CST Programme 5/19/06 9:40 AM Page 1

PROGRAMME



CST TROMSØ 060606



COMMUNICATING SCIENCE AND TECHNOLOGY

TROMSØ 06-09 JUNE 2006

http://uit.no/cst/

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CST
TROMSØ
060606



Table of Contents

A Welcome Message 2

Organizers 3

University Map 6

Practical Information 7

Media Festival 10

Conference Program 11

Abstracts 18

Poster Abstracts 34

CV Invited Speakers 39

Exhibitions 54

Sponsors 61

Thanks 63

Advertisements 64

List of Participants 65



A Welcome Message

Welcome to CST Tromsø 060606,
Jarle Aarbakke, rector, University of Tromsø

Welcome to the Arctic, welcome to Tromsø, the gateway to the Arctic, welcome to the international conference at 70 degrees north. Also, welcome to the northernmost university of the world, with about 1900 employees and about 6500 students, of which almost 10 % are international. The university has six faculties; humanities, law, science, medicine, social science, and the Norwegian college of fishery science. Research, and teaching in science and technology are primarily found at the faculty of science, at the faculty of medicine, and at the Norwegian college of fishery science. Master programmes include international programmes taught in English, such as biology, chemistry, geology, mathematics, medical biology, physics, statistics, telemedicine and e-health, and energy and environment in the north. The geographical location of Tromsø provides excellent opportunities for field studies and specialization within Arctic research. One example of this is ARCTOS - a research network in Arctic marine ecology - initiated by the University of Tromsø, the Norwegian Polar Institute, Akvaplan-niva, and the University Centre in Svalbard. Also, Tromsø is home to a cluster of research groups and companies working in the fields of marine biotechnology and bioprospecting.

CST 060606 is devoted to communicating science and technology to the public in general and to young people in particular. The timing of the conference is excellent. On November 10 2005 the Foreign Minister of Norway, Jonas Gahr Støre, presented a new initiative for research and development in the high north - “Barents 2020”. In his speech, the Foreign Minister pointed to knowledge as the single most important factor if we are to successfully balance the exploration and exploitation of resources and protection of the environment. “Barents 2020” calls for joined forces in research and education internationally.

It is essential that we reach out to the young people who will be the key players in developing the future.



Organizers

University of Tromsø

University College of Tromsø

Confederation of Norwegian Enterprise

Norwegian Academy of Technological Sciences (NTVA)

RENATE
National Centre for Contact with Working Life for the Promotion of the Natural Sciences and Technology

Troms County Council

City of Tromsø

Steering Committee

Bjørn Solheim (Chair),
University of Tromsø, Tromsø and Project director CST

Sylvia Labugt,
University of Tromsø, Tromsø and Project leader CST

Ronald Rindestu,
County Council Chairman, Tromsø

Liv Cecilie Evenstad,
Tromsø University College, Tromsø

Ann Kristin Edvardsen,
Confederation of Norwegian Business and Industry (NHO), Tromsø

Odd Lauritzen,
National Centre for Contact with Working Life for the Promotion of the Natural Sciences and Technology (RENATE)

Eduardo da Silva,
International Advicer, University of Tromsø

Advisory Board

José Mariano Gago,
Professor. Minister of Science, Technology and Higher Education, Government of Portugal. President Initiative for Science in Europe, and President International Risk Governance Council, Lisboa and Geneva

Ole D. Mjøs,
Professor, University of Tromsø, Tromsø and Head of Nobel Peace Prize Committee

Shirley Malcom,
Head, Directorate for Education and Human Resources Programs, American Association for the Advancement of Science (AAAS), Washington DC,

Ivar Giæver,
Professor, Rensselaer Polytechnic Institute, Troy, NY. Nobel Laureate in Physics 1973.

Walter Staveloz,
Executive Director European Collaborative for Science, Industry & Technology Exhibitions (ECSITE), Brussels

Vladimir de Semir,
Professor, Universidad Pompeu Fabra, Barcelona, President of the international network of Public Communication of Science and Technology

Carl Johan Sundberg,
Assoc. Professor, Karolinska Institutet, and Project Director EuroScience2004 Stockholm

