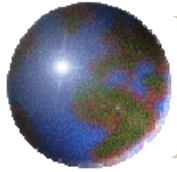


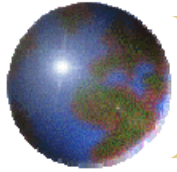
Challenges for knowledge organizations in the triangle of knowledge

Roumen Nikolov
Sofia University



The Knowledge Triangle: Shaping the Future of Europe

- The Knowledge Triangle: Shaping the Future of Europe, 31 August–2 September 2009, Swedish Presidency, Gothenburg;
- The **importance of a well-functioning knowledge triangle** (education-research-innovation) has been underlined by the European Council at every Summit on the Lisbon strategy since 2006;
- **Boosting the knowledge triangle** is now a concrete element of the implementation of the **Integrated Guidelines for Growth and Jobs** (2008-2010) and the **National Reform Programmes**;
- The Bologna Process views the position of **higher education as at the crossroads of research, education and innovation**, and, as such, it is the **key to Europe's competitiveness**.

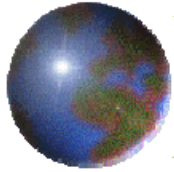


Current status

The Commission's analysis shows that the EU needs to work harder to integrate all three parts of the knowledge triangle.

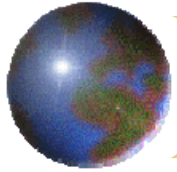
Current status:

- lack of innovation and entrepreneurial culture in research and higher education;
- fragmentation of the EU's research and higher education system, which means that it does not necessarily make the most of the excellence that exists in Europe,
- lack of investment, in particular private investment, in research and development,
- difficulty in translating R&D results into commercial opportunities,
- the difficulty in reaching a critical mass in certain fields,
- the lack of a critical mass and innovation in SMEs



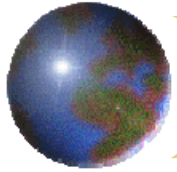
Universities in focus

- The developing knowledge based European society creates a **strong pressure on universities** as central actors;
- A European modernisation agenda is **stimulating universities to develop their diverse missions and new models** for the way they operate. Innovation and entrepreneurship must be integrated while maintaining education and research as core activities.
- For **all stakeholders outside universities**, the strengthening of their own capacity to follow and adapt the new knowledge to products and services is fundamentally important.



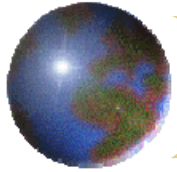
Trends in Higher Education (Guri-Rosenblit, 2007):

- **Globalisation versus National Needs.** Globalisation trends threaten the stability, security and identity of universities in some national settings;
- **Government Steering versus Institutional Autonomy.**
- **Harmonisation versus Diversity** (Bologna Process vs institutional diversity and heterogeneity of academic cultures);
- **Public versus Private Sectors;**
- **Basic versus Applied Research;**
- **Competition versus Collaboration;**
- **Intellectual Property versus Intellectual Philanthropy;**



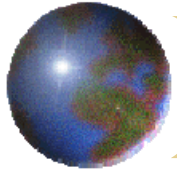
University Organisational Models (1)

- ✚ University as a centre of knowledge production and teaching - *knowledge factory* (Machlup, 1962);
- ✚ Research University
- ✚ Entrepreneurial University
- ✚ Innovation University
- ✚ Global University
- ✚ Virtual University



University Organisational Models (2)

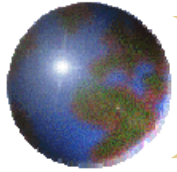
- ✚ eUniversity (Digital University, eCampus, University 2.0)
- ✚ Open University;
- ✚ University of Applied Science
- ✚ Corporate University
- ✚ Franchise University
- ✚ Global Alliance



Entrepreneurial University

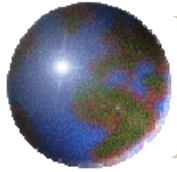
(Clark, 1998) : The main characteristic of such university is that it “*understands the commercial value of knowledge*”. Minimum of entrepreneurial actions:

- **Strengthening the steering core.** Traditional European universities have demonstrated weak capacity to steer themselves.
- **Expanding the developmental periphery.** Enterprising universities compared to traditional universities, have more units that build links with outside organizations and groups.
- **Diversifying the funding base.** Widening the financial base by financial diversification becomes essential. The entrepreneurial universities invest efforts to raise money from a second stream (apart government)
- **Stimulating the academic heartland.** The heartland of an entrepreneurial universities is still found in the **traditional academic departments formed around disciplines** where most academic work is done. **Whether they accept or oppose** determines the successful promotion of changes and innovative steps.
- **Integrating the entrepreneurial culture.** Entrepreneurial university, much as firms in the high tech industry, **develop a work culture that embraces change.**



Knowledge Society in Finland

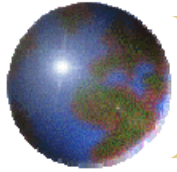
- The Finnish experience of the 1990s represents one of the few examples of **how knowledge can become the driving force of economic growth and transformation;**
- During that decade, the country became the most ICT specialized economy in the world and thus completed its move **from the resource-driven to knowledge- and innovation-driven development;**
- **Education** is considered as the **key element** of a knowledge-based, innovation-driven economy;
- Finland's innovation system successfully converted R&D and educational capacity into **industrial strengths.**



Finnish knowledge society model (1)

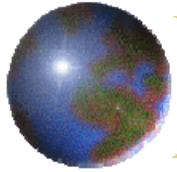
(Markkula, 2006)

- **Creativity and innovativeness** are the driving forces;
- **Effective networking** - creating a shared knowledge reality among both individuals and organizations;
- **Increasing intellectual capital** is the most important value base of work organizations;
- **Knowledge management and encouraging systematic lifelong learning** are the basis on building a concept of a learning organization;
- Future economic success is more and more built on **national innovation system** with special emphasis on well-targeted **regional innovation policy**;
- **Increasing investments in research and development** play a crucial role in governmental policy.



