wiring into a space smaller than a postage stamp, the signal on one wire is felt by its neighbors. The electric field between them can then impede the flow of current through the wires, and that slows down the signals they carry. IBM is a bit cagey about saying exactly when the new technique will go into production, other than that it will be in chips slated for production in 2009.

(127/2007)

www.spectrum.ieee.org

The revolution of plastic displays

In May 2007, Sony Corp. reported the first full-color, video-rate, flexible, all plastic display in which both, the thin film transistors as well as the light emitting pixels were made of organic materials. The field-effect transistors made from organic material (e.g. various polimer) have a bright future in large-area electronic devices such as displays, and it becomes more and more important to manufacture these from low-cost materials and with low-cost technology.

Using room-temperature processing, researchers at the Georgia Tech have fabricated high-performance field effect transistors with thin films of Carbon 60, also known as fullerene. The ability to produce devices with such performance with an organic semiconductor represents another step toward practical applications for large area, low-cost electronic circuits on flexible organic substrates. The new devices – which have electron-mobility values higher than amorphous silicon, low threshold voltages, large on-off ratios and high operational stability – could encourage more designers to begin working on such circuitry for displays, active electronic billboards, RFID tags and other applications that use flexible substrates. Researchers have been interested in making field-effect transistors and other devices from organic semiconductors that can be processed onto various substrates, including flexible plastic materials. As an organic semiconductor material, C60 is attractive because it can provide high electron mobility – a measure of how fast current can flow. Previous reports have shown that C60 can yield mobility values as high as six square centimeters per volt-second. However, that record was achieved using a hot-wall epitaxy process requiring processing temperatures of 250 degrees Celsius – too hot for most flexible plastic substrates. Though the transistors produced by the team display slightly lower electron mobility they can be produced at room temperature. If you want to deposit transistors on a plastic substrate, you really can't have any process at a temperature of more than 150 degrees Celsius. With room temperature deposition, you can be compatible with many different substrates. For low-cost, large area electronics, that is an essential component.

(128/2007)

www.gtresearchnews.gatech.edu

'Hybrid' computers will meld living brains with technology
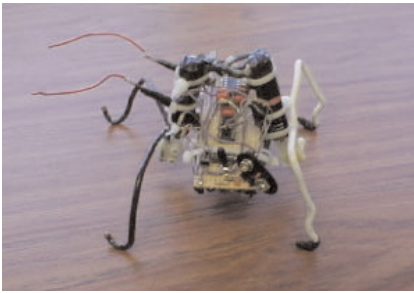
More and more experimentations aim to synthesize living tissue and inorganic material in the same infocommuication systems. One important reason of this type of researches and developments is the fact that hybrid systems have more effective sensory mechanisms than our present-day computers, robots, etc. It means that future desktops and laptops will have organic parts as well as inorganic ones.

A scientist who successfully connected a moth's brain to a robot predicts that in 10 to 15 years we'll be using "hybrid" computers running a combination of technology and living organic tissue. Charles Higgins, an associate professor at the University of Arizona, ha built a robot that is guided by the brain and eyes of a moth. Higgins told Computerworld that he basically straps a hawk moth to the robot and then puts electrodes in neurons that deal with sight in the moth's brain. Then the robot responds to what the moth is seeing -- when something approaches the moth, the robot moves out of the way. Higgins explained that he had been trying to build a computer chip that would do what brains do when processing visual images. He found that a chip that can function nearly like the human brain would cost about $60,000. "At that price, I thought I was getting lower quality than if I was just accessing the brain of an insect which costs, well, considerably less," he said. "If you have a living system, it has sensory systems that are far beyond what we can build. It's doable, but we're having to push the limits of current technology to do it." This organically guided, 12-in.-tall robot on wheels may be pushing the technology envelope right now, but it's just the seed of what is coming in terms of combining living tissue with computer components, according to Higgins. "In future decades, this will be not surprising," he said. "Most computers will have some kind of living component to them. In time, our knowledge of biology will get to a point where if your heart is failing, we won't wait for a donor. We'll just grow you one. We'll be able to do that with brains, too. If I could grow brains, I could really make computing efficient."

(129/2007)

www.computerworld.com

Double antennas deliver double the signal

The result of the PLUTO project is an excellent example of the empirical observation called Cooper's Law, according to which the spectrum efficiency of radio communications doubles every two-and-a-half years. The more efficient use of frequency spectrum diminishes the cost of the wireless infrastructures and lowers the energy consumption of the terminal equipments.

Digital TV transmission techniques that deliver most benefit in the worst reception environments have been developed by a consortium of European researchers. The technologies promise to reduce the network infrastructure needed for mobile TV, while minimising the power demands and complexity of mobile TV receivers of the future. In a typical broadcast transmission, radio signals bounce off objects in the environment, reaching the receiver over multiple paths. Distortion from 'multi-path' signals can produce fading, resulting in temporary failure of reception. Most of us have experienced this, moving a mobile phone around a room to get the strongest signal. Modern broadband wireless technologies like wimax, DAB for audio, and DVB-T and DVB-H for video, use a modulation scheme called Orthogonal Frequency-Division Multiplexing (OFDM). An OFDM transmission is spread across thousands of different sub-carriers, each carefully organised at slightly different frequencies within the channel. Spreading the transmission across a high number of sub-carriers increases the probability of maintaining error-free transmission. Researchers have demonstrated that splitting the transmit power between multiple antennas can provide substantially more effective coverage than using a single antenna. Signal simulations carried out for project Pluto show a gain of up to 5 decibels could be achieved. The Physical Layer DVB Transmission Optimisation (PLUTO) project comprises a consortium of academics, equipment manufacturers, propagation experts and broadcasters from Finland, France, Germany and the UK, co-funded by the European Commission.

(130/2007)

cordis.europa.eu

Amazon servers, starting at 10 cents an hour

The new generation of application services appeared on the horizon. Through the new Amazon.com service called Elastic Compute Cloud (EC2) we may buy according to our own ever changing needs computational, storage and data transfer capacity. The most interesting novelty is the business model. The subscriber has only to pay for the use of server processor time, the actually stored and downloaded amount of data. There is no monthly subscriber minimum charge, loyalty period and onetime accession contribution.
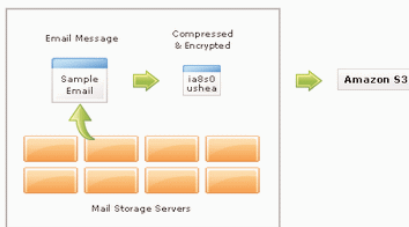
Amazon.com announced a service to provide computing power on demand over the Internet. This hosted service, called Amazon Elastic Compute Cloud (EC2), is in limited beta testing and is aimed at software developers writing Web applications. The service is offered to developers, who can tap into the server-processing service to quickly meet their application's changing needs. Rates start at 10 cents per "instance-hour" consumed--a dime for the use of a guaranteed minimum amount of computer capacity running particular server software. This utility computing service works with Amazon Simple Storage Service (S3), which Amazon introduced earlier in 2007. "Amazon EC2 reduces the time required to obtain and boot new server instances to minutes, allowing you to quickly scale capacity, both up and down, as your computing requirements change. Amazon EC2 changes the economics of computing by allowing you to pay only for capacity that you actually use," Amazon Web Services said on its Web site. The Amazon Web Services division of the retail and technology company is a big proponent of the idea of building Web applications on top of hosted services. It has rolled out a number of services--available via XML-based application programming interfaces (APIs)--that essentially constitute a development environment for Web developers. In addition to its storage and server lineup, Amazon Web Services has introduced services for messaging, search and e-commerce.With Amazon EC2, developers set up or choose an Amazon Machine Image, which contains the software needed to boot up an instance of a server. Writing to the published APIs, developers can automate the process of adding and subtracting more server capacity as traffic to their Web applications changes.

(131/2007)   www.news.com

Why VoIP is the next target for spammers

The unsolicited advertisements are appeared in the field of VoIP services. The VoIP spams the SPITs (SPam over Internet Telephony) more likely to embarass the users because they pop-up usually in the form of long voice messages.

Industry experts believe that attacks over services such as Skype are moving from proof of concept to becoming a real threat. Although "spit" (SPam over Internet Telephony) attacks are very rare compared to the everyday nuisance of email spam, Yuval Ben-Itzhak, chief technology officer at computer security company Finjan, has discovered three spit attacks in 2007 which showed VoIP spammers are thinking along the same lines as email spammers. One promoted a fitness protein drink, the second tried to lure users on to a site filled with malware and a third was a "pump and dump" scam intended to inflate the share price of a small American company. David Endler, director of security research at TippingPoint, reports that both of the accounts he has opened with a popular VoIP provider have received multiple Spit attacks, even though the numbers are unpublished. "It's definitely happening, I'm just surprised we're not seeing a lot more of it," he says. "It's going to become a nuisance because the voice files are a lot larger than email spam, so they're going to strain and slow down networks and when it's a case of a phone ringing, instead of an email just popping in to your email inbox, it's just so annoying because it can be at any time of the day. Even though spit is designed to leave itself as a voicemail message, it's still going to be annoying if your voicemail box gets filled up with junk." Endler warns that the darker, more threatening side of this kind of spam will come when voice phishing - called "vishing" - takes off. "The real problem with VoIP is that it's very easy to take a name as your identity which appears with a call, or to put up a number on a screen that isn't actually the number that the call's being made from," he says.

(132/2007)   www.guardian.co.uk

The book of future

Is the end of the Gutenberg-galaxy in visible distance? Or just to the contrary, it is in front of an unprecedented growth thanks to the digital technologies? The low-cost but good quality displays, the special tools and new options of the man-machnie interface as well as the resulting reading experience may somehow compensate for the smell of the paper books and for the excitement of manual paging. The books have not yet been for long the unique sources of knowledge and literacy but, in the future, they can more deeply integrate into the complex process of acquiring them.

Ever sat in front of your computer and read an entire book? Probably not, but chances are you will in the future. In fact, UVic English professor Dr. Ray Siemens predicts that within one generation, we'll be doing most of our reading online, books included. Siemens heads up a multidisciplinary group of researchers whose goal is to develop a new way of reading—the book of the future—in electronic form. It's an extension of an existing trend, Siemens says, because plenty of online reading is already taking place. "The kids about to enter adulthood do most of their reading online," says Siemens. "They're watching television less and going online for their news and entertainment." But so far, online reading hasn't extended to book-reading for most people. Reading at the computer feels harder on the eyes than reading the printed page, and the computer's lack of portability is another factor. While laptops can be taken many places, their structure doesn't make reading on the bus or at the beach convenient. Then there's the whole issue of tactile experience. Many people like the feel of books, and enjoy everything from turning the pages to the smell of the ink. These are all valid observations that Siemens and his researchers are taking into consideration in developing new online reading models. Upgraded technology, such as gentler monitors and the invention of "e-book readers" will likely address some of the practical complaints, while our own expectations about the reading experience will gradually change with technological advancement. The diversity of expertise on the research team is unique. It includes historians, language specialists and social scientists, as well as computer experts. The idea is to examine all facets of the reading experience.

(133/2007)   ring.uvic.ca

SAP goes to iPhone

The expansion of the large enterprise applications beyond the standard workstations with fixed location, is a process which can be observed for long. This tendency will very likely continue as the IT capabilities better and better integrate into the everyday objects of our workplace and personal environment.