Ragnhild Sohlberg,
Vice President, Norsk Hydro ASA, Oslo

Bjørn Solheim,
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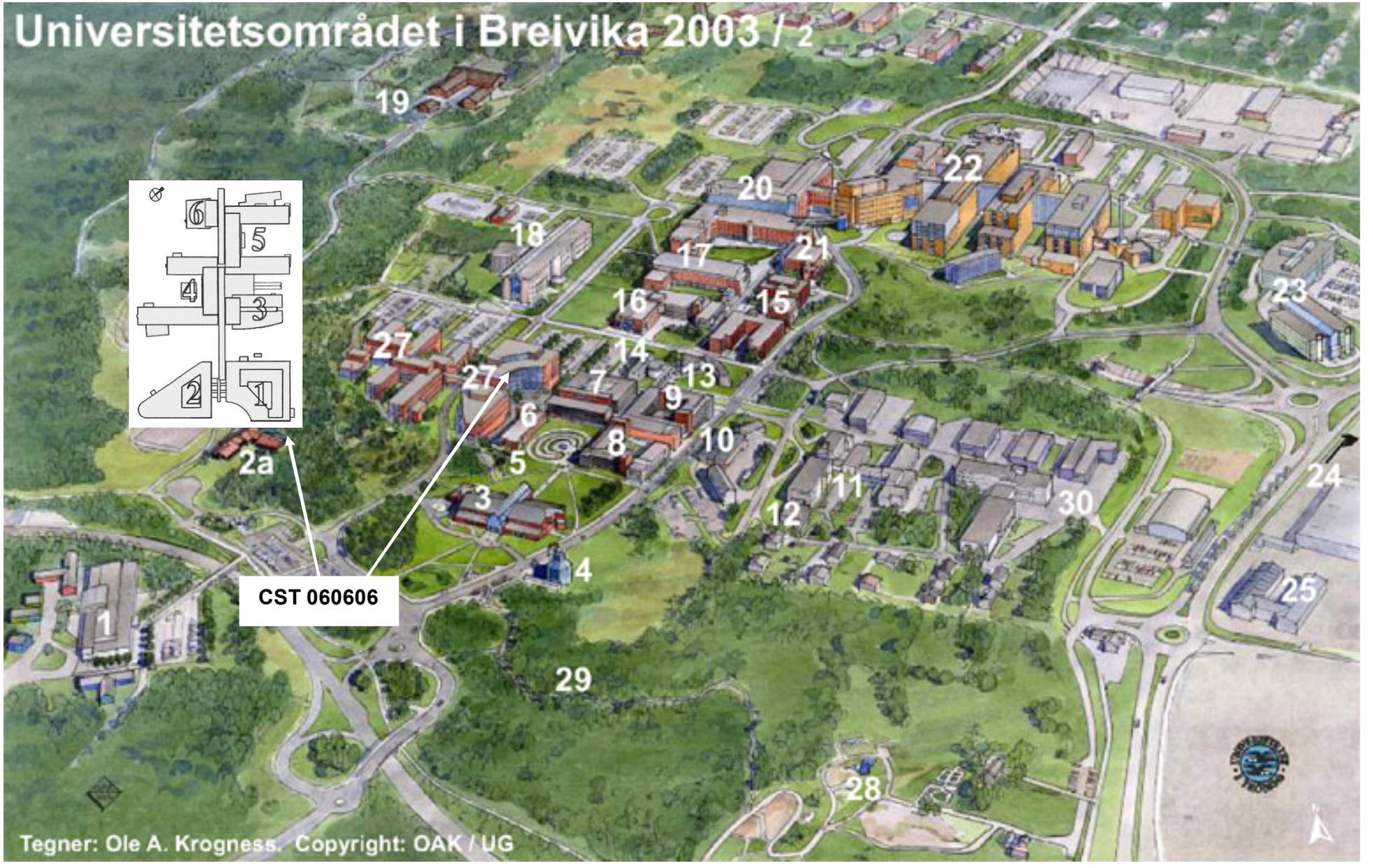
Marit Stykket,
President, The Norwegian Society of Engineers, Oslo

Media Contest Jury

Vladimir de Semir, Barcelona, Spain, Chairman
Kathrine Skretting, Trondheim, Norway
Janet Sumner, London, UK



The conference is held in 'Teorifagbygget', building 27, house 1.



Practical Information

REGISTRATION
A registration desk will be located in the Arrival Hall at Tromsø Airport between 10.00 and 20.30 on Monday the 5th of June. There will also be a registration desk at the 'Get together' at Tromsø Rådhus from 18.30 Monday evening. Registration at other times can be done at the information desk in the conference area.

AIRPORT TRANSPORT
There is a bus connection between the airport and most of the hotels in the centre of Tromsø. The bus fare is NOK 45 per person. A taxi between the airport and the centre of Tromsø will cost between NOK 150 and NOK 170 depending on day/night and week days/week end rates.