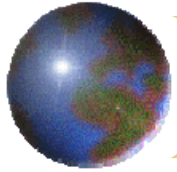
Finnish knowledge society model (2)

- In contrast with the cases for building knowledge society ecosystems in the **USA**, in **Finland** the state acts “*as a promoter of technological and social innovations, as public venture capitalist and producer of knowledge labour, thus creating the conditions under which Finnish business could restructure itself and compete globally*” (Markkula, 2006).
- Every process has to be oriented towards **capacity building and competence development** for individuals or organizations.
- The success of every organization mostly depends on its **intellectual capital** and ability to utilize it.
- A key element of Finland’s success has been the **capacity of policy makers to pursue reform** (Schleicher, 2006)



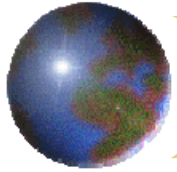
Finnish Innovation University (2010)

- Merger of 3 existing universities: Helsinki University of Technology, Helsinki School of Economics and University of Art and Design;
- Start-up funding of 700 Milion Euro coming from the government and industry;
- **Innovation University concept challenges the traditional role of universities**, addressing all the three missions of universities (Markkula, Lappalainen, 2008);
- It aims to “*secure the nation’s competitiveness in a situation where globalization on the one hand and ageing of the large age cohorts on the other are jeopardizing the current structures*” ;
- Fundamental factors in the university reform are related to multidisciplinary, creativity and abilities to **increase intangible capital both inside the universities and through them in society**;



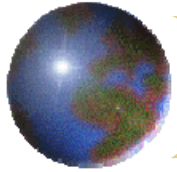
Instruments and Platforms for Building the Knowledge Triangle

- ✚ European Institute of Innovation and Technology (EIT);
- ✚ Science/Technology Parks;
- ✚ European Technology Platforms (ETPs);
- ✚ Joint Technology Initiatives (JTIs);
- ✚ Regions of Knowledge & Innovative Clusters;
- ✚ Living Labs;
- ✚ Triple Helix Model; etc.



European Institute of Innovation and Technology (EIT)

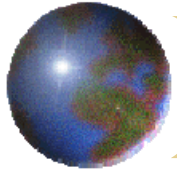
- **Vision:** The European Institute of Innovation and Technology (EIT) is to be a key driver of sustainable European growth and competitiveness through the stimulation of world-leading innovations with a positive impact on economy and society.
- **Mission:** The mission of the EIT is to grow and capitalise on the innovation capacity and capability of actors from higher education, research, business and entrepreneurship from the EU and beyond through the creation of highly integrated Knowledge and Innovation Communities (KICs).
- Knowledge and Innovation Communities (KICs) are innovative ‘**webs of excellence**’: highly integrated partnerships that bring together **education, technology, research, business and entrepreneurship**.
- first two to three KICs will be selected in December 2009:
 - ▣ Sustainable energy
 - ▣ Climate change mitigation and adaptation
 - ▣ Future information and communication society



Science/Technology Parks

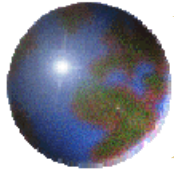
Science & Technology Parks promote the economic development and competitiveness of regions and cities by:

- Creating new business opportunities and adding value to mature companies
- Fostering entrepreneurship and incubating new innovative companies
- Generating knowledge-based jobs
- Building attractive spaces for the emerging knowledge workers
- Enhancing the synergy between universities and companies.



Science Park Definition

A **Science Park** is an organisation managed by specialised professionals, whose main aim is to increase the wealth of its community by promoting the culture of innovation and the competitiveness of its associated businesses and knowledge-based institutions. To enable these goals to be met, a Science Park stimulates and manages the flow of knowledge and technology amongst universities, R&D institutions, companies and markets; it facilitates the creation and growth of innovation-based companies through incubation and spin-off processes; and provides other value-added services together with high quality space and facilities. (IASP International Board, 6 February 2002).



International Association of Science Parks

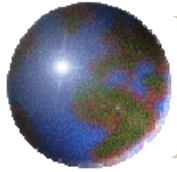
The screenshot shows the IASP website interface. At the top left is the IASP logo with the text "25 YEARS! 1984-2009 LINKING THE BEST" and "International Association of Science Parks". To the right of the logo is a login form with fields for "user" and "password", and an "ok" button. Below the login form is a link for "Forgot your password?". On the right side of the page, there is a banner for the "XXVII IASP World Conference 2010 - Daedeok".

The main content area is divided into two columns. The left column contains a navigation menu with the following items:

- The IASP at a glance
- About Science and Technology Parks
- Links to Members
 - By country
 - By technology sector
 - By sub-networks
 - Site locator for brokers
- Partners
- Conferences and Events
- Newsroom
- IASP Bookstore
- Webliography
- Join the IASP
- Contact us

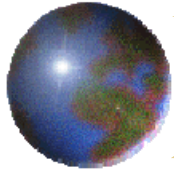
The right column features a "Links to Members - By Country" section with a world map in the background. The countries listed are:

Argentina	Israel	Serbia
Australia	Italy	Singapore
Austria	Ivory Coast	Slovakia
Azerbaijan	Japan	Slovenia
Belgium	Jordan	South Africa
Brazil	Kenya	Spain
Canada	Korea	Sweden
Chile	Latvia	Switzerland
China	Lithuania	Syria
Colombia	Luxembourg	Taiwan (China)
Costa Rica	Malaysia	Thailand
Croatia	Mexico	The Netherlands
Cuba	Mongolia	Trinidad & Tobago
Czech Republic	Namibia	Tunisia
Denmark	New Zealand	Turkey
Estonia	Nigeria	United Arab Emirates
Finland	Norway	United Kingdom
France	Oman	Uruguay
Germany	Panama	USA
Greece	Peru	Venezuela
Hungary	Poland	
India	Portugal	
Iran	Romania	
Ireland	Russia	
	Saudi Arabia	



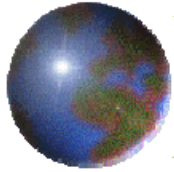
Stanford Research Park

- **Founded in 1951**, through the foresight of Stanford Dean of Engineering Fredrick Terman and others;
- the Park was **the first of its kind** and became the cornerstone of what would eventually be known as **Silicon Valley**;
- Today, it has **140 companies** in electronics, software, biotechnology and other high-tech fields and employs 23,000 persons and many.