SAP said that new software for sales-force automation that it is hailing as one of the most user-friendly products to date would be compatible with Apple's iPhone. The German company is the world's biggest maker of business management software and, while analysts generally praise its broad line of products for their deep functionality and analytical abilities, they say they are difficult to use. They will include the program as part of new sales-force automation software that it is launching in December. "The iPhone has become such a popular thing," said Bob Stutz, an SAP senior vice president who is responsible for developing the company's customer relationship management software. "Everybody wants the ease of use of the iPhone.""It didn't look like SAP," said Daryl Ganas, director of sales and marketing operations for Intel, one of several companies that has helped SAP test the software.The first generation of the iPhone software will load business contacts, information on sales prospects and account data onto the device, Stutz said. SAP is breaking with precedent by introducing versions of the new software that are compatible with the iPhone ahead of ones for mobile devices that businesses traditionally use. These include Research In Motion's BlackBerry, Palm's Treo and devices that run on software from Microsoft. Stutz said that SAP had decided to introduce the iPhone software ahead of programs for those devices at the request of its salespeople, saying they prefer using iPhones to the other devices. The iPhone software, part of a new sales-force automation suite from SAP, uses a Web-based interface with drag-and-drop tools similar to ones available on Google.

(134/2007)   news.zdnet.com

Wearing technology on your sleeve

Whereas scientists have been experimenting with wearable computing for many years, these new systems have not reached at all the multifunctionality of desktop and laptop computers. A European Union project tries to achieve this highly ambitious objective.

You think the switch from typewriter to computer was a revolution? The next stage could see many of us interacting with computers inserted into our very clothes. A new project is exploring a range of applications where wearable technology could significantly improve productivity and even help save lives. Today's instances of the association between man and technology are perhaps not as impressive to the jaded cinemagoer, but just as ambitious for the impact they could have on our daily lives. The focus, though, is perhaps not so much on assimilation as it is on integration and usability European researchers have been carrying out wide-ranging testing of new wearable technology with applications in a variety of fields and with the potential of protecting and even saving lives. The vital innovation is that the technology facilitates a new form of human-computer interaction comprising small, easily accessible body-worn computers that are always on and always responsive. If you have a desktop application, then there is always a screen, a keyboard and a computer unit, but if you have a wearable computing solution, then it can be completely different," says Michael Lawo, technical manager of the WearIT@work project. "You can have speech control in one instance, gesture control in another, though the application should always be the same," he says. The Open Wearable Computing Framework being developed essentially comprises a central, easily wearable and hardware-independent computing unit which gives access to an ICT environment. Some of the basic components include wireless communication, positioning systems, speech recognition, interface devices, and low-level software platforms or toolboxes allowing these features to work together.

(135/2007)

cordis.europa.eu

Freedom for the internet phone!

Experiencing the explosive growth of the communication and other capabilities of the mobile phones, we tend to overlook a simple fact, i.e. no mobile phone exist today which would allow for unlimited internet browsing. The well-tried business models of the manufacturers and service providers which limit the web access, is challenged only by Google – for the sake of its own, well-perceived business model, of course.

No Google phone exists yet, but the search giant's announcement of an open platform for mobile-phone apps is a step in the right direction. Will a Google Phone ever be made? Google's chair and CEO Eric Schmidt won't officially say. But Schmidt does say that if all goes as planned, we'll likely see many "Google phones" from a variety of wireless carriers. He also says that once software developers create a mature Android OS, it would be a prime time for Google to release a gPhone. So what is this Android? Android is a Linux-based mobile software platform that Google hopes will be the operating system of mobile phones in the future. It will compete with platforms such as Apple's OS X on the iPhone, the BlackBerry OS, Microsoft's Windows Mobile, and the Palm OS. Google announced the Android platform along with other members of the Open Handset Alliance, a group of 34 hardware and software companies plus wireless carriers committed to creating open standards for mobile devices. The Android platform, according to OHA, is free software available under the Apache open-source license. On November 12, a software developer's kit (SDK) was released to developers. How will Android phones differ from today's coolest smart phones? Google says Android will have a browser capable of handling any type of Web content that a desktop computer's Web browser can handle. That design opens up a treasure trove of possible browser-based services already available to PC users, including contact management, document creation, GPS direction services, and VoIP services. Many of these services could be implemented today but aren't, largely due to the fact that wireless carriers currently offer basic browsers that restrict users to a walled garden of services.

(136/2007)

www.pcworld.com

Is it really a Van Gogh?

Machine vision is not yet as perfect as human vision but in the last couple of years as one of the most dynamicly developing IT field it has become more accurate. Until recent time it has been mainly applied for security purposes but a new software suggests other perspectives as well. Our future art historian machines will identify painters.

A mathematical program developed in the Department of Computer Sciences at the University of Haifa will enable computers to "know" if the artwork you are looking at is a Leonardo da Vinci original, as the seller claims, or by another less well known artist. "The field of computer vision is very complex and multifaceted. We hope that our new development is another step forward in this field," said Prof. Daniel Keren who developed the program. Through this innovation, the researchers "taught" the computer to identify the artworks of different artists. The computer learned to identify the artists after the program turned the drawings of nature, people, flowers and other scenes to a series of mathematical symbols, sines and cosines. After the computer "learns" some of the works of each artist, the program enables the computer to master the individual style of each artist and to identify the artist when looking at other works – works the computer has never seen. According to Prof. Keren, the program can identify the works of a specific artist even if they depict different scenes. "As soon as the computer learns to recognize the clock drawings of Dali, it will recognize his other paintings, even without clocks. As soon as the computer learns to recognize the swirls of Van Gogh, it will recognize them in pictures it has never seen before." This new development is a step forward in the field of computer vision. According to Prof. Keren, this field is still inferior to human vision. "Human vision has undergone evolution of millions of years and our field is only 30 years old. At this stage computers still have difficulty doing things that are very simple for people, for example, recognizing a picture of a human face. However, computers are very good at simulating and sketching 3 dimensional images."

(137/2007)

media.haifa.ac.il

World robot population: 4.5 million - and counting
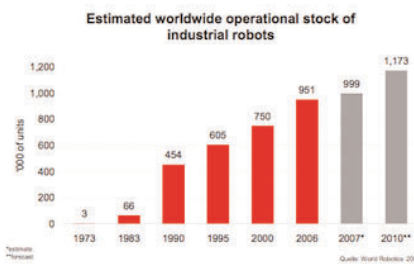
Despite the fact that robotics has inspired countless science-fiction and less scientific but even more fantastic speculations, novels, films and - on the other hand - serious essaies, researches and developments, factual and statistical studies concerning the word's robot population haven't been done too often. However, it is worthy because these surveys show us that the number of robots will not only be increasing but robots will become important and integrant parts of our everyday life too.

Estimated worldwide operational stock of industrial robots

Ever wonder how big is the world's robot population? Well, exactly how many robots are around is hard to know, but here's an educated guess: 4.5 million. If all those bots were to congregate and form a nation, its population would be larger than Costa Rica's but smaller than Croatia's, whatever that means. RoboNation would be No. 116 in the country population rank, with 0.0096 percent of the world population, if you're wondering. This robot population estimate is based on data released by the International Federation of Robotics in its 2007 World Robotics survey. For those into robots, it's a marvelous source of statistics, forecasts, case studies, and more. The study divides robots in two categories: industrial robots and service robots. The first category includes welding systems, assembly manipulators, silicon wafer handlers—you know, that kind of heavy, expensive, several-degrees-of-freedom stuff. The second category includes professional service robots (bomb-disposal bots, surgical systems, milking robots) and household service robots (vacuum cleaners, lawn mowers, all sorts of robotics toys and kits, and that Sony robot dog). According to the study, there were 951,000 industrial robots in operation all over the world in 2006. As for service robots, it estimates that almost 40,000 professional units and about 3,500,000 household units were sold up to 2006. So 951,000 + 40,000 + 3,500,000 = 4,491,000. Round that to 4.5 million. And now to the forecasts. By 2010, according to the study, the number of industrial robots should increase to 1.173 million and the number of service robots to 7.2 million. That puts the world robot population at 8.3 million, which is bigger than Austria's (again, whatever that means).

(138/2007)

blogs.spectrum.ieee.org

Comparing collaborative interaction in different virtual environments
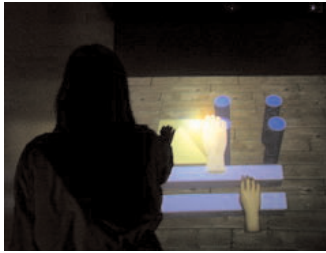
In virtual environments it is important for collaborators to get feedback about the actions of the others "present". Researchers in Japan an Korea are trying to revel how tho enhance the effectiveness of such collaboration. In the first phase of the research they examined the role of the motor stimuli.

Virtual reality technology is used to engage humans in a simulated milieu, typically for the purpose of entertainment, training, or education. The development of supporting hardware and software tools, such as display and interaction devices and physics-simulation libraries, has been accelerating. This is especially obvious for haptics, the application of touch using force, vibration, or motion. These advances affect collaborative virtual environments (CVEs), in which multiple users can work together by interacting with objects in the environment. In such cases, all of the inputs from the participants must be combined in real time to determine an item's behavior. The way this is implemented varies across different virtual reality systems. Several research studies have examined interaction techniques between users in CVEs, especially where they both handle the same object. A Japanese team constructed the Virtual Dollhouse application to demonstrate what happens in concurrent object manipulation, where several people want to act on an object together: for example, lifting a block at the same time. In this application, two people have to collaborate in building a dollhouse. They are presented with several building blocks, a hammer, and several nails. Network support enables participants in different places to work jointly when interacting with the simulation, and see the results of each other's actions. Manipulating the same object's attributes generates the most events, or changes in the CVE, which need to be communicated throughout the environment. Thus, the team focused our study on changes to a single thing's attributes, or situations where the item's reaction depends on the combined inputs of people working together.

(139/2007)   spie.org

Organising photos by faces
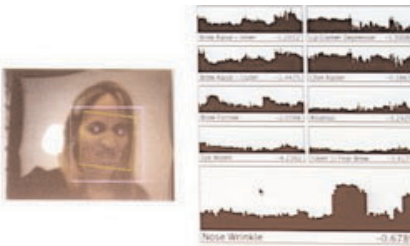
The ever growing volumes of digital information put continuous pressures on information search technologies. It seems today that the most feasible approach is the automatic recognition of contained objects and, based upon the result, the automatic tagging of contents (annotation). This is used for free text categorisation, and the effectiveness of word recognition in speech reaches the 80%. In case of other types of contents, such as pictures and videos, the automation is much more complex and comprehensive task. Any step forward in these areas, therefore, may be important.

Many cameras today can detect the faces of those being photographed, which is handy for guiding the camera to set its exposure, focus, and color balance properly. But the more difficult challenge of face recognition is more useful after the photo has been taken. That's because of a concept called autotagging, one of a number of technologies that make digital photography qualitatively different from the film photography of the past. Tags of descriptive data can be attached to digital photos, and they help people find and organize pictures. The only problem is that tagging your photos, today a laborious manual task, is like eating your vegetables. It's good for you but a lot of people don't like it. With autotagging, the camera attaches tags as the pictures are taken. Today, cameras embed timestamps in photos, which makes it possible to sift through pictures by date. But be honest here--how reliably can you remember exactly when you took that picture of your darling daughter a year or two ago that you'd like to e-mail to her grandparents? Being able to screen for photos only of a particular person could dramatically speed up the search process. Face recognition requires computational horsepower that is hard to fit into the confines of a digital camera, but one company likely to help make it a reality is Fotonation, which already supplies face-detection software for dozens of camera models from Samsung, Pentax, and others. The computational challenge is reduced by the fact that most folks tend to photograph the same set of 25 or 30 people, Eric Zarakov, Fotonation's vice president of marketing said. A camera could be "trained" to recognize just those particular people. One camera maker willing to mention its interest in autotagging is Panasonic.