CONFERENCE LOCATION
All sessions
University of Tromsø, Teorifagbygget, House 1
Address: Breivika, 9037 Tromsø

TRANSPORTATION
There will be shuttle buses between the Clarion Collection Hotel With located at Sjøgata 35/37 in the centre of Tromsø and the conference venue every morning. First departure is on the 6th of June at 07.50 and second departure at 08.20. On the other days departures will be at 08.00 and 08.30.
Scandic Hotel is located about 3 km from the University and there will be transportation to the conference venue at 08.30 every morning.
The shuttle bus will depart the conference venue 15 and 45 minutes after the last session of the day.

CONFERENCE ACCESS
Information desk
An information desk will be located in the conference area. The staff will be happy to assist with any queries. The desk opens one hour prior to the first session in the morning and stays open until thirty minutes after the last session. It can be reached by telephone at (+47) 47 87 65 98.

Message board
There will be a message board for conference participants located next to the conference information desk.

Technical staff
Technical staff will be available during all sessions. Please direct all other enquiries for technical assistance to the conference information desk. Presenters who have not submitted their presentations in advance should report to the conference information desk at arrival.

Admission
At registration all delegates and exhibitors will receive a name card. This card is required for admission to the conference venue, parallel sessions, lunches, and Conference Pub.

Exhibition
The exhibition will be open during the entire conference.

Working area – delegates
An Internet café is available in the conference venue. A wireless connection to the Internet will be available in the conference building. Several of the hotels have access to the Internet for their guests. A copier and telefax are available at the conference venue. For more information, please contact the Information desk.

Working area – media
A media working area is located in the conference area.

Meeting facilities
Meeting rooms are available close to the conference area. Please make reservations at the Information desk during the conference.

Lunches
Lunches are included in the conference fee and will be served in the conference area all days except Friday.

No smoking policy
Smoking is not permitted in either the conference venue or the restaurants. There are specific rooms for smokers at the hotels.

Cell phones
We kindly ask all participants to turn off cellular phones during presentations.

SOCIAL ACTIVITIES
Get-together on the 5th of June
Start: 19.00
Location: Rådhuset (Trosmø's City Hall)
Address: Rådhusgata 2, 9008 Tromsø

Official Conference Pub on the 6th and 7th of June
We invite all of you to Ølhallen – Tromsø's oldest pub, established in 1928.
Open only for conference participants with guests: 18.00-22.00
Address: Storgata 4, 9008 Tromsø

A trip to Tromsø`s Roof on the 7th of June
The bus will departure from the Clarion Collection Hotel With at 19.00
Return 21.30
Dinner is included
Filet of lamb – served with fried vegetables, baked potatoes and a herb sauce.
Crème Brule – with fresh berries and raspberry coulis
Two glasses of wine or beer

Roundtrip by bus and the Coastal Steamer on the 7th of June
The bus will departure from the University at 16.00
Return 23.45
Meals are not included.

Conference Dinner on the 8th of June

The bus will depart from the Clarion Collection Hotel With at 19.00 and arrive at Sommarøya at 20.00.
Return 24.00
If weather permits the dinner will be served outside. The definition of permitting weather in Tromsø might differ from other places in the world. Please, bring warm and preferably windproof clothes and sensible footwear.

If you have not registered for the social events prior to the conference please contact the information desk.

USEFUL INFORMATION

Currency	Norwegian Krone (NOK) (NOK 100 = EUR 12,5)
Country Dialling Code	+47
Emergency	113 (medical emergency) or 112 (police)
Local police	(+47) 77 69 85 00
Taxi	(+47) 77 60 30 00
Electricity	230V, 50 Hz



Media Festival

In order to inspire new and innovative ideas for the communication of science and technology, the first day of the conference will be organized as a Science Media Festival dedicated to presenting TV programs and commercials. A special invitation to submit programs has been sent to broadcasters, video makers, and advertising agencies. The contributions have been evaluated by an international committee and out of more than 30 contributions six TV production/Videos together with three commercials have been selected to be shown in the final. The best production in each of the categories will each receive a prize of **20 000 Euro**.

The criteria for best presentations are:

• to inspire young people to learn more about science and technology,
• to increase people's understanding of the importance of science and technology in society, and
• to describe the qualifications needed to produce a company's products, and the exciting job opportunities in industry for young people.

The jury is composed of:

- **Dr. Vladimir de Semir** (Chairman), Commissioner for Scientific Culture - Barcelona City Council. Associated professor of Scientific Journalism and director of the research centre Science Communication Observatory at the Pompeu Fabra University, Barcelona, Spain
- **Dr. Kathrine Skretting**, Professor of film and media studies, the Norwegian University of Science and Technology, Trondheim, Norway
- **Dr. Janet Sumner**, Broadcast Project Leader, The Open University, Milton Keynes/BBC London, UK



Conference Program

*Program is still subject to change.