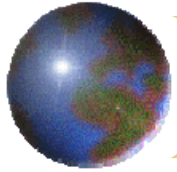
Cambridge Science Park (1970)

- provide and foster close links with the scientific excellence of Cambridge University
- facilitate technology transfer
- support R&D companies from start-up to floatation
- foster and encourage the growth of biotechnology and high tech research and development clusters
- provide specialist facilities and technology transfer expertise to R&D companies across a range of sectors
- provide high-quality, flexible laboratory and office buildings to a community of compatible neighbours also involved in scientific research and development
- provide state-of-the-art conferencing facilities to support Science Park activity

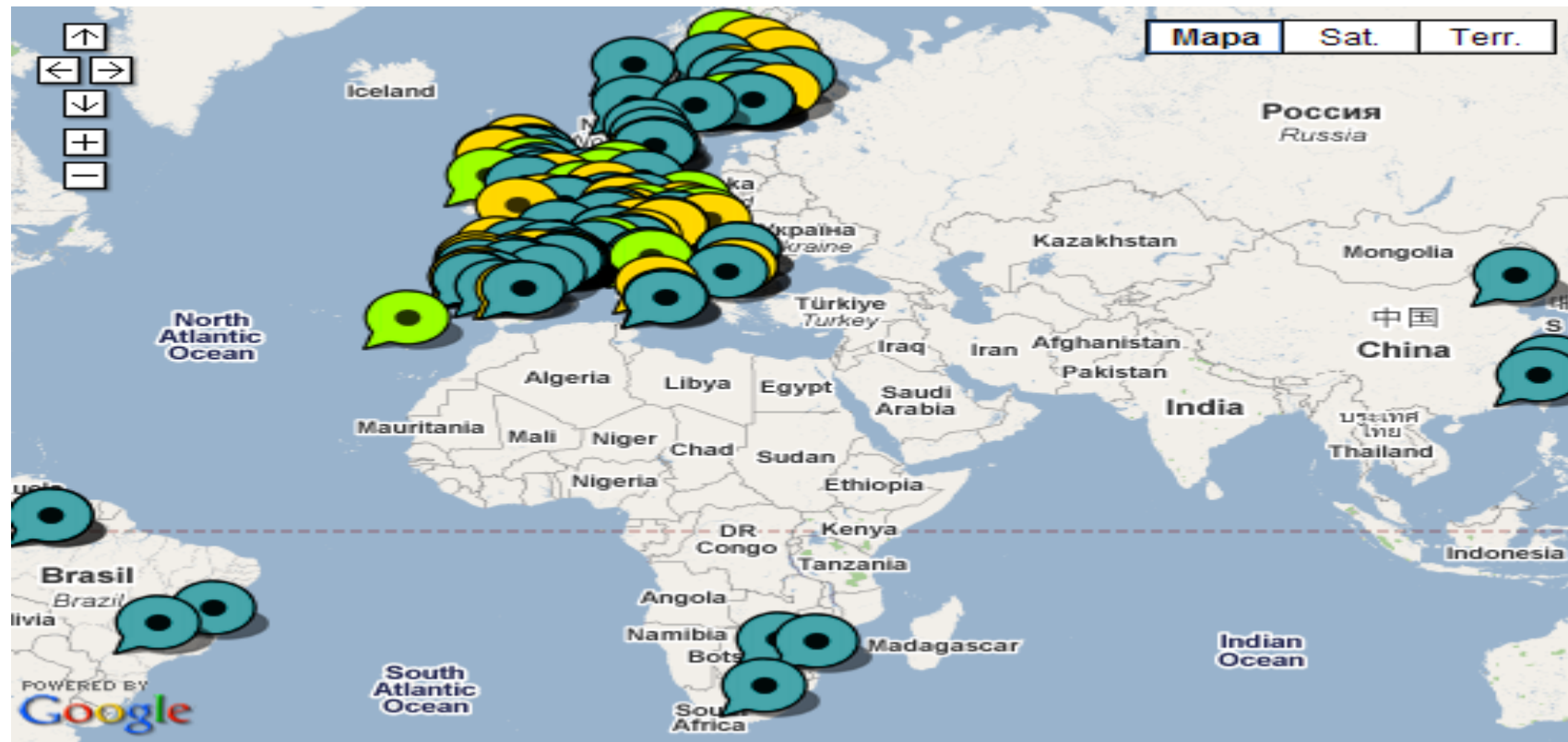


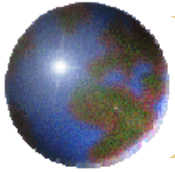
Living Labs

- Living Labs aim to contribute to a **new Innovation System** where users and citizens become active actors and not only passive receivers.
- A **Living Lab** is about experimentation and co-creation with real users in real life environments, where users together with researchers, firms and public institutions look together for new solutions, new products, new services or new business models.
- **Living Labs** are about societal involvement, about promoting **open innovation** in a societal basis, involving academia, SMEs, public institutions and large companies in an Open Innovation process that because happens in real environments has an immediate impact.
- **Application deadline** for 4th wave - **no later than 21 December 2009 at 24:00 hours CET**