(140/2007)   www.news.com

Social networking for zebras

Whereas network theory is an amazing intellectual construction, some of its details have yet to be proven. Due to the fact that it is very general, the theory can be applied to almost all scientific fields. It means that researchers unsurprisingly use it in (more and more IT related) biology and ethology e.g. for the observation of zebras' collective behaviour.

Facebook hasn't yet opened up a site for zebras. Even so, social networking is taking off for them, too. By using social network theory to understand how zebras interact, scientists hope to explain why the plains zebra is thriving while the Grevy's zebra is endangered. But to apply network theory to that problem, researchers need to develop wide-ranging new theoretical tools. The same concepts that can explain the zebra problem are also useful for tackling problems as wide-ranging as tracking terrorists, controlling the spread of diseases, and recommending products to consumers. Grevy's and plains zebras look and act very much alike, but their social structures are quite different. Plains zebras organize themselves into stable "harems," with a single stallion keeping watch over a group of mares and babies. The Grevy's zebra, on the other hand, has a "fission-fusion society," with groups that form and dissolve. Dan Rubenstein of Princeton University is an ecologist who has studied zebras and other horse-like animals for 20 years. To understand their social structure, he makes graphs of their interactions, with a separate graph for each season. Each zebra corresponds to a node on a graph (drawn as a dot), and two zebras are connected by a line if they've come within a few feet of each other during a given season. Rubenstein was thrilled to see that network theory revealed patterns he wouldn't have seen otherwise, and he started thinking of all the other questions network theory might help him answer. In a harem society, is there a change in the zebras' interactions just before a bachelor overthrows a stallion in a coup? When zebras flee a lion, how do they decide which zebra will lead the stampede? Do different zebras play different roles in society?

(141/2007)   www.sciencenews.org

Web founder and short-termism

It is a bit strange to hear about the lack of long-term view from the founder of the web: the web itself might not have been created if XML were to be invented instead of HTML. After all, isn't it the short-term productivity of HTML which had been created by Sir Timothy and which produces increasing chaos in the long run, why himself had to establish the Semantic Web initative? But we think that we know the root of his concerns: too few original idea, too few well-established directions and responsible approaches are very rare in the world of the online medium of the future. Do we perhaps live in the era of consolidation of web infrastructure, and not of newer and newer groundbreaking ideas?

Internet companies are taking a dangerously short-term view and ignoring big potential risks and opportunities as the online medium becomes a more central part of everyday life, according to the man who invented the worldwide web. Sir Tim Berners-Lee, who now oversees the development of new technology standards for the web as head of the World Wide Web Consortium, also criticised the lack of support for long-term research into these issues, which he said marks a break from the traditional approach technology companies have taken. "I think there's a lot of concern the web companies are thinking short-term," Sir Tim said in an interview with the Financial Times. "They've been taught to look short-term by the dot-com bubble, [it] has made everyone very conscious of short-term returns on investment, and this has trickled down to research funding." He also sounded a sceptical note about Silicon Valley's latest outbreak of internet euphoria, focused on a rash of so-called "Web 2.0" companies in areas such as social networking and online video. "Because it's so easy to make a Web 2.0 site you can clone a lot of them very easily, and as a result people are bringing out new sites with a modicum of new polish on them - but they're not really thinking up the new ideas," he said. While some internet companies, such as Yahoo, have created their own research labs, these have tended to take a far narrower and more pragmatic approach to the areas they study than the tech industry's ground-breaking labs of the past, such as those run by AT&T, IBM and Xerox. According to Sir Tim, research on the future of the web needs to draw on experts from a mix of backgrounds, including technologists, economists, psychologists and sociologists.

(142/2007)   www.msnbc.msn.com

Even servers have a footprint

Environment concsiousness slowly reaches the computer industry, too. The awareness of the fact that the annual environmental impact of a server is close to a fuel eating SUV, is very sobering and opinion-shaping. It is important to know the root cause of this, and to thrive for implementing solutions which reduce any harmful environmental impacts of IT. .

Computer servers are at least as great a threat to the climate as SUVs or the global aviation industry, warns a new report. Global Action Plan, a UK-based environmental organisation, publishes a report today drawing attention to the carbon footprint of the IT industry in the UK. "Computers are seen as quite benign things sitting on your desk," says Trewin Restorick, director of the group. "But, for instance, in our charity we have one server. That server has same carbon footprint as your average SUV doing 15 miles to the gallon. Yet, whereas the SUV is seen as a villain from the environmental perspective, the server is not." The report, An Inefficient Truth states that with more than 1 billion computers on the planet, the global IT sector is responsible for about 2% of human carbon dioxide emissions each year – a similar figure to the global airline industry. The energy consumption is driven largely by vast amounts of customer and user data that are stored on the computer servers in most businesses. The rate at which data storage is growing surpasses the growth in the airline industry: in 2006, 48% more data storage capacity was sold in the UK than in 2005, while the number of plane passengers grew by 3%. The group ran a survey of some of the largest businesses in the UK in an attempt to find out how aware the industry is of its carbon footprint. The survey revealed that more than half of the IT professionals surveyed believed their environmental impact was "significant", however 86% of them do not know the carbon footprint of their activities, two thirds of the departments they work for are not responsible for paying their own energy bills, more than half do not even see those bills.

(143/2007)   environment.newscientist.com

Supercomputer Green List

Environment consciousness has a place in computing, too. PCs are mostly equipped with energy management functions. The main task here is the organisation of disposal and reuse. However, the solutions used in the large data centers which perform bulk of the world wide web searches, and in the supercomputers which perform the truly computation intensive tasks in the world, e.g. global environmental forecasts, waste too much energy.

Supercomputers can draw enough power to run a small city and cost millions of dollars to operate each year, so a new list will reward machines built with more than computation in mind. "Wasted power can equate to wasteful carbon emissions when the electricity comes from coal sources," said computer scientist Kirk Cameron of Virginia Tech, who is compiling the list with colleague Wu Feng. "Thus it is both economically sound and environmentally sound to improve the power efficiency of supercomputers." Feng and Cameron conceived of the Green500 list as a companion to the Top 500 supercomputer list after noticing that the average achieved performance of new machines appeared to be leveling off, even as peak performance and power consumption increased. Japan's Earth Simulator supercomputer, for example, generates enough heat during operation to warm a domed stadium, so elaborate cooling systems are required and the maintenance of that increases costs, the researchers said. Plans for Google's new data center at The Dalles, Ore., by comparison, will draw on affordable local power and cooling water from the nearby Columbia River, they added. Cameron has worked since 2002 to demonstrate that supercomputers can preserve performance levels while simultaneously reducing power consumption. Feng led the development of Green Destiny, a low-power, high-performance machine that rated alongside the Cray T3D MC1024-8 supercomputer at No. 393 on the Top 500 list in 2002. "The Green500 is a work in progress," Cameron said. "Over time we anticipate increased participation and improvements in the ability of the list to reflect high performance and energy efficiency as technologies improve."

(144/2007)   www.livescience.com

Searching Video Lectures

MIT scientists have developed a new search engine for converting video-taped lectures into text. The engine searches for keywords in the texts. If students don't understand something, they will not need to watch the entire lecture but only its relevant parts.

Researchers at MIT have released a video and audio search tool that solves one of the most challenging problems in the field: how to break up a lengthy academic lecture into manageable chunks, pinpoint the location of keywords, and direct the user to them. Announced last month, the MIT Lecture Browser website gives the general public detailed access to more than 200 lectures publicly available though the university's OpenCourseWare initiative. The search engine leverages decades' worth of speech-recognition research at MIT and other institutions to convert audio into text and make it searchable. The fundamental elements of the Lecture Browser have been kicking around research labs at MIT and places such as BBN Technologies in Boston, Carnegie Mellon, SRI International in Palo Alto, CA, and the University of Southern California for more than 30 years. Their efforts have produced software that's finally good enough to find its way to the average person. But the MIT researchers faced particular challenges with academic lectures. For one, many lecturers are not native English speakers, which makes automatic transcription tricky for systems trained on American English accents. Second, the words favored in science lectures can be rather obscure. Finally, says Regina Barzilay, professor of computer Science at MIT, lectures have very little discernable structure, making them difficult to break up and organize for easy searching. "Topical transitions are very subtle," she says. "Lectures aren't organized like normal text." Our result, she says, is a coherent transcription. When a person searches for a keyword, the browser offers results in the form of a video or audio timeline that is partitioned into sections.

(145/2007)   www.technologyreview.com

Why toddlers love robots

Robots help us in our households, they entertain us, they are our playfellows. We try to use them for educational purposes as well. An experiment carried out with toddlers prooved that they were more authentic when they had been capable of as complex interaction and unpredictable reaction as possible. In this case robots fulfil their socializing role. However, we also quickly lose interest in them when their design guarantees a more elaborate performance than they can give.

Entertainment robots have become sophisticated enough that they can charm toddlers for weeks, or even months, and could soon be useful to teachers as permanent educational assistants, according to research reported in Proceedings of the National Academy of Sciences. Qrio, the dancing, bouncing, giggling robot spawn of Sony Corp., tried out its social skills on a group of children between 10 months and 24 months old at the Early Childhood Education Center at the University of California, San Diego, as part of a study on how children socialize with robots. The researchers found that the key to Qrio's popularity was its ability to move and respond to the children in a way that was closely timed to the activity around it. Robot designers usually measure the social competence of their creations by observing the robots' performance in public demonstrations. Watching how well a robot can grab and hold a person's attention gives engineers ideas about how to change software or aesthetic design. But getting good feedback from toddlers in public demonstrations can be hard, says Seema Patel, CEO of Interbots, a company that makes the entertainment robot Quasi. "It becomes trickier with toddlers, because often they're being held or pushed in strollers," and don't have the freedom to interact, she says. The research was done as part of the University of California, San Diego's RUBI project, which has the goal of developing a robotic teacher's assistant. Fumihide Tanaka, a researcher at the university put Qrio into the children's play space and watched as the toddlers tried to sum up the new kid on the block. The moment that a child began to engage with the robot seemed to depend very much on the robot's responsiveness to social gestures.

(146/2007)   www.spectrum.ieee.org

Humanoid could teach Japanese dentists to feel people's pain

Nowadays robots ar often used in hospitals (e.g. for surgical purposes) but they will be applied in a completely different area of medicine as well: in dentistry. They don't yet pull out toothes but (as the Japanese example shows us) can make dentists's job more efficace and patients's feel less painful.

Japan's future dentists may soon be able to better appreciate patients' pain by training on a humanoid robot that can mumble "ouch" when the drill hits a nerve. The robot, resembling an attractive young woman with long black hair and a pink sweater, can also listen to instructions and react to pain by moving her eyes or hands. A group of robot and computer-makers presented the high-tech dental patient in Tokyo at the 2007 International Robot Exhibition, a four-day technology showcase that opened Wednesday (local time). The medical simulation robot, named Simroid, is designed to be used for clinical training at dental schools, said Tatsuo Matsuzaki, an official at robot maker Kokoro Company Ltd, which developed the body and control system. The 160-centimetre robot can say "it hurts" and frown when it feels uncomfortable from the dental drill. "Because it's so real, dental trainees can see patients' feelings and will be able to develop good skills as they treat it, not as an object, but as a human being," Mr Matsuzaki said. "The point is that we can share people's pain without hurting people." Naotake Shibui, a professor at Nippon Medical School which introduced the robot in September, said Simroid can help dentists "learn how to communicate with patients"."Treatment technique is important but it's also important to feel what it's like to be a patient," he said. But in case anyone thinks the robot is too real, it also has a sensor on the breast area that keeps track if it has been touched inappropriately, an engineer said.