Tuesday June 6

	Plenary Auditorium 1. Chair: Jarle Aarbakke, Rector University of Tromsø
09:00	Opening welcome Øystein Djupedal, Minister of Education and Research, Norway
09:20	*The Northern Lights. Their Heritage and Science* Narrator: Asgeir Brekke, Tromsø, Norway (CV-39) Music: Øistein Hanssen, Tromsø, Norway (CV-43)
10:00	Nysgjerrigper Award 2006 Presentation of Award, Øystein Djupedal, Minister of Education and Research, Norway
11:00	Coffee Break
11:20	*Rock Art as Communication. The Use of Signs and Symbols in the Old European North* Knut Helskog, Tromsø, Norway (CV-44, abs-24)
11:50	*A Camel Ride to Prime Time* Janet Sumner, London, UK (CV-51, abs-31) Opening of the Science Media Festival
12:20	Lunch
	Plenary Auditorium 1. Chair: Janet Sumner, Member of the Jury
13:30	Presentation of the Finalists in the Media Production Contest **TV production/Video** • *Kraftskolen (Powerful Ideas)*, Eva Berg, Snöball Film AS/Statskraft, Norway • *A Stem Cell Story, Kate Doherty*, EuroStemCell, UK • *Genfähre (Gene carrying bacteria)*, Michael Feser, ArchiMeDes, Germany • *Total phänomenal supernasen (Fantastic phenomena: Supernose)*, Juergen Bundy, Südwestrundfunk (SWR), Germany • *Hit Science*, Daniela Attilini, RAI Radiotelevisione Italiana - RAITRE, Italy • *Newton*, Ågot Holgersen, NRK, Norway
16:00	Coffee Break

16:30	Presentation of the Finalists in the Media Production Contest (continued) **Websites** *No entries to the final* **Commercials** • *By studying science and technology you determine a path for future generations*, Piotr Spodnik, DougFaberFamily, Poland • *Nötteknekkeren (The Nutcracker)*, Elisabeth Helland, Grey World Wide, Norway • *Mesta trailer*, Elisabeth Helland, Grey World Wide, Norway
17:30	Award Ceremony Media Contest Presentation of Awards, Vladimir de Semir, Chair of the Jury
18:00	Transportation to the Hotels

Wednesday June 7

	Plenary Auditorium 1. Chair: Carl-Johan Sundberg
09:00	*Political Initiatives in Science and Society* Øystein Djupedal, Minister of Education and Research, Norway
09:30	*Political Initiatives in Science and Society* Josè Mariano Gago, Minister of Education and Research, Portugal (To be confirmed)
10:00	Coffee Break
10:30	*Science under Attack: Distorting Science, from the Classroom to Government* Lawrence M. Krauss, Cleveland, Ohio, USA (CV-46, abs-25)
11:15	*Science and Society: Relationship in Trouble or in Transition?* Shirley Malcom, Washington DC, USA (CV-48)
12:00	Lunch
13:30	Beyond Technology Børje Ehrstrand, Stockholm, Sweden (CV-42)
	Parallel sessions
14:20	**Session 1. Auditorium 2. Scientific Journalism** Chair: Carl-Johan Sundberg *Training of Scientists and Journalists in Science Communication* Carl-Johan Sundberg, Stockholm, Sweden (CV-52, abs-31)

14:50	*Public Trust through Communication. A Self Interest for Science?* Peter Sylwan, Sweden (CV-52)
15:20	*Science and journalism - a healthy relationship?* Dr. Karin Hermansson, Stockholm, Sweden (CV-45, abs-24)
	Session 2. Auditorium 3. How to Make Science Teaching More Interesting Chair: Hein Johnson
14:20	*XLAB- the Most Advanced Experimental laboratory for Young Scientists* Eva-Maria Neher, Göttingen, Germany (CV-48, abs-28)
14:50	*Inspiring European Science Teaching* Chris Warrick, Abingdon, Oxon, UK (abs-33)
15:05	*Young Minds - Technology Foresight - a Successful Method to Increase Teenagers' Interest in Future Science and Technology* Helena Lilja, Stockholm and Luleå, Sweden (abs-26)
15:20	*Interaction makes us strong - collaboration between school and industry* Carla Botten-Verboven, Oslo, Norway (CV-39, abs19)
	Session 3. Auditorium 1. Mass Media and Science Communication Chair: Bjørn Solheim
14:20	*The Good, the Bad, and the Improbable - Fiction and moral debates* Frans Meulenberg, Rotterdam, The Netherlands (CV-49, abs-27)
14:50	*Selling Science to Unwilling Buyers: Reaching out beyond the Classroom* Lawrence M. Krauss, Cleveland, Ohio, USA (CV-46, abs-26)
15:20	*Can Genetics Help us Rethink Communication? Public Communication of Science as a "Double Helix"* Massimiano Bucchi, Trento, Italy (CV-40, abs-20)
15:50	End of Program
16:00	Excursions