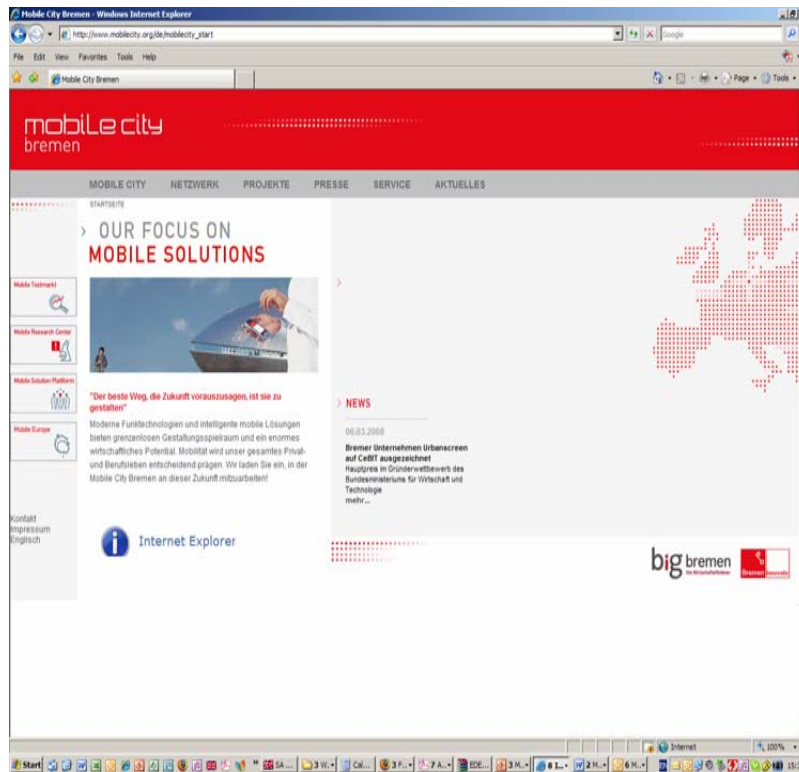


European Network of Living Labs (ENoLL)

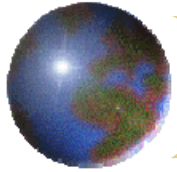




Mobile City Bremen Living Lab

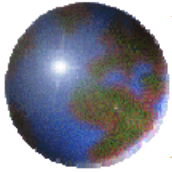


- combines research, development, testing and marketing of mobile products and services in a mobile cluster;
- thanks to targeted sponsorship and the dedicated cooperation of numerous companies, universities and research institutes, **Bremen has become a premium address for mobile solutions;**



Mobile City Bremen...

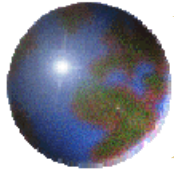
- The key elements of Mobile City Bremen are the **Mobile Research Center**, the **Mobile Solution Platform** operated by the **Mobile Solution Group**, and the **Mobile Test Market**.
- Point of entry is the **Mobile Solution Center on the university campus**.
- At the Mobile Research Center, **more than 100 academics** from the fields of information technology, communication engineering, design and media constitute a high-quality interdisciplinary research network for the mobile future.
- The **Mobile Solution Platform** helps to make a success of mobile applications more quickly. This open system platform adapts content to the users' various mobile devices and provides access to a multitude of users. Additionally, the **city of Bremen is firmly established as an ideal testing environment for product launches and acceptance tests**.



Manchester EastServe Living Lab



- The loss of heavy industry and manufacturing in East Manchester has seen its population decline from 100,000+ to less than 30,000 people;
- LL aims to ensure that local people can **develop the skills to participate fully in the emerging information society** and to be able to take advantage of the new training and employment opportunities becoming available through the **take-up of ICTs by small businesses and social enterprises**

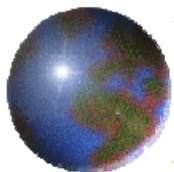


Rural Living Lab (RLL) – Gödöllő, Hungary



Services:

- **Infrastructure and access points:**
Alternative mobile, satellite and wireless applications
- **Business applications** suited to rural SMEs: low cost and easy to use solutions, open software and peer-to-peer platforms, Trading, ERP, SCM,...



Digital Spaces LL & VirtSOI LL

Firefox browser window showing the website: <http://www.digitalspaces.info/index-bg.html>

Navigation: english | начало | архив | зали | за контакт

новини | накратко | събития и дейности | услуги и проекти | членове | европейско и международно сътрудничество

Пътят на идеята

Творчество и иновации
Европейска година 2009

1-ва ЕВРОПЕЙСКА СЕДМИЦА ЗА МСП
МАТЯ ПИРИС - ГОДИНА ИДЕА

Пътят на идеята
23 октомври (петък) 2009, от 10.00 часа до 18.00 часа
в Аудата на Алма матер,
Софийски университет "Св. Климент Охридски"
вход свободен с регистрация >>>

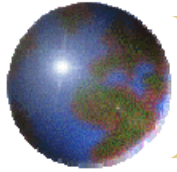
Главни организатори :

- Инвестиционен фонд Neveq
- Българска Мрежа на Бизнес Ангелите
- VirtSOI Living Lab
- Digital Spaces Living Lab
- Microsoft

Logos: NEVEQ, BBAN, VirTech, DSLL, Microsoft

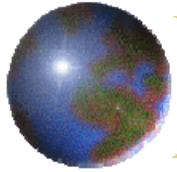
Програма (пленарна част)