(147/2007)   www.abc.net.au

DNS attack could signal Phishing 2.0

The widespread use of web mashups has created a new form of phishing attacks. Attackers do not need to produce and maintain the whole copy of an entire website, it is enough to forge the DNS entry of the embedded site. This way it is much harder to recognize the trap.

Researchers at Google and the Georgia Institute of Technology are studying a virtually undetectable form of attack that quietly controls where victims go on the Internet. The study, set to be published in February, takes a close look at "open recursive" DNS servers, which are used to tell computers how to find each other on the Internet by translating domain names such as google.com into numerical IP addresses. Criminals are using these servers in combination with new attack techniques to develop a new generation of phishing attacks. The researchers estimate that there are 17 million open-recursive DNS servers on the Internet, the vast majority of which give accurate information. Unlike other DNS servers, open-recursive systems will answer all DNS lookup requests from any computer on the Internet, a feature that makes them partic-ularly useful for hackers. Attacks on the DNS system are not new, and online criminals have been changing DNS settings in victim's computers for at least four years now, Dagon said. But only recently have the bad guys lined up the technology and expertise to reliably launch this particular type of attack in a more widespread way. While the first such attacks used computer viruses to make these changes, lately attackers have been relying on Web-based malware. The researchers expect to see more of these DNS attacks launched from Web 2.0 sites in the coming months, because they make it very easy for people to "mash up" Web pages from many different sources -- some of which may be untrustworthy. "This is truly the next generation of phishing," said Chris Rouland, chief technology officer with IBM's Internet Security Systems division.

(148/2007)   www.infoworld.com

MAAS - malware as a service

Would you need software tools for seizing bank account data, but you do not have enough resources to develop your own? Maybe your developers lack the required knowledge? Then it is certainly advantageous for you to rent those tools! Few knows that the market of malwares and the relating services unfortunately has grown to a remarkably big business segment.

While standard commercial software vendors sell software as a service, malware vendors sell malware as a service, which is advertised and distributed like standard software. Communicating via internet relay chat (IRC) and forums, hackers advertise Iframe exploits, pop-unders, click fraud, posting and spam. "If you don't have it, you can rent it here," boasts one post, which also offers online video tutorials. Prices for services vary by as much as 100-200 percent across sites, while prices for non-Russian sites are often higher: "If you want the discount rate, buy via Russian sites," says Gutmann. In March the price quoted on malware sites for the Gozi Trojan, which steals data and sends it to hackers in an encrypted form, was between $1,000 (L500) and $2,000 for the basic version. Buyers could purchase add-on services at varying prices starting at $20. In the 2007 black economy, everything can be outsourced, according to Gutmann. A scammer can buy hosts for a phishing site, buy spam services to lure victims, buy drops to send the money to, and pay a cashier to cash out the accounts. "You wonder why anyone still bothers burgling houses when this is so much easier," says Gutmann. Anti-detection vendors sell services to malware and botnet vendors, who sell stolen credit-card data to middlemen. Those middlemen then sell that information to fraudsters who deal in stolen credit-card data and pay a premium for verifiably active accounts. "The money seems to be in the middlemen," says Gutmann.

(149/2007) zdnet.co.uk

US control of Internet remains issue

The root domain name servers are under the physical control of the government of the United States. There were several series of international conferencies organized by the UN, which aimed to create a new international control mechanism for the operation of the root name servers. After the unsuccessful talks in Tunisia in 2005, the 2007 discussions in Rio de Janerio did not brought any results. The following discussions about this issue within the UN may be in 2010.
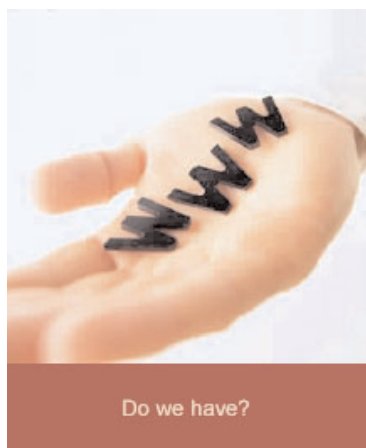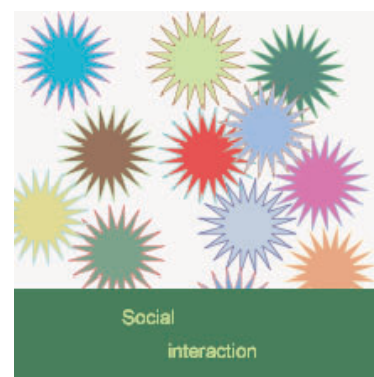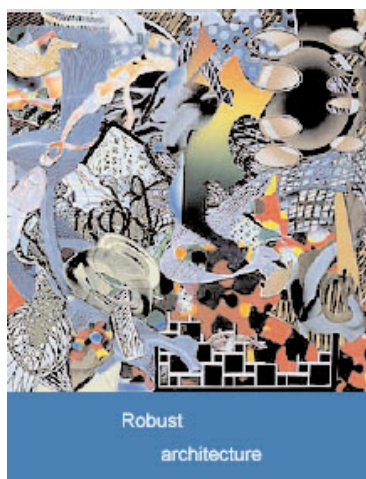
A U.N.-sponsored Internet conference ended in Rio de Janeiro with little to show in closing the issue of U.S. control over how people around the world access e-mail and Web sites. With no concrete recommendations for action, the only certainty going forward is that any resentment about the American influence will only grow as more users from the developing world come online, changing the face of the global network. "I think that there are many Third World countries and developing countries and people from Asia and so on who are pressuring for changes," said Augusto Gadelha Viera, coordinator of the Brazilian Internet steering committee and chairman of a closing session on emerging issues at the four-day Internet Governance Forum. As the conference drew to a close, Russian representative Konstantin Novoderejhkin called on the United Nations secretary-general to create a working group to develop "practical steps" for moving Internet governance "under the control of the international community." At issue is control over Internet domain names, the monikers after the "dot" like "com" and "org" that are crucial for computers to find Web sites and route e-mail. The domain name system is now controlled by the Internet Corporation for Assigned Names and Numbers, a Marina del Rey, Calif.-based nonprofit over which the U.S. government retains veto power. By controlling the core systems, the United States indirectly influences the way much of the world uses the Internet. The Internet Governance Forum, the result of a compromise world leaders reached two years ago to try to resolve the issue of U.S. control, has no decision-making powers. At most those seeking change can use the conference to pressure the United States to cede control.

(150/2007)   www.phillyburbs.com

SOCIAL PERSPECTIVES

Open systems –
open questions

Robust
architecture

Social
interaction

Information
explosion

Do we have?

Open sources - new challenges for economics[1]

As the era of isolated disciplines has declined, the situation of researchers and analysts has become more complicated. The conceptual classes of specific areas and the set of objects once in the focus of analyses have become more and more indistinct, and in general only the opportunities of the analyst can set bounds to opening further dimensions of interpretation.

It also applies when we examine the recently more and more often used connective technologies or open source economy and their social consequences.

The beginning: open source

Eric S. Raymond wrote in his essay, The Cathedral and the Bazaar:

"Linux overturned much of what I thought I knew. I had been preaching the Unix gospel of small tools, rapid prototyping and evolutionary programming for years. But I also believed there was a certain critical complexity above which a more centralized, a priori approach was required. I believed that the most important software (…) needed to be built like cathedrals, carefully crafted by individual wizards or small bands of mages working in splendid isolation, with no beta to be released before its time."


In this world a decentralized, minimally controlled developer community is presented as the "babbling bazaar" consisting of many, often overlapping sounds. And experience shows that even though it is seemingly chaotic, still something comes into being out of it, which is capable of competing with the operating systems that are created in the closed, hierarchically organized systems of large companies and other software. Raymond himself ends (an earlier version of) his writing with the following words:

"Perhaps in the end the open-source culture will triumph not because co-operation is morally right or software ``hoarding'' is morally wrong, but simply because the closed-source world cannot win an evolutionary arms race with open-source communities that can put orders of magnitude more skilled time into a problem."

In our brief writing it is indeed worth choosing the communities organized around open-source codes as a starting point for phenomena discussed here. The internet as the basic form of connective technologies has enabled the realization of entirely new qualities and measures of co-operation. As a result, the often criticized but still axiomatic theory of the American social scientist, Mancur Olson, the logic of collective action has been fundamentally refuted.

According to Olson in groups that provides public goods (goods the consumption of which others cannot be excluded from and the individual consumption of which has no influence on the consumption of others) the free rider problem is naturally present: some people, taking advantage of the nature of public goods, want to come in for a share in consumption without any (or compared to others, with less) contribution. These situations can be solved by selective incentives, but selective incentives operate cost effectively only in small groups.
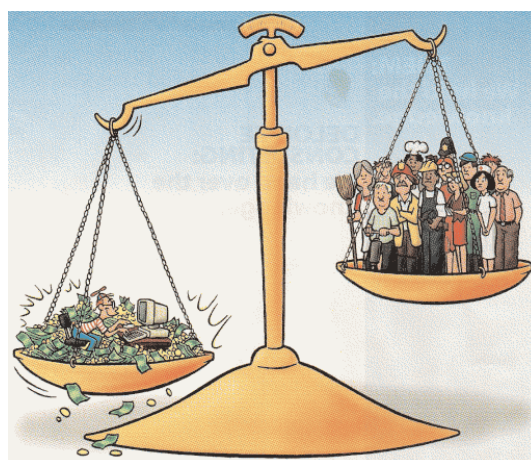
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[1] *The study is based on the Institute For The Future (IFTF) – Ten Year Forecast Perspectives 2006 – Economics: Open Scale - http://www.iftf.org/docs/SR-945_2006_TYF_Perspectives.pdf -downloaded: 02.05.2007*

The general validity of this theory has been disproved exactly by the above mentioned developer communities. They have shown that by overcoming the pitfalls of collective action there is a way for large-scale co-operation that is organized in a decentralized way - due to different connective technologies such as the internet.

Open… what?

The question arises that if we leave the domain of software development, can we find similar analogies in other areas of economics? Provided we consider codes as open source, we may ask whether it is possible to make other types of sources open or to ensure free access. Another aspect of the previous examples would be to increase of the labor-pool's volume.

Focusing on ideal cases, it is plausible to say that the capacity of closed institutions to increase labor-pool is limited (by the institution's own bounds), whereas open systems are not confined by such restrictions, therefore can make competitive edge.

A number of theorists attempted to describe the process that lies behind the new type of logic. One of the most popular ones is Chris Anderson and his notion of the 'long tail'. The long tail refers to the feature of open systems (and newly formed successful business models) that makes them capable of aggregating small contributions of a large number of individual users. This aggregate can then exceed the restricted number of clients of the traditional models, who will need to make greater contributions. Another popular author-concept-former is James Surowiecki, who explicates a long-known notion in detail in his book, The Wisdom of Crowds. As Eric S. Raymond put it: "Given enough eyeballs, all bugs are shallow" - that is, as opposed to what critics of open systems have stated, as the number of participants (users) increases, the number of potential errors does not increase. Even more important is the observation that the chances of detection and correction of errors also get better. The most obvious example which comes to mind is the philosophy underlying the operation of Wikipedia, but it is also true for numerous dot-com companies, either survivors of the dot-com bubble of 2001, or enterprises founded later, who aim at benefiting from the advantages of the internet as a form of connective technologies.
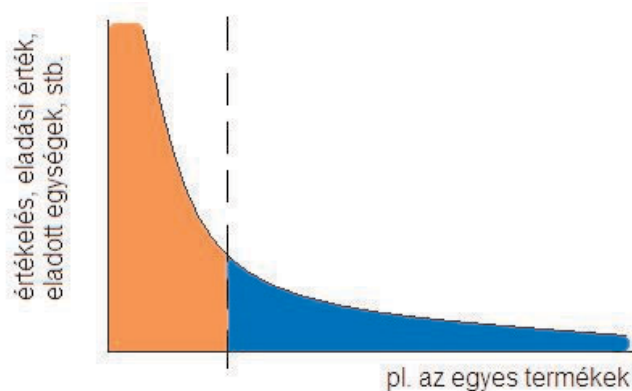
The framework for the creation of the new logic that negatives Olson's theory is provided by information economy, where the competition value of products comes from information and innovation. Yochai Benkler points out three major aspects of information economy (in contrast with characteristics of industrial society):

- Emphasis on strategies that are not proprietary right based (that is non-material factors like arts, sciences or education will acquire more important roles)

- The increasing importance of non-market based production (the individual with the piece of information he or she created can reach masses often without a strategy).