Thursday 8. June

	Plenary Auditorium 1. Chair: Tore O. Vorren
09:00	Role of Media *Who is the Target Group? How Can We Reach Them? What are the Criteria of Success? How is the internet changing the role of intermediation?* Vladimir de Semir, Barcelona, Spain (CV-42)
	Parallel Sessions
	Session 1. Auditorium 1. Polar research and climate change Chair: Tore O. Vorren
09:45	*Extraordinary Opportunities to Succeed or Fail in Science Communication During the International Polar Year* David Carlson, Cambridge, UK (CV-41, abs-41)
10:15	*Key Questions in Climate Research* Kim Holmén, Tromsø, Norway (CV-45, abs-45)
10:45	*Public and Climate Change: The Challenge of Explaning Complicated Scientific Issues* Rasmus E. Benestad and Ø. Nordli, Oslo, Norway (abs-18)
	Session 2. Auditorium 3. Teaching Science I Chair: Per Wiggo Richardsen
09:45	*Rocking science - how to twist maths from a chalkstone, and take it into cyberspace.* Frede Thorsheim, Fjell, Norway (abs-31)
10:05	*New Book Will be Core of Public Outreach Program* Jack Williams, Washington D.C., USA (abs-33)
10:25	*Mathematical Drama for Schoolchildren* Njål Foldnes, Stavanger, Norway (abs-21)
10:45	*Science theatre, a performance for all senses* M. Rådbo, Gothenburg, Sweden (abs-29)

	Session 3. Auditorium 2. Teaching Science II Chair: Liv Cecilie Evenstad
09:45	*Teaching science with multimedia* Hanspeter Hauke, Baden-Baden, Germany (CV-44, abs-23)
10:15	*The ALMA Interdisciplinary teaching Project* Douglas Pierce-Price et al., München, Germany (abs-28)
10:35	*Subliminal Science - Engagement through Familiarity* Gary Evans, London, UK (abs-21)
10:55	*PIDstop - Combining Gameplay and Learning* Bjarne A. Foss and K. Hag, Trondheim, Norway (abs-21)
11:15	Coffee Break
	Parallel Sessions
	Session 4. Auditorium 3. Chair: Tore O Vorren
11:40	*The upper polar atmosphere - a part of our environment.* Asgeir Brekke, Tromsø, Norway (CV-39, abs-19)
12:10	*The Venus Transit 2004 Programme* Henri Boffin, Garching, Germany (abs-18)
12:30	*Computer Science Behind Your Science* Gunnar Hartvigsen, Tromsø, Norway (abs-22)
12:50	*Strengthening Science and Technology Teaching by Broadband* Bjørn G. Hauge et al., Sarpsborg and Halden, Norway (abs-23)
	Session 5 Auditorium 2. Marine resources Chair: Per Wiggo Richardsen
11:40	*An integrated Management Plan for the Barents Sea* Cecilie H. von Quillfeldt, Longyearbyen, Norway (CV-53, abs-32)
12:25	*Traceability - competitive advantage for food of the future* Petter Olsen, Tromsø, Norway (CV-50)

	Session 6. Auditorium 1. Energy resources Chair: Ragnhild Sohlberg
11:40 12:25	*Scenarios for commercial development in Northern Seas - Challenges and opportunities for natural sciences* Tore Husmo, Stavanger, Norway (CV-46, abs-25) *Evolution of the Global Energy Consumption in the 21st Century and possible solutions to cover the needs.* Egil Lillestøl, Bergen, Norway, and CERN, Switzerland (CV-47, abs-27)
13:10	Lunch and Poster Presentation
	Plenary Auditorium 1. Chair Tore O. Vorren
14:50	*Creativity and Education* Ivar Giaever, Troy, New York, USA (CV-43, abs-22)
15:20	Plenary: The Barents Region 2020. Future Challenges for the Educational System Chair: Tore O. Vorren 1. Jarle Aarbakke, Tromsø, Norway 2. Ivan C. Burkow, Tromsø, Norway (CV-40) 3. Salve Dahle, Director, Akvaplan-niva, Tromsø
16:00	Coffee Break
16:20	Panel Discussion
17:00	Transportation to the Hotels
19:00	Departure for Conference Banquet.