9:30-10:00 **Регистрация (на място)**



Technology Challenges

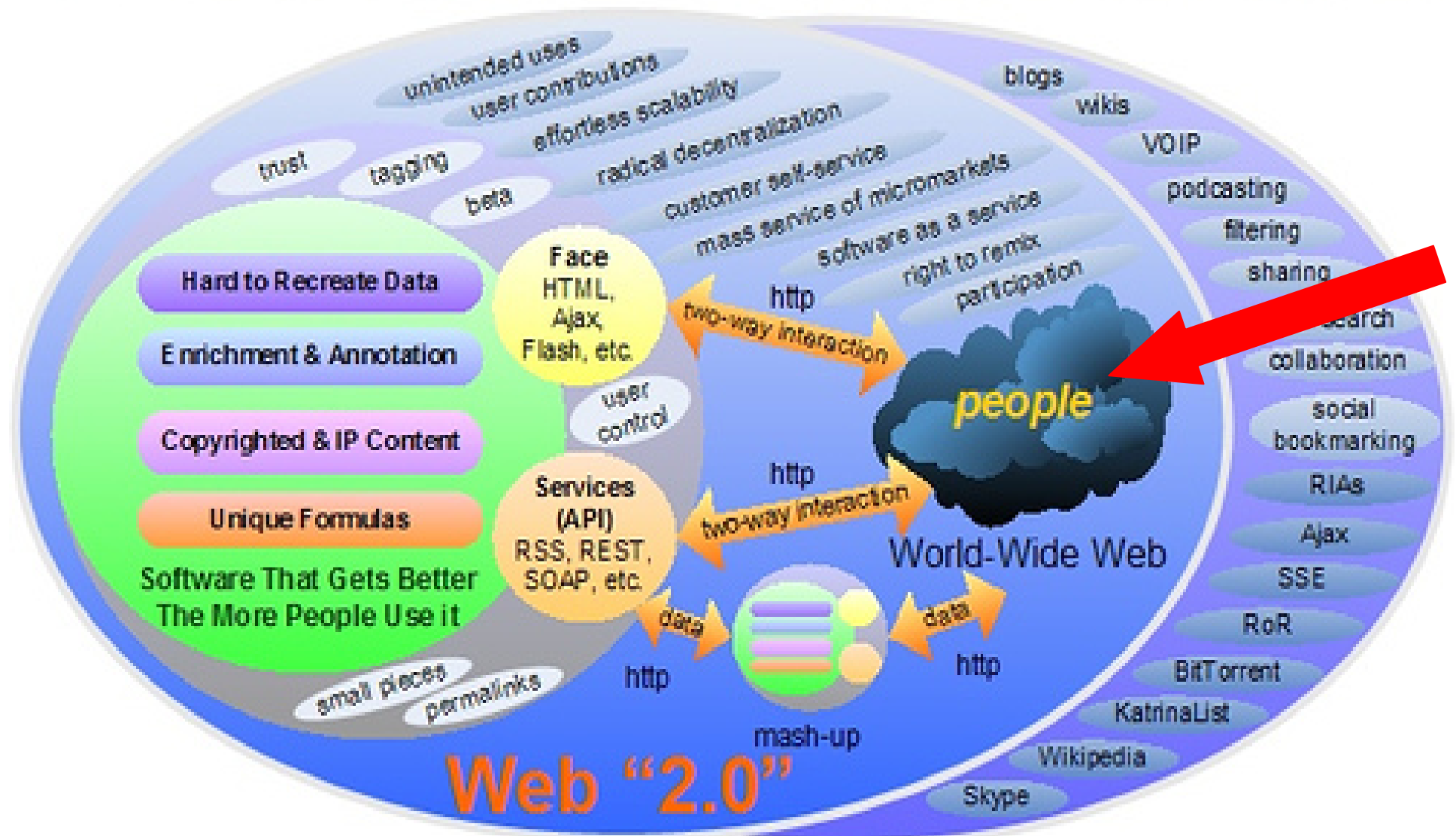
- Web 2.0 revolution;
- Semantic Web
- Cloud Computing
- Knowledge Management
- Visual Computing & Simulation
- Serious Gaming
- Virtual Worlds
- Future Internet (EU competitive advantage)
- Mobile Technologies
- E-Infrastructure & e-Libraries
- Etc.

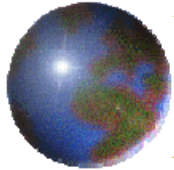


The Web 2.0 revolution

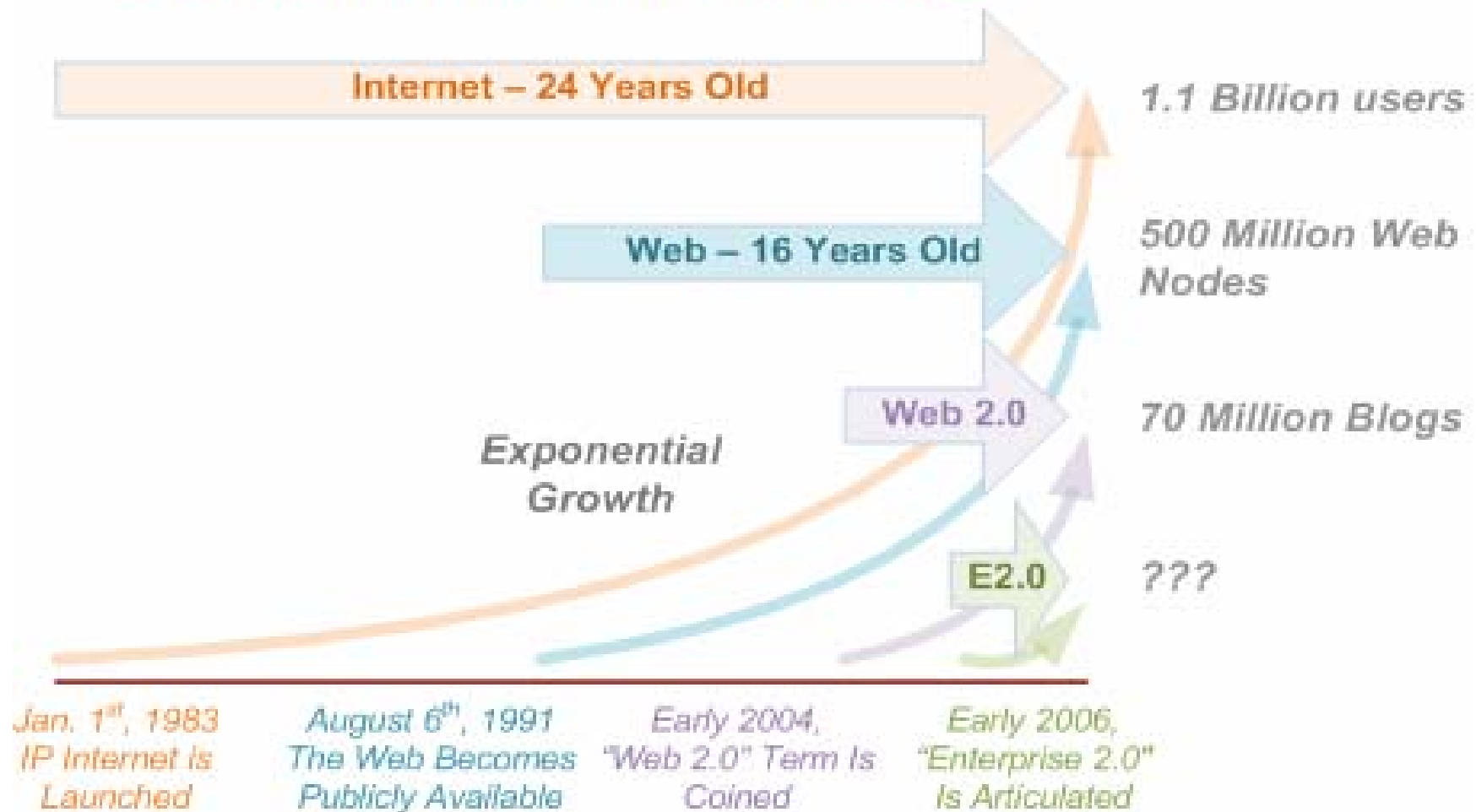
O'Reilly and his collaborators consider Web 2.0 as a synonym of a **new generation web**: “*The central principle behind the success of the giants born in the Web 1.0 era who have survived to lead the Web 2.0 era appears to be this, that they have embraced the power of the web to **harness collective intelligence...***”.