- Creation of effective, large scale co-operations.

The already discussed third feature contributes together with the firs two to the essential process of production, which does not happen in the traditional producer-consumer relation any more. Instead of the producer and consumer the concept of the user emerges and together with the user a special new market logic: the two roles that used to be separate now unite in the user, thus the consumer can be present as potential labor force in the information economy. As a result of this process, decentralization and democratization of the system's operation evolves. An important aspect of the changes is that, this way, users are also creators of their own information environment. The aim of closed institutions (putting it simply) is to have the largest possible market share. However, to achieve this, they must focus on a restricted group of needs they can satisfy. In contrast, open systems aggregate small scale groups which pursue self-interest and which by actively participating can satisfy

their own local needs more efficiently. Thus, institutions using open source can achieve both on micro and on macro levels. The problem of copyright is essential in information economy, which is mainly based upon intellectual products. An important element of the operation of large scale co-operations aided by connective technologies that the processes in the system should remain flexible, components (based on information) should become freely modifiable.

In the information economy the ownership of the means of production and products is replaced by a copyright adjusted to indirect reciprocity. Since the profits of certain actors do not come from directly selling their product in many cases, it was only a matter of time to adjust the practice of 'all rights reserved', which was a result of the totally restrictive propriety rights, to the demands of the new era. As a result, the CreativeCommons was born, the "some rights reserved". This means freely modifying or sharing certain elements, without the contributors absolutely losing control over their products (contributions).

The new logic at work

Returning to the free rider problem, we still do not have a definite answer for the question proposed: what maintains such a decentralized system? In other words, how do communities cope with the problem that in the vast majority of cases the individual's contribution is not directly rewarded, or the reward can come from a different, arbitrary point of the system, but in unpredictable ways? The key concept, which we should briefly focus on, is the indirect reciprocity. Social scientists have long been preoccupied with the problem of enduring phenomena, where indirect reciprocity has a crucial role. Considering the fact that open systems are gaining ground, this can become a major characteristic of economic relations. Martin Nowak and Karl Sigmund proposed a number of assumptions concerning the operation logic of systems operating upon indirect reciprocity, which they have attempted to test. The following conclusions (among others) can be derived from their experiments:

- The system must be relatively stable and persistent in order to serve as a reference point to its users.

- New types of notations acquire central roles in the system, such as the possibility to build reputation.

- Based upon different indications, the importance of morality judgments becomes greater.

- As social interactions become more and more complex, they lead to constantly increasing cognitive needs.

However, research of individual motivations and consequently, revealing the relationships underlying the endurance of these systems is limited as within large communities links are often weak and there is a great proportion of anonymity (e.g. the use of nicks).

New vs. Old

Even if we see technological innovation as unbroken, changes in the society, which applies innovation, are taking place more slowly. Mechanics of the market which direct processes are strongly attached to economically influential institutions that are based on closed source. And these still fundamentally determine processes of innovation. Nevertheless, the spreading of the new economic logic presented above, that there is viable alternative. Although, the "fight" will not end with the exclusive victory of one party over the other. It is more about shifts in emphasis, changes of certain details. For instance, it is plausible, that closed economic organizations will continue controlling the market, while within the hierarchy organization of certain levels may become open (thus reacting to the entire operation of the organization and shaping it).

There are numerous examples of clashes between the new and the old (business) logic provided by Microsoft and its emerging rivals. The case of Linux has shown that a development based on open source code and developers' voluntary contribution can challenge the operation system of Microsoft, which had been considered almost

incontestable. Linux has had a great reputation for its stability and safety, but its greatest fault is thought to be less user-friendly nature. However, as it goes through the evolution process of developments based on open source code, this disadvantage fades linearly as the number of participants increases. During the 90s two rivals emerged in the competition of browsers, Nescape Navigator and the Internet Explorer. By the second half of the decade it appeared that the fight will end with the absolute victory of Microsoft. However, in 1998, Netscape made the source code of its browser public first in the market of more significant software. As a consequence, Mozilla Foundation was born and developers who joined, created a browser, Firefox, which today has 15-16% of the market share. This, compared to the 3-4% in 2004 is an extraordinary result, and another example of the competitiveness of community development. The battle between Microsoft and Google is interesting because both companies operate in closed, hierarchically organized systems. The latter, however in various points in its hierarchy and operation uses the logic of open systems. At the beginning, Google acquired leading position in the market of online advertising and search engines. Already here, Google showed how a closed system could benefit from the advantages provided by open sources. It left a number of channels open so that users could participate in the building and it worked out its new services in co-operation with them. By satisfying the needs of the internet using communities on a higher level and a more customized way, it gradually became the challenger of Microsoft. Google on the one hand, made such online services accessible that were previously only accessible offline (or it bought up the companies that developed these services), and the Redmond giant, on the other hand invests more and more energy (and capital) in online presentation.

For the time being, in social scientific research mostly raises problems and speculates on their solutions: to the actual operation of the system we can only make inferences from experiences of the so far realized details. We have previously touched upon the various disciplines, but it is enough to see that the new organizational theory, placing resource economics on new grounds and the new logic of collective action is yet to be born.

Further information and readings relating to this topic

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Lightweight networks -

infrastructure changes in the information age[1]

In our latest study we examined some aspects of economics in the 21st century. We demonstrated how the appearance of the open access resources transforms the logic determining the operation of the economic organizations. Economy (and society) has always been strongly connected to the technology typical of that age. Changes in one of the systems never take place without modifying the other. The transformation of the industrial societies into information or knowledge societies has not left the infrastructure environment untouched either. This means not only the rearrangement of economy and global needs among the nations but also the changes in the logic behind - in the fields of work management, improvements, the geographic arrangement of technology, etc.

To admit all these statements it is vital to see that not only information technologies are meant here. In Manuel Castells' terminology "informational" indicates that "information generation, processing and transmission become fundamental sources of productivity and power because of new technological conditions emerging in this historical period". In the new economy, only competitors who are able to adapt themselves to Castells' processes (both locally and globally) may become dominant. At the same time, the definition is not limited to information technologies (though treats them as presuppositions) and it emphasizes that this paradigmatic shift affected the conventional lines of production as well.

During the 20th century, large public infrastructure networks drove global economic growth. With huge capital investments, long construction cycles, and centrally managed production units, these networks were a force for stability as well as the possibility to maintain the welfare systems.

Technological development in the age of "informationalism" (including the appearance of info-communicational technologies) seriously challenged the above-mentioned structures. Some of the information monopolies ceased to exist, while a great deal of small-scale, adaptable solutions emerged besides "heavier" infrastructures. These soft solutions can be organized in more efficient, more secure, and more flexible ways than the older systems. As they come online, they may be able to boost emerging economies, mitigate the environmental impacts of rapid global urbanization, and offer alternate paths to economies of scale.

Below we examine three aspects of these changes: (1) the shift in scales, (2) the strategic transformation lying behind the changes, and (3) the shifts of demand and supply, that is, the market.

Shifting scales

The transformation process described above is first analyzed from the point of view of dimensions. In industrial societies, each point of the infrastructure networks is built of robust units of huge dimensions. An alternative is having small, adaptive, and independent production units that substitute big centers and perform their activities decentrally, thus freeing themselves from immovability and relative immobility characteristic of large-scale infrastructure projects.

These kinds of decentralized systems result in a different network topology. Improved connectivity and denser networks will process (in terms of economy) materials and services closer to their point of production or distribution. Besides lowering the costs due to economies of scale, differentiation may be achieved when satisfying the needs of small local communities.

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1   The study is based on the Institute For The Future (IFTF) – Ten Year Forecast Perspectives 2006 - Infrastructure: Lightweight Networks - http://www.iftf.org/docs/SR-945_2006_TYF_Perspectives.pdf -downloaded: 02.05.2007

As for the consequences, we call attention to the change that may take place in the developed and developing world. One of the most critical global problems is environmental degradation. The industrialized regions still present in developed countries are highly affected - infrastructure here is dominated by centralized and robust units as they are strongly connected to the model of the industrial society's economy. Inelasticity is the main hindering factor in solving the problems. However, if "heavy" infrastructures can be substituted for lightweight networks, significant changes may be accomplished.

In developing regions, the main problem is that economic growth is proceeding along a forced path. It has been a tendency so far that production units with huge work and capital investments non-operable in the western societies for several reasons (environmental, educational reasons, or cost-effectiveness) have been relocated to these regions. Although developing countries are usually under economic compulsion to accommodate these plants, among the consequences we might find serious environmental problems as well as further underdevelopment of social structures. However, technological development supporting lightweight infrastructures could provide a solution. Instead of projects with high capital investments, smaller networks could be created that meet the local needs and possibilities more efficiently. These decentralized networks are more sustainable upon the whole, and can help leapfrogging the phase of industrialization with all of its consequences.

This shift in scales and the distribution of production units described above may reshape the geographic displacement of infrastructures and influence the strategies controlling structure construction. Two strategies can be differentiated. First, the network cannibalizes itself and transformation springs from its own character-istics and potentials. Second, transformation is driven from outside, under the influence of a new technology.

Transformation of the global telephone network serves as a good example. At the beginning, telephone networks were constructed as typical centralized systems (partly because the operation and maintenance of the telecommunication system was monopolized in several countries). The next phase is characterized by market liberalization - the field was open to competitors (though as infrastructure deployment in this case is expensive, liberalization did not always lead to topology change). The next step was deploying the Internet - a new service running over the landlines that continued reshaping the network by new demands and initiatives. In other words, we witness the cannibalization of the telephone network by its own offspring. The other challenge conventional networks must face on the strategic level is the evolvement of a new technology. Fixed telephone lines are challenged by wireless applications, mobile phones, and wireless Internet as well as VoIP - a technology that links the process of network transformation more closely to the Internet instead of the technological logic of fixed lines. It is easy to admit that new technologies play an important part in further reshaping the topology as in most cases they substitute "heavy" infrastructures and support lightweight networking.

New technologies also serve as tools for solving social problems - the following two projects stand here as good examples. The first project is called One Laptop Per Child (OLPC) also known as the "$100 laptop" founded by Nicholas Negroponte. The goal of the project is to provide children in developing countries with simple personal computers using built-in power supply and wireless technology.

The second initiative, the Hungarian Netbox project is built on the same ideas (though it runs under fair trade conditions; instead of donation they sell well-equipped PCs to the participants) and it aims at eliminating the digital lag of Romany people living in small villages. From the point of view of our analysis, it is of no little amount that this initiative (as well as OLPC) focuses on settlements with underdeveloped infrastructure. However, using wireless technology, capital-intensive infrastructure investments can be eliminated.

Shifting supply and demand

Infrastructure changes are also significant from the point of view of the global market as they are interwoven and interrelated with the shifts and possibilities of supply and demand. Looking at it from a different approach, we could say that exchange processes, that is, transactions mainly consist of information transfer and exchange that bear a close relation to info-communicational tools. Transactions bring up the question of logistics - transferring the subject of the transaction to its place of destination.