Friday 9. June

	Plenary Auditorium 1. Chairman: Svein Sjøberg
09:00	*Europeans, science and technology: What can the recent Eurobarometer study tell us about interests, attitudes, perceptions and knowledge?* Svein Sjøberg, Oslo, Norway (CV-51, abs-30)
09:45	Science and Technology in Education *School science and youth culture: Missing the target? What we can learn from ROSE, an international comparative study* Camilla Schreiner, Oslo, Norway (CV-50, abs-30)
10:30	Coffee Break

11:00	*The Knowledge Promotion from a Publisher's Point of View* Ole Andre Sivertsen, Oslo, Norway (abs-29)
11:20	Science in Kindergarten and Schools. The Tromsø Project Tonje Woie, Tromsø, Norway
11:40	*Communiqué - A Road Map for the Establishment of a European Research Media Service* Peter Green, Brussels, Belgium Thomas Evensen, Oslo, Norway
12:30	Final words Bjørn Solheim
12:45	End of the Program

Poster Presentations

Posters will be on display outside auditorium 1 and 2 during the whole conference. The authors will be present at the posters on **June. 8 between 14:30 and 15:00**.

Technology-enabled communication across continents and culture
Johannes C. Cronjé, University of Pretoria, Pretoria, South Africa (abs-34)

The Energy Network
Karl Torstein Hetland et al. Norwegian Centre for Science Education, Oslo, Norway (abs-34)

International Baccalaureate for the Barents Region
Margot Hovda-Lien, Finnfjordbotn High School, Finnfjordbotn, Norway (abs-35)

Schoolyard Seismology and Geoscience Learning
Eystein S. Huseby and Y. V. Federenko, Department of Earthe Science, University of Bergen and Polar Geophysical Science Centre, RAS, Apatity, Russia (abs-35)

Want to know the latest on European ICT research?
Jernet Karenssen, GOPA Cartermill, Brussels, Belgium (abs-36)

The Xplora porta.: Using ICT in science education
Laura Massoli, European Schoolnet, Brussels, Belgium (abs-37)

The research and research information of Austria towards Europe.
Dr. Sabine Stadler, Austria (abs-37)

Abstracts

(Arranged alphabetically by main author)

PUBLIC AND CLIMATE CHANGE: THE CHALLENGE OF EXPLAINING COMPLICATED SCIENTIFIC ISSUES

Benestad, R.E.
Benestad, R.E., Nordli, Ø. The Norwegian Meteorological Institute, Oslo, Norway

As the media increasingly embraces the climate-change issue, climate scientists often find themselves in a central role as the arbiters of the facts, trying to explain complex scientific issues to a public which in general has long forgotten natural science lessons from school. Furthermore, the media has sometimes turned the climate-change issue into a circus with two extremes: those who believe that a man-made global warming leads to a disaster for the planet and those who deny that increased atmospheric levels of CO2 due to the burning of fossil fuels will have a noticeable effect. The dissemination of scientific knowledge and a vigorous scientific debate are both positive and necessary for the modern civilisation. However, there is a problem: the public does in general not understand the basics or the details of the debate - the recipients of information do not know how to interpret it. An added problem is the time pressure: the media dictates that the scientist's statement must be short and concise, as well as captivating. The media wants 'Infotainment', whereas the scientists wants to inform or educate. The problem is both a conflict of interest and a clash of cultures. Most journalists are not well-versed in natural sciences and their world knows short deadlines, black-and-white presentation of conflicts, emotional-calling photos, and catchy head lines. Too often, ill-informed journalists present a twisted or completely wrong picture. The question is how to meet this challenge. RealClimate.org is a recent commentary Web site whose aim is to counter some of the disinformation, but its level may be too technical for the lay person. Personal experience with public debate has been mixed, as the issues often get overshadowed by individual charisma, rhetorical skills, and allegations about the scientist's motives. One long-term solution is to provide schools with climate-related educational material, but it is may also be important to enhance the level of general physics and chemistry. For the benefit of the more mature population, an education of journalists and editors could perhaps result in more pedagogically written articles, and it is important to use different levels for different target groups. There have been documentaries and films made on climate issues, and the TV/film media may offer one powerful means of reaching out.