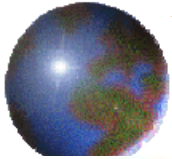
Elements of the Web's Next Generation





Sizing Up Our Global Social Networks: Growth from the Internet to Web 2.0

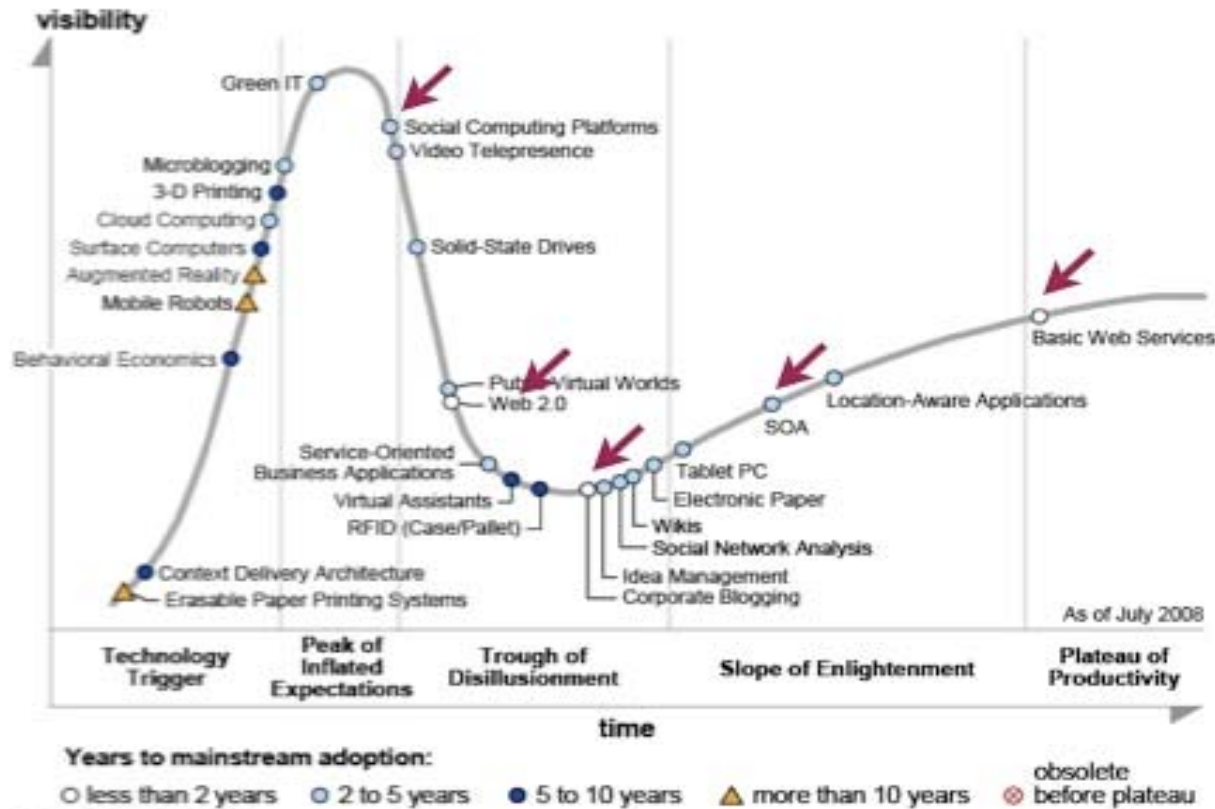




Gartner's 2008 Hype Cycle:

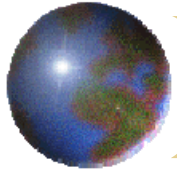
Web 2.0 And Related Concepts Are Just Before, In, Or Coming Out of Trough of Disillusionment

Figure 1. Hype Cycle for Emerging Technologies, 2008



Source: Gartner (July 2008)

"Although **Web 2.0** is now entering the Trough of Disillusionment, it **will emerge within two years to have transformational impact**, as companies steadily gain more experience and success with both the technologies and the cultural implications"



Enterprise 2.0 (University 2.0, Government 2.0)

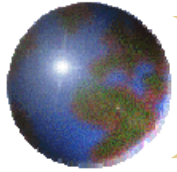
Enterprise 1.0

- Hierarchy
- Friction
- Bureaucracy
- Inflexibility
- IT-driven technology / Lack of user control
- Top down
- Centralized
- Teams are in one building / one time zone
- Silos and boundaries
- Need to know
- Information systems are structured and dictated
- Taxonomies
- Overly complex
- Closed/ proprietary standards
- Scheduled
- Long time-to-market cycles