In the new age of technology, it might seem trivial that information management necessary for the transactions can be easily established. If a conventional logistics system can be involved, trading is performed in a system showing great adaptability to the given context and environment. The result of such an ideal situation is that ordered products are delivered from the most optimal place, financial transactions follow the most optimal routes, while redirection and alteration work with minimal waste. This is, of course, an exaggeration but the last decades saw development in the global market disclosing the nature of transformation; it can be characterized by increasing flexibility, environment awareness, and adaptability - the key features of lightweight networks.

Doubts

The picture about the world of lightweight networks outlined above is highly idealtypical but knowing the key processes taking place in the development of the information society, future dominance of these networks is most likely. Taking the question to the level of national economy, it is obvious that in the background of the present summary we can find capitalist market economy. The case of China raises the question whether different social and economic backgrounds inducing different development strategies (that is, being under central control and having a dominating governmental role) could derive benefits of the lightweight systems in a different way. At the same time, China is facing serious (environmental and social) problems due to accelerated industrialization. The country entered the information age, launched the related infrastructure investments centrally, and saw the

appearance of "market-economy" way of thinking at the same time. Transformation processes have not terminated yet; nothing can be deduced from the interactions of society, economy, and technology.

Similar questions arise when examining the level of economic operators, that is, organizations. It is obvious that not all systems become smaller, more flexible, and more adaptable; large scale, globally operating organizations not necessarily work with lower efficiency, and the operation of an organization has several layers. For example Google, one of the dominant organizations of the information age, maintains an immense data store but the information processed here is a result of an operation that focuses on networking. Another significant factor is whether problems are mainly solved within the organization or the vertical structure is transforming into a horizontal one. Size itself means nothing.

Among others, Thomas L. Friedman uses two examples in his book "The World is Flat". One of them is Aramex, a package delivery company of Lebanese origin. With a global strategy the company would not have had the least chance against the world leading DHL. So they began with a strategic partnership offering their in-depth knowledge of Middle East countries. Besides their knowledge of the region they proved to be flexible enough (due to their size and from the necessity of market processes) to enter the international market after establishing their local network.

The other strategy is represented by E-trade. Friedman uses their online banking and broker services to demonstrate how the big can think like the small. As services are customizable using the online interface, their system resembles a self-service restaurant. While the delivery company built its network from bottom to top, the channels here are opened centrally from the top, this way creating a similarly flexible and adaptable network. The theory of lightweight networks does not cover uniform technological solutions. It is more about exploiting the possibilities of information society and its determining processes. Productivity and power remain the driving forces either inside the large-scale organizations or through the network of small and independent economic units. No matter how we select the focus of our study, transformation is obviously on its way.

The theory of lightweight networks does not cover uniform technological solutions. It is more about exploiting the possibilities of information society and its determining processes. Productivity and power remain the driving forces either inside the large-scale organizations or through the network of small and independent economic units. No matter how we select the focus of our study, transformation is obviously on its way.

More information, further readings

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Links

One Dollar Per Child - http://www.laptop.org

Netbox - http://logininitiative.eu/netbox/

New forms of social movements - "dark mobs"[1]

Masses of seemingly innocent university students illegally download and share music with peer-to-peer networks. It became obvious after the events of 9/11 how the internet and the use of mobile communication technologies helped terrorists in achieving concerted action. A group of New York artists organizes performances in front of various surveillance cameras in public places because they consider the cameras an unwarranted invasion of individual privacy.

In spite of the obvious differences, the examples mentioned above have a number of things in common. All of them can be viewed as the opposition of a certain authority (business organizations, state, public administration) and a (more or less organized) challenging group. All of them involves the constant redefinition of legal and illegal, that is the definition of the (socially interpreted) right and wrong. And finally, the presence of new technologies is an essential characteristic of all our examples.

In order to be able to grasp the common characteristics in the previous examples and in similar cases, we need to borrow the term 'social movements' from the theories that examine the realization of collective action. By using this term we shall interpret the tensions that arise from the encounter between the different strategies of bottom up and top down systems.

History of social movements

Social movements according to the definition of Meyer and Tarrow are "collective challenges of the extant authority, mobilizing people with common purposes and solidarity in sustained interaction with elites, opponents and authorities". Ever since authorities have existed, opposition to them has also existed. However, the elements listed in the second part of the definition (solidarity, sustaining) have only become part of collective protest gradually. In this evolution, the effectiveness of the activity of social movements had increased solidly and by now the diversity of organizations, often informal, impromptu relations have become characteristic.

For a theoretical apprehension of this situation, the network approach seems to be most appropriate, a theory which began to gain strength in the 80s and 90s. It is a compound of the collectivist and individualist thought experiments of the previous decades. While it also studies collective processes and macro conditions of the circumstances, it emphasizes that the system consists of decision-making individuals, determined by "free will" and circumstantial possibilities.

Movements of information society

Craig Jenkins, professor of sociology at the Ohio State University, accounts for studying the relationship of social movements and the state (which had previously been ignored by theorists) in his article from 1995, with the following:

1. The nature of movements involve politics: since they want social change, they need to have access to the political sphere, where these changes can institutionally be realized.

2. It is the state which determines the circumstances of the movements' activities.

3. Social movements need political representation, which is also based on a relationship with the state.

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[1] The study is based on the Institute For The Future (IFTF) – Ten Year Forecast Perspectives 2006 - Culture: Dark Mobs
 - http://www.iftf.org/docs/SR-945_2006_TYF_Perspectives.pdf -downloaded: 02.05.2007

Movements have come a long way in the past centuries. Opposition of state and citizen has emerged, protest forms have become reproducible, political thinking has penetrated all areas of everyday life and the state had to face with well-organized challengers. Neither the potentials which lie in individual initiative and deliberation, nor the institutional system that provides a framework for everything or the amount of resources available can be ignored by analyses anymore.

Although, it has been only ten years since Jenkins formulated his opinion about the role of the state, we now have to deal with a totally different situation. It is due to the technological environment which has altered forms of connection within society and questioned the power of traditional institutional systems.

The main ground for institutional changes might still be that of policy in Jenkins's list, however, there are numerous examples where changes occur by bypassing the institutional system. The role of the state has diminished in determining circumstances as well; let's just think of the world of internet. Finally, presumably as a result of the former, the necessity of political representation and relationship with the state becomes questionable. Since dominant social forces, economic processes have shifted into the scope of information - where the chance for monopolizing information is less and less -, abilities of particular agents (in this case, primarily the state and the civil society) to safeguard interests have undergone some transformation, the power of bottom up initiatives has increased (not to mention the increase in individual influences).

Shortly after the political transition in Hungary, one was to discover how technology could be of help to bottom up organizations, and that within the framework of democratic rules, the state had to face serious challenges in the struggle to maintain control. In 1990, between October 25-28 the so-called "taxi blockade" took place, when several thousand taxi drivers and freighters paralyzed the major cities and border crossing points of the country. What helped them in coordinating their actions was the communication system behind CB (or PR27) radio, a system that only the police, the ambulance and the army (that is only public organizations) had.

Smart mobs

Howard Rheingold introduced the idea of smart mobs in 2002. By the term he means large groups of ordinary people who could use mobile technology, to quickly band together in collective action. Technologies include the internet, computer-mediated communication (e.g. MSN Messenger), and wireless applications (e.g. mobile phones, PDA), and using peer-to-peer networks and complex applications which work with a large amount of data are among bottom-up tools. These together form a context aware environment, where the particular applications respond to the context of the user.

Due to the increasing number of network connections, smart mobs are characterized by intelligence and effectiveness, which on the one hand helps information flow, and on the other hand provides facilities for social coordination.

One of the new social phenomena is the so-called flash mob. In the course of a flash mob, people, who basically do not know each-other assemble in some public place, do something unexpected and then disperse. Calls for the gatherings are usually posted on website message boards or sent out via email, but there is no real organizer of these events. Likewise, no real connection is formed between members; the sudden dispersal of the mob is part of the concept. A number of similar events already took place in Hungary as well; such was the one when people opened their umbrellas at the same time at Deák Ferenc square or the pillow battle in front of Nyugati railway station.
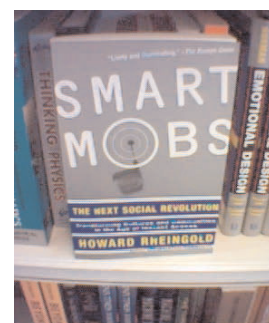
"Dark" mobs

Rheingold draws a distinct picture of the movements of information society, and accurately describes their characteristics. Nevertheless, he does not reckon with the fact that the increasing effectiveness of state independent organizations denotes a challenge for power holders. Bottom-up systems represent creativity, connectivity, disruption and desire, while drivers of top-down organizations are productivity, precision, security and convenience. Whereas these represent two extreme ends and on the spectrum between these ends clashes occur constantly, this ongoing clash becomes the primary source of innovation in technology, society and marketplace.

What turns smart mob into dark mob is the clash between innovation and control. In the course of maintaining control over society power holders and enforcers must always find ways to restrict activities of social agents who use context aware technologies. In return, bottom-up advocates will look for new ways of innovation and creativity. This will be accompanied by the constant redefinition of right and wrong, - in institutional language -, legal and illegal. Since one of the primary sources of innovation is the search for workarounds, users have to face that they are increasingly becoming criminalized and by using technologies that previously made them smart, they turn into a "dark" mob. (A somewhat similar example could be the Prohibition era in the United States).

Surveillance Camera Players, a New York-based group has a history of more than ten years now. This group protests against public surveillance cameras placed by the police, because they consider it an invasion of individual privacy and violation of human rights. They demonstrate in front of the cameras and protest with banners. In the majority of cases they perform a play, which is rewritten to fit the technological environment (their first performance was that of a version of King Ubu). And naturally, their only audience is the police (who already interrupted their "show" several times).

Obviously, there are familiar kinds of crime that can be associated with the internet (such as fraud and black marketeering). The other side of the shield however, is the criminalization of innovations that threaten the advantage of existing institutions or the morals of empowered segments of society.

The Taxonomy of internet crimes according to the U.S. Department of Justice:

- Computer intrusion (hacking)
- Password trafficking
- Currency counterfeiting
- Child pornography or exploitation
- Child pornography or exploitation which can be associated with mailing
- Internet fraud and spam
- Internet harassment
- Internet bomb threats
- Internet trafficking in explosives and firearms

According to Mosés Naím, editor-in-chief of Foreign Policy the combination of decentralization and globalization fundamentally changes the nature of both dark-market activities (making them even more dangerous) and our ability to mediate conflicts in these activities. Geographic and institutional boundaries become barriers for enforcement but not for illicit activity.

The Swedish Piratbyran group is a very good example for "dark" movements. They originally created their website in 2003 to give voice to anti-copyright criticism. This was already highly popular with users, but then in 2004 they started their new internet site called Pirate Bay, which allows users to share torrent files. Currently this is the world's most popular tracker site. It didn't take much time for the authorities to take action against The Pirate Bay. This was mostly done by confiscating servers, however, as a reaction to all this, a Swedish "pirate party" was formed in 2005 independently of the founders of The Pirate Bay and the confiscation of servers provoked storms of indignation throughout whole Scandinavia, even demonstrations were organized. At the same time, servers of The Pirate Bay

were placed in different countries making it nearly impossible for legal actions to be taken against them. Just to add for the sake of curiosity, The Pirate Bay also tried to buy the non-certified micro nation of Sealand, established on deserted man-made sea platform - from donations from its users.