THE VENUS TRANSIT 2004 PROGRAMME

Boffin, Henri
ESO, Karl-Schwarzschild-str.2, 85748 Garching, Germany

ESO's public outreach activities comprise communication and media activities, educational projects and targeted events, addressing well-defined audiences. However, in 2004, one major activity stands out both in terms of visibility and in covering all of the above areas: the Venus Transit 2004 Public Science Discovery Programme. The objective was to use the 2004 Transit as a vehicle for disseminating knowledge about the Solar System, for raising the awareness of method of transit-based observations of exoplanets, to enable the public to re-enact a historical scientific exercise, to raise public appreciation of the scientific method and to collectively obtain a scientific result based on geographically distributed observations. The very successful programme comprised the development of

an extensive set of teaching materials for schools, a web-based information and reporting system, observational activities on the day of the transit (8 June) as well as a video contest and a final event in Paris in November.

COOPERATION BETWEEN EDUCATIONAL INSTITUTIONS AND THE INDUSTRY

Botten-Verboven, Carla
Oslo, Norway

As the technological development goes faster every day, there is an increasing demand for greater cooperation between educations at all levels and the working life - the arena where knowledge and skills are being practiced.

The teaching should increasingly move out of the class room. A partnership between educational institutions and the working life has been established as a cooperational model, and should be further developed to make sure the companies will be used as educational settings. This will bring up to date the topics, as well as visualise the practical use of theoretical knowledge.

In the same way, educational institutions ought to cooperate in a way that

- Students can participate at a higher level
- Students can assist the teaching at lower levels
- Ensure a better use of teachers competence

The industry might have difficulties finding suitable personnel resources to cooperate with educational institutions. Some companies have hired "young pensioners" with good knowledge as well as considerable experience from the company.

It's important that the educational institutions take their share of the responsibility for the cooperation and to organise the carrying out of various activities in a way that will benefit the students as much as possible.

Cooperation between educational institutions and the industry might involve extra costs in connection with teachers practising in companies, transportation of students etc. Public funding ought therefore to be allocated to support the cooperation.

Already 10 years ago the Confederation of Norwegian Enterprise started its project "Industry and school". The aim was to develop the cooperation between educational institutions and the industry to give an insight to the role of the industry and economic growth, a better foundation for educational choices by revealing the various industrial professions, and to strengthen the teaching by connecting theory and practical use of the subjects.

THE UPPER POLAR ATMOSPHERE - A PART OF OUR ENVIRONMENT

Asgeir Brekke
Physics Department, University of Tromsø, Norway

The upper polar atmosphere is a part of geospace that stretches out from an altitude of about 90 km to several thousands of kilometres. This region is the most dynamic part of the upper atmosphere, here mass and energy streaming out from the sun, The Solar Wind, is creating such spectacular phenomena as the northern lights. Heat is released that

causes the atmosphere to expand such that satellite orbits are disturbed and satellite communication can be destroyed. High energy particles are bombarding this part of our atmosphere that can destroy the ozone layer for periods. In this region energy and momentum that is propagating from below can also affect such dynamics as winds and waves.

Long term changes have been observed in these regions that are believed to be related to global climate changes. It is still an open question to what extent this region can modify the energy balance of the global system and the greenhouse effect.

CAN GENETICS HELP US RETHINK COMMUNICATION? PUBLIC COMMUNICATION OF SCIENCE AS A "DOUBLE HELIX"

Bucchi, Massimiano
Trento, Italy

The below abstract taken from the publication from New Genetics and Society, Vol. 23, No. 3, Decembers 2004. (Carfax Publishing)

Public communication of science is still largely conceptualized within a 'transfer' paradigm that describes it as a displacement of results and ideas from the specialists to the lay public, problematizing the public, the media, (sometimes) science, but very rarely the notion of communication itself. This paper is a preliminary attempt to see if the discourse about genes and the genome can help us to problematize the concept of communication in relation to science, rethink our models of public communication of science and, more generally, the metaphors we employ to describe communication. It is suggested that the relationship between science and the public could be understood better by viewing communication through metaphors drawn from contemporary biology, e.g. as 'cross-talk' between the specialist and public discourse or as a 'double helix' coupling the two dimensions under certain conditions.

EXTRAORDINARY OPPORTUNITIES TO SUCCEED OR FAIL IN SCIENCE COMMUNICATION DURING THE INTERNATIONAL POLAR YEAR

Carlson, David
International Polar Year, International Programme Office, British Antarctic Survay and UK National Environmental Research Council, Cambridge, UK

The opportunity to focus research and public attention on polar regions during an international Polar Year has drawn strong world-wide interest, through several hundred coordinated proposals involving tens of thousands of participants from more than 60 nations. These proposals put forward a wide range of physical, biological and social sciences covering both polar regions. This set of activities offers unique opportunities for education and outreach. Against a background of prominent commercial events, including films, television series, and museum exhibitions, and regular broadcast coverage, many IPY institutions and individuals consider local events, new educational materials, and new engagement strategies. Nearly every IPY science project will offer real-time web access to project information and a variety of potentially-useful materials. The challenge to educators lies in anticipating the large media events and in refining the materials from the science projects for practical and effective use.