Enterprise 2.0

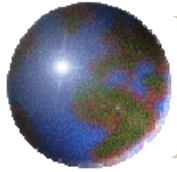
- Flat Organization
- Ease of Organization Flow
- Agility
- Flexibility
- User-driven technology
- Bottom up
- Distributed
- Teams are global
- Fuzzy boundaries, open borders
- Transparency
- Information systems are emergent
- Folksonomies
- Simple
- Open
- On Demand
- Short time-to-market cycles

<http://www.enterprise2conf.com/about/what-is-enterprise2.0.php>



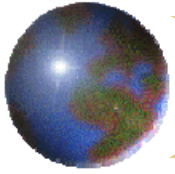
Other academic developments

- ✿ Open Educational Resources (OER)
- ✿ MIT iCampus Project (why not EIT iCampus???)
- ✿ MIT OpenCourseWare, OpenCourseWare Consortium (> 100 institutions);
- ✿ Open textbooks;
- ✿ Open repository of research publications;
- ✿ E-libraries (e.g. Europeana)
- ✿ Global Research Library (GRL)



E-infrastructure for e-Science

- ✿ High performance computation services;
- ✿ Data, information and knowledge management services;
- ✿ Observation, management and fabrication services;
- ✿ Interfaces and visualization services;
- ✿ Collaboration service;
- ✿ Virtual Organizations



EGEE: global collaborations in science

- ~ 500 sites in 40 countries
- > 60 Virtual Organisations
- ~ 30 000 CPUs
- > 5 PB storage
- > 20 000 concurrent jobs/day

- Scientific communities

High Energy Physics

Astrophysics

Computational Chemistry

Fusion

Life Sciences

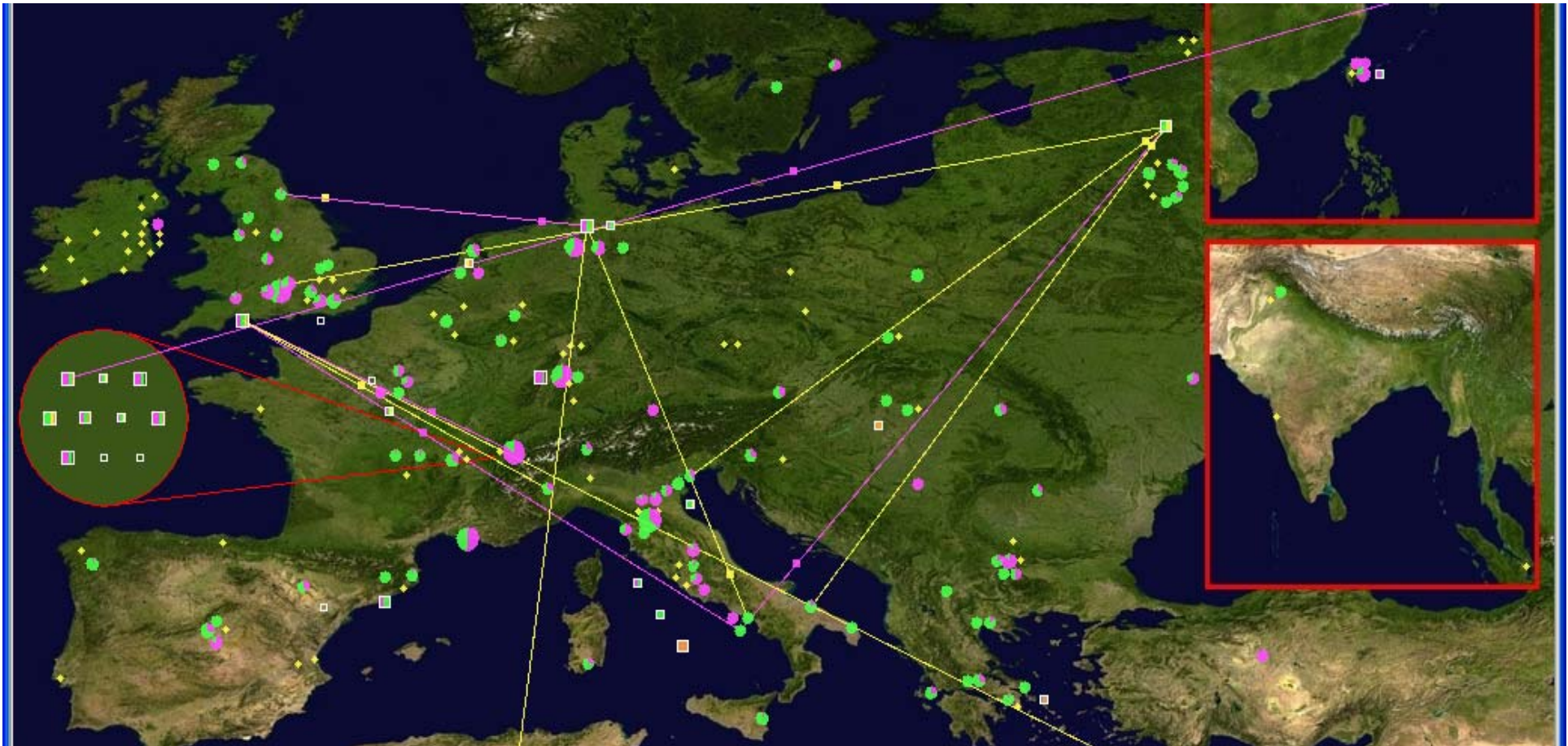
Biomedics

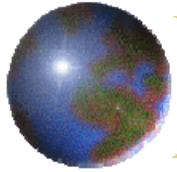
Earth Sciences

Finance

Geophysics

Multimedia...





nanoHUB - NSF-funded Network for Computational Nanotechnology

The screenshot shows the nanoHUB.org website in a Mozilla Firefox browser window. The browser's address bar displays <http://nanohub.org/>. The website header includes the nanoHUB.org logo, the tagline "ONLINE SIMULATION AND MORE FOR NANOTECHNOLOGY", and a search bar with "Login" and "Register" buttons. A navigation menu contains links for Home, My HUB, Resources, Members, Explore, About, and Support. A "Help!" link is also present.