What may the solution be? - that is our main concern. Is society running into criminality and anarchy? It is rather about a learning process, which is often paved with convulsions that are a consequence of certain social institutions ceasing to be and others coming to being. The state, the business circles, that is law-makers and enforcers have to take part in defining the new rules of the game, and at the same time they have to develop new strategies. On the one hand it is a necessity, as it is already obvious what kind of responses traditional restrictions evoke. On the other hand, agents of information society themselves are exposed to certain risks, in order for their safety, they also need some kind of control (without asserting where this control should come from). Particularly, because risks cannot be underrated, let us just think of the connections between international terrorism and technologies).

A question yet to be answered is how successfully the rigid institutions can accommodate to this altered social environment, which represents an increasing challenge to them. Safety and protection are becoming more and more important today, nevertheless, besides real dangers there is a risk for large segments of society to shift to the "dark side" and become criminals by using everyday technologies, such as file-sharing and copied software). Social movements of the present and future will play an increasingly important part in these changes and battles.

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http://piratbyran.org

http://thepiratebay.org

http://www.notbored.org/the-scp.html

Information society - past, present, and future

Under the heading of the IT3 Panoramic Social perspectives, we have, to date, dealt with some exciting - and first and foremost, more practical - changes to take place in the near future. In this issue, we turn our attention to a slightly more abstract topic - the concept and origin of the information society, as well as a brief survey of its future prospects.

"The Power of a Name"

Regarding the examination of the characteristics of the information society, we are all too often confronted by an overly conceptualized attempt that, in many cases, results in the birth of completely unique and unusual concepts that often merely serve to conceal the inevitably arising logical inconsistencies.

Justifiably, the question may arise: Why do certain names carry such significance? Giving a name or definition to an age or social phenomenon is no different than exercising our "power" over it. To a certain extent, we subject it to our inspection, thereby regarding it as existing and real, and even more importantly: we want to get others to accept it as well. It is well-founded that the names which are introduced into the general public consciousness are capable of influencing our way of thinking - and thus the reality surrounding us - as well as the future. Moreover, we must not forget about the struggle for "limited resources" within the sphere of academics either, which concerns the origin of the self-legitimization of certain disciplines, and in a more pedestrian form, the safeguarding of their ability to obtain resources. Today, this has become especially important and exciting, as we encounter more and more academically-oriented entrepreneurs, as well as enterprises (first and foremost, in the USA) whose intellectual interests are the canonization of their own systems of thought and theories. Having a tendency to become entangled in this process are the 'toolbars' of the traditional academic sphere, scientific education, journalism, marketing, and political planning, which - let's admit it - also hamper our clear vision.
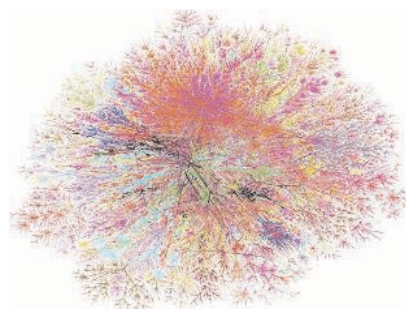
Over the past few decades, in the sphere of the social sciences, we have witnessed a proliferation of new expressions chosen to describe the social and economic changes relating to the "new age," as well as a veritable renaissance of theories - disputing or agreeing with one another - which hide behind these expressions. In a book published by James Beniger in 1986, Beniger collected no less than 75 such expressions appearing in academic or more widely known publications between 1950 and 1985, which in some way reflected the changing social environment (Beniger 1986, cited: Barney 2004).

It is evident that some of these terms are explicitly ideologically saturated. That is, they more or less - either covertly or openly - depict a world that the 'name-givers' long for (good examples of this are the expressions "the enlightenment" and "knowledge society") while in other cases, this ambition is missing, and it is rather the objective, "neutral," simply descriptive or structural content that is the determinant.

The information society

Although the concept of the information society first appeared during the first half of the 1960's, it is only over the past two decades that it has gained ground and risen to prominence, due to the aforementioned problems associated with the "competing" concepts presented in the preceding.

The formation of the independent theory of the information society must have gone hand in hand with the eclipse, and the then surrender, of the overtly critical attitude of the time, since a condition of wide-

spread recognition was the due "domestication" of the theory, and the clarification that it didn't aspire to the role of a 'world-redeemer.' It is evident that the expression "information society," at first hearing, doesn't carry with it the latent message that an age is being surpassed, or that the commencement of a less desirable future is upon us. Instead, it fits well into the liberal traditions of Western thinking. At the same time, the positivist belief devoted to advancement can be found in the relatively secure middle of the ideological spectrum.

The critics of the theory of the information society, for the most part, started out from the virtually perennial dilemma of "continuity versus new age." The most common, recurring, and to a certain extent, "subversive" critical objection was that this was nothing more than an ideology aimed at maintaining the hegemony of a world ruled by the existing system and the economic and technocratic elite. Putting it more gently, recognizing the huge development and social diffusion of information-communication technologies, continuing to hold its ground is the argument that these technologies have not resulted in any fundamental change in our social processes. Thus, we still cannot speak of developmental trends that radically differ from earlier ones. Although technology permeates the economic and political subsystems, and although the tools and technologies change, the fundamental principles and chief goals do not emerge from the earlier frameworks. Thus, when all is said and done, there is no mention of surpassing the capitalist industrial social model (Kumar 2005: 58).

It is easy to see that in so much as we allow the ideological character of our interpretational basis to rule, we can find ourselves in truly turbulent waters.

A scarcely avoidable characteristic of the scholarly legitimization of the information society theories is that their formulation did not occur within the classic scholarly sphere. In discourse, first and foremost, the works that were determinants in its formulation undoubtedly possessed less prestige in the traditional academic sphere. Although Fritz Machlup's pioneering economic work (Machlup 1962) received serious recognition, we would hardly be mistaken in stating that the work of the "business guru" Peter Drucker and the Toffler couple (dealing with futurology) reached a much larger audience, and as a consequence, all three of them became unavoidable participants in the birth of the theory of the information society. However, it should be noted that they did not yet use this expression[1] (Drucker 1969, Toffler 1970). As is well known, the first usage of the expression "information society" (joho shakai) can be tied to the names of Japanese researchers (see Z. Karvalics 2007, Barney 2005: 7).

Nor perhaps is it coincidental that in the 1970's, it was from the outside field of journalism that the impressive author, Daniel Bell, joined the field of "new age" theoreticians. His book about the coming of a post-industrialist society was unavoidable for decades, and even today is considered by many to be the theoretical "furnace" from which it all began (Bell 1999). The fact that we mention his book here is a good indication that a "purist" classi-fication of theories and authors according to school of thought is not possible.

While the work published in the 1960's made rather euphoric declarations about the future charged with positive excitement (although Toffler analyzed the negative effects of his so-called super-industrial societies as well), in the following decade, criticism projecting serious social tensions and conflicts emerged.

It is worth pausing here for a moment to take note of the conceptual wealth outlined by these first works: it is at this time that the concepts of the knowledge industry, the knowledge-based economy, and the knowledge sector were born. That is, the information society theories, from the moment of their birth, were fragmented and implicit. They were fragmented because each of the social phenomena pertained to only one of its groups (this of course is a value-free statement), and implicit, meaning that different concepts were used for the description of the same phenomenon - i.e. the information society. The construction of the ITE canon is thus retrospective and, from the outset, malleable: the relevant theories and concepts had to be collected from various locations, and this multicolored (and at times, uncertain) characteristic makes its impact felt even to this day.

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1. *Toffler könyve egy 1970-ben a Playboy-ban megjelent cikkének a továbbgondolásaként jött létre. Az akadémia világán kívüli népszerűségét jól jelzi, hogy több mint 6 millió példányban kelt el.*

While the development of communication technologies has been unbroken since the 1960's, there is no question that we have witnessed the most impacting and spectacular changes since the second half of the 1980's and the first half of the 1990's. At the same time, the far-reaching diffusion of computer technology - now even reaching households - and the lightning-fast rise of the internet (e-mail, WWW) and the cellular telephone brought along with them the partial transformation of the ITE. Making their appearance were simplified and (relative to the earlier definition) reduced definitions which defined the information society as a fundamentally technologically centered concept, tracing it back to the tools of telecommunications and computer technology, and explicitly or implicitly stepping back from the earlier paradigmatic and holistic concept. Moreover, its former rival, the knowledge society, once again emerged, which this time, more or less, defined itself as the succeeding developmental phase of the information society (Z. Karvalics 2007).

In a new study by László Z. Karvalics, the author outlines the three levels (built upon one another) of the information society narrative (Z. Karvalics 2007). The difference between them is defined according to the level of abstraction they set out from, and according to the level of complexity with which they attempt to grasp the examined phenomena. Belonging to the first large group are the "great narratives" which employ the most comprehensive perspective of the macro-level civilization theories.[2] They undertake no less than an analysis of the fundamental mechanisms of the functioning of society, attempting to define the ensuing processes at the beginning of a new era in world history within a unified theoretical framework.

It is under the highest level of abstraction that we find the "small narratives," which do not wish to provide us with universally holistic diagnoses - as in the previous case - yet at a high level of abstraction, deal with issues of the transformation of certain social subsystems (the economy, the media, partnerships, politics, etc.). A classic, unavoidable work of this level of analysis is Manual Castells's three-volume work (Castells 1996, 2000, 2003).

Finally, it is also worth mentioning the fundamentally practical and problem-oriented "mini-narratives" which, from the point of view of abstraction, represent the lowest level of ITE. Naturally, we are not speaking here of a qualitative stigma, but instead the concrete demands emerging in the most diverse spheres of politics and economy - the practical, micro-level responses (not necessarily lacking theoretical grounding) to the questions of what and how.

What might the future bring?

In recent years, without a doubt, we have witnessed the slow thinning of theories related to the information society. It is not that the intellectual ammunition feeding these theories has dried up - perhaps even today fresh and modern advancements will come about. However, the concept of the information society began to be utilized by too many people, in too many places, and to achieve too many goals, which has irreparably undermined its previous role.

The fundamental question is the following: Does there exist an independent academic field dealing with the examination of the information society?

The information society itself is not an isolated continent - it is not an independent entity.

This is plain to see since, if this weren't the case, there would surely exist a group of social phenomena falling outside the information society. This, however, seems to contradict the fundamental logic of the theory.

Just one example: Let us consider some typical fields of interest related to the information society, such as e-government or e-democracy. We soon realize that the fate of these and similar "e-projects" are decidedly determined by the "non e" factors - that is, the much wider circle of social processes.

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2.   *Z. Karvalics first and foremost cites the work of Tadao Umesao, Marshall McLuhan, and Alvin Toffler.*

The institutionalization of an academic field of study is not merely determined by the wishes of its participants. The information society will continue to be the number one explanatory metaphor as long as it offers explanations to phenomena with greater prospects than the other metaphors of the information, late modern (or however we choose to call it) age. This battle between metaphors is not always fair. Following the logic of fashion, after a certain period of time, the new and unusual always has an advantage over the customary and habitual. The information society will remain a metaphor and a narrative-composing force as long as it justifies its usage with exciting intellectual achievements. In this respect, we are the participants and viewers of an open-ended story...