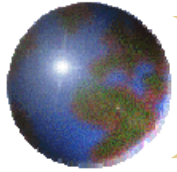
The main content area features a "Got Questions?" section with a question mark icon and a quote icon, encouraging users to ask questions and earn points. Below this is a statistics table showing usage for the prior 12 months:

Usage for prior 12 months	
Users	91242
Resources	1882
Tools	163
Simulations	979292
Who's online?	

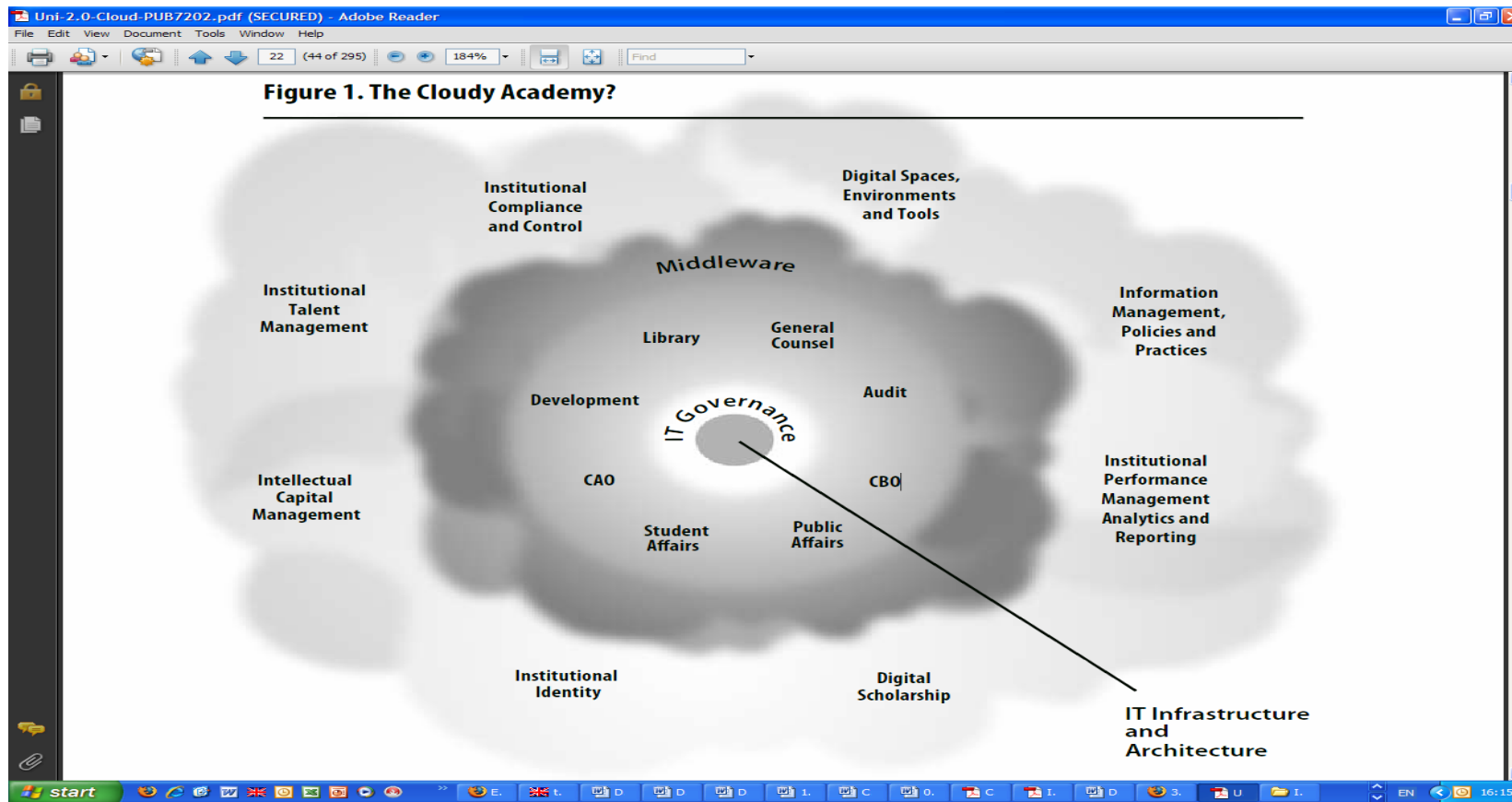
The website is organized into several columns:

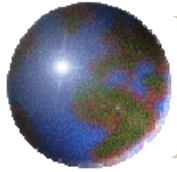
- SIMULATE**: A section for simulation tools.
- RESEARCH**: A section for research-related content.
- TEACH & LEARN**: A section for educational resources, including "Tools and Assignments for Classes", "Nano 101 / Nano 501", "Introductory tutorials", and "Curriculum on Nanotechnology".
- CONTRIBUTE**: A section for user contributions.
- NANO NETWORKS**: A section for network-related content.
- FEATURED TOOL**: A section highlighting a "Quantum Dot Lab" tool for computing eigenstates.
- FEATURED ONLINE PRESENTATION**: A section for presentations, such as "Information Theory and Cell/Nanoparticle Modeling".
- FEATURED PROFILE**: A section for user profiles, featuring Xufeng Wang.
- FEATURED QUESTION**: A section for user questions, such as "how to download a spice3f4?".
- TOP TAGS**: A section for popular tags like "ABACUS", "carbon nanotubes", "course lecture", "devices", "education/outreach", "Illinois", "materials", "material science", "molecular electronics", "nano/bio", "nano electro-mechanical systems", "nanoelectronics", "nanomedicine", "nanophotonics", "nanotransistors", "NEGF", "quantum transport", "research seminar", "transistors", and "tutorial".
- RESOURCES**: A section for tools, seminars, tutorials, series, workshops, and teaching materials.

The browser's taskbar at the bottom shows the Windows Start button and various application icons, with the system clock displaying 17:21.

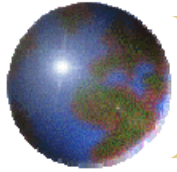


University as a Global “Cloudy Academy”





Shell we join this movement?



Thank you for your attention!