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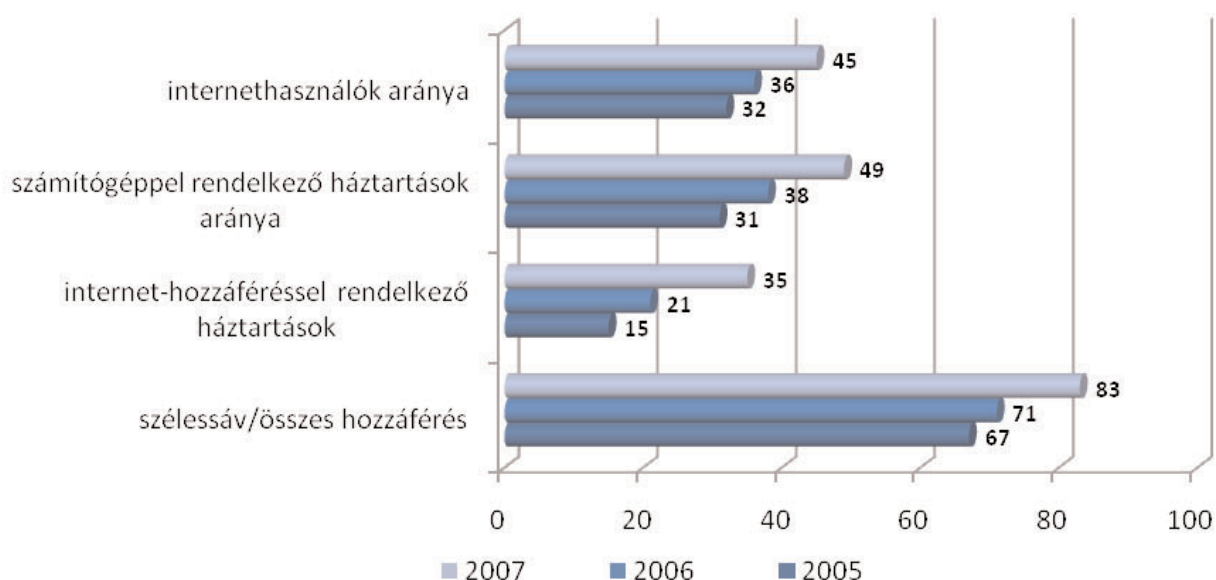
Information Society in Hungary 2007

Present and Future

The past articles of this section usually dealt with possible technological development scenarios and the anticipated social effects of these changes from a broader, theoretical point of view. This time our investigation is a little more focused and closer to everyday realities: we try to explore the trends which were taking place in the development of the Hungarian Information Society in 2007 and map those sequels which can happen in the near future. To find answers we used the 2007 data of the Hungarian World Internet (WIP) project.

According to the signs 2007 was a very important year in the development of the Hungarian Information Society. At least this is what the data suggest: as WIP shows the last year was a turning point.

It is never suprising to hear that in Hungary the Information Society is still in it's infancy. Rate of users is quite low, not too many households have Internet connection and a majority of Hungarians does not know how to use a computer. However, according to the data the pace of the diffusion processes have speeded up in 2007. The WIP research have been investigating these diffusions since 2001 and always found that the average rate of diffusion is steady and very low: for example in the case of Internet usage 4 percent a year. But something happened in 2007: the rate of Internet users in Hungary has grown with 9 percent, what means a doubleing in the yearly diffusion rate. An even more suprising jump can be detected in the rate of home Internet connections. In 2006 only 21 percent of the Hungarian households had Internet connection. One year later the rate is 35 percent, which is a very remarkable rise.

Basic Information Society Indicators in Hungary, 1005-2006-2007, %

What can be the reason of this sudden increase and what developments will caractherize the future?

The sociological theory of diffusion states that innovations (either technological tools, ideas, or social practices) are spreading in a society or among the members of any other population according to a unified pattern. This general pattern is the so-called S-curve. The S-curve simply illustrate that long recognized fact that the process of diffusion can be divided to different stages in time. First there are only a few adopters of the new thing, in the next phase a significant increase happens in the number of adopters, what is followed a period of a much slower growth until the end of the whole process. The concept of the S-curve is of course an ideal type: the different diffusion processes naturally are not the same: there are differences in how long each stage is last, end also in the saturation level. This means that the final adoption rate of different innovation are not the same: some can reach almost total diffusion among the members of a certain population (eg. television in the Hungarian households, or washing hands among doctors) others "only" goes as high as 50, 60 or 70 percent. It is not easy to predict the final diffusion rate of Internet usage in Hungary. As the examples of other countries show the diffusion in this case can reach even 80 percent (for example in the Scandinavian countries). The rate of Internet users can be this high even in Hungary in certain groups, especially among the youngest age cohorts. This suggest that the rate of users can reach this level in a long term but not in the close future, since in international comparison even this sudden increase in penetration numbers in 2007 was only enough to conserve our relatively unfavorable positions. This means that in comparsion of the countries of the European Union Hungary is usually still at the back of the gradiation.

However, there is one exception: the rate of broadband connections. This indicator is very high in Hungary: more than 80 percent of home Internet connections are cabel or DSL. This suggest that accessing the Internet with a telephone modem is eventually the past: only 5 percent of the connected householdd using this technology and most probably this number will decrease further in 2008. Consequently, almost all Hungarian users is using a broadband connection which makes them possible to gain all the advantages lying in high level online services and applications.

Generally we can conclude that in 2007 a progressive period have started at least if we believe in the concept of the S-curve. So, 2008 will be a very interesting year: it will reveal whether this increase was only a one-year wonder or this was the start of a stage of dinamic growth.

This question could be possibly answered if we have known what was the reason of the last year's jump. Probably most people would guess that the significant decrease in subscription fees in 2007 was the most important reason and this by no means irrelevant. The constant falling of the prices could have been experienced in the las few years and maybe the fees now reached a level which made the choice easier for a lot of people. But this factor maybe not the most influental one. The fact that the Internet has became a normal part of everyday life, even for those not using it, is even more significant. Today, there are numerous areas in which the internet has become perhaps the most important means of handling matters. Just think about the real estate and used automobile market, plane ticket sales, tax returns, or the virtualization of personal communication which makes it just as easy to chat as to use community web pages that offer countless functions. These areas are liked to the Internet even for non users who usually ask a friend or a relative to arrange certain thing on the Net. So, the Internet slowly but steadily has became embedded to our everyday routines which autamatically leads to the growth in the rate of users.

The above mentioned applications, usage forms are among the most popular online activities, but if we want to know which is the first in the row, there will not be a big suprise. Emailing have been always the most popular thing people used the Internet for ever since the WIP project started. Almost all Internet user (92%) send and receive emails, most of them on a daily basis. Besides email, different forms of information seeking activities are very widespead: reading news, looking for travel, product or health related information are verpopular activities.

Of course Hungarian users are not only sending emails and looking for information. Using instant messaging systems and downloading and listening music online are also very widespread. However, this can not be told about online transactions: relatively few Internet users is shopping online and even less is bankig or conducting any kind of financial issue on the Internet. Presumably in the area of financial transaction more time is needed to establish the trust and to change those routines which accompany these activities (for example in the case of shopping there are a lot of things which can not be worked out onlie: comparing sizes, touch the material, probing etc.).
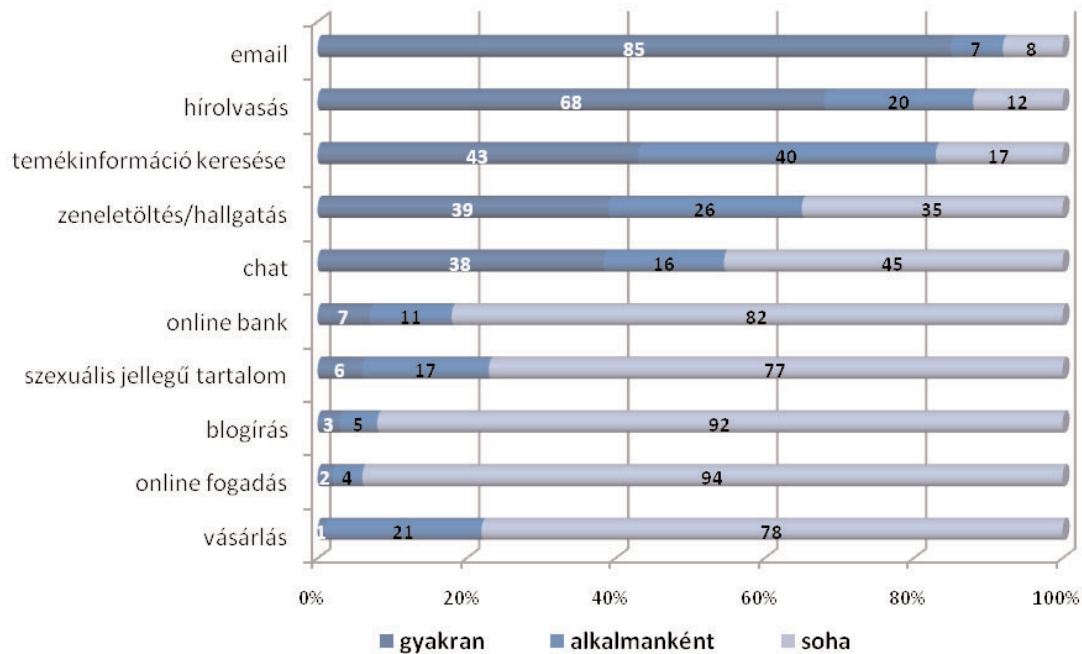
Popularity of certain Internet usage forms among Hungarian Internet users

(How frequently do you use theInternet for the followings?), 2007, %

Nowadays, when speaking about the Internet the topic of the so-called web 2.0 applications can not be missed. The concept of Web 2.0 is usually describe usage forms aiming to support the fullfilment of creativity, communication and peer-to-peer content sharing - like networking sites or blogs. The popularity of these applications is varied among the Hungarian Internet users. According to the data 51 percent of Hungarian users has a membership on at least one online networking site, which is quite a high number. These sites are especially popular among teenagers: 73 percent of users aged 14-17 has a networking site registration. Writing blog is less popular: only 8 percent of Hungarian Internet users

has a blog and only 3 percent is updating it regularly. The rate of those who are reading blogs is 25 percent. These rates can be regarded as low at first sight, but if we think about the nature of the activity the rates are quite remarkable. readin and wrting blogs are especially popular in younger groups what perdicts that this new way of self-expression and sharing private life will be more popular in the near future. We can almost be sure that these web 2.0 applications will be among the most important usage forms.

When we try to ivestigate the usage habits more sophistically five usage groups can be identified by the usage habits and usage frequency. A biggest group is the so-called infromation oriented users: their browsing habits are caractherized mostly by infromation seeking activities. The group of entertainment and communication oriented users mainly use the Internet to play games, watch movies and listening to music as well as communicate with friends. Web 2.0 applications are also quite popular in this group. The third group is the transaction oriented users - they are those, who mainly log on to the Net to fulfill some kind of transactions. Besides, two adverse group can be described which quite the oppposites of each other. While the inactive users use just a few applications and not too regularly, the active users use a wide variety of applications frequently.

The fact that one can divide the users into segments clearly shows that the Internet means different usage patterns for users and for prospective users as well. It is hard to forecast which activities will "magnetize" current non-users, and which applications will be popular in the future? Especially interesting to ask how will the future of Web 2.0 applications be shaped, which - according to many - can bring a new era of Internet use in the next years. However, to answer these question will be a task of WIP 2008.

Briefly on the WIP Project

The Hungarian research of the Worls Internet Project started in 2001 and ever since a survey ha been conducted in every year investigating the caractheristics and development of the Hungarian Information Society. The Hungarian research is part of the international WIP cooperation which has more than twenty partner all around the world. The Hungarian research is completed by the partnership of ITHAKA Kht., TÁRKI Zrt. and BME-ITTK. In 2007 the project was funded by the National Office for Research and Technology. Mor infromation about the project can be found on www.wiphungary.hu or www.ithaka.hu

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Nemzeti Kutatási és Technológiai Hivatal

A projekt a Nemzeti Kutatási és Technológiai Hivatal támogatásával valósult meg.