SUBLIMINAL SCIENCE - ENGAGEMENT THROUGH FAMILIARITY

Evans, Gary
Science Photo Library, London, United Kingdom

Engagement with science by the public at large is crucial to the future. However, too often the public sees science as something too difficult and, as a result, science and scientists are marginalised.

Science needs to become a familiar experience to the public at large. The picture library is a powerful moderator of this. Overt promotion of science imagery through editorial use is well established. However, the picture library also opens markets in non-traditional sectors - CD covers, fabric designs, postcards and calendars, display advertising, etc. - which are seen by the public through the course of their everyday life. Importantly, by working with an established picture library the image maker enjoys the protection of their rights and good standing.

Above the line activities such as outreach programmes are already reaching the willing. Science needs to learn from advertising theory. Surrounding the public with positive images of science in everyday situations leads to a subliminal reinforcement of the message that science is within reach of everyone.

Crucially, making science more familiar and everyday in this manner can help trigger that first, critical spark of curiosity that leads toward engagement.

MATHEMATICAL DRAMA FOR SCHOOLCHILDREN

Foldnes, Njål
Førsteamanuensis, BI Stavanger, Norway

We present a mathematical drama project for schoolchildren. The play, "Prima og Nulle tar kaka", was performed at 30 elementary schools in Oslo for about 2000 children in the age range 9 to 11 years. It contains 11 mathematical problems integrated in a narrative context.

Using narrative elements together with mathematical problems was a good mix. Most children liked the play, especially as they had done some work beforehand, touching on the mathematical concepts that we placed at critical points in our narrative. At these points the characters in the play called upon the children for assistance, who engaged themselves completely.

The current political climate in Norway favours cross-disciplinary project like ours, aimed at motivating children to learn mathematics. The media is also interested; we got coverage in national television and newspapers.

PIDSTOP - COMBINING GAMEPLAY AND LEARNING

Foss, B.A.
Foss, B.A., Hag, K. Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Today's students have knowledge and skills from extensive use of computer games, or more generally interactive game software. Characteristics of such games are a high degree of interactivity, advanced graphics, a highly dynamical virtual universe, and an incentive system to promote prolonged and more advanced use. Today's students have

grown up with computers and computer games, and there is a growing understanding that educational games may create a new and improved learning culture. PIDstop has been developed at NTNU as a response to this. PIDstop is a web-based system in which learning resources are centered on dynamic simulators, pleasant graphics and a high degree of user interaction. The pedagogical resources are focused on science and technology-related themes, and new resources have been developed in close cooperation between teachers and students.

PIDstop has since 2003 been used for education and recruitment purposes, in higher education as well in recruitment campaigns for children. User feedback from 2000 students in a variety of courses at NTNU clearly shows the potential of PIDstop. 80-90% of the students express that they benefit from the use of PIDstop. Furthermore, PIDstop is seen as an interesting tool to improve the recruitment to science and technology.

CREATIVITY AND EDUCATION

Giaever, Ivar
Rensselaer Polytechnic Institute and Applied BioPhysics, Inc, Troy, NY 12180, USA
and University of Oslo, Blindern, Oslo, Norway

Everybody agrees that children are very creative, neither hindered by tradition nor education. They explore new ways to use things and combine objects in impossible ways, while they slowly learn about their surroundings. When they are seven or so, they no longer put toothpaste in their hair and know that socks go on before shoes. They are getting educated; the parents have taught them right from wrong. Creativity is very inefficient and education is almost the opposite of creativity. Physics is a strict discipline, where you are required to be logical and methodical rather than creative and intuitive. Therefore you are almost sure not to be creative if you have earned a Ph.D. in physics.

Problem is that today we teach children almost everything in school such as history, geography, mathematics, cooking, woodworking and even sex, but we do not teach children the most important thing: “how to think”. Independent thinking is a skill that can be taught just as you can teach children how to play football or hockey. Edward de Bono is trying to do just that, and in this talk I will discuss some of his methods.

COMPUTER SCIENCE BEHIND YOUR SCIENCE

Hartvigsen, G.
Dept. of Computer Science, Faculty of Science, University of Tromsø, Norway

During the last 50 years, computer science has become fundamental for progress in science. Professor Bernard Chazelle at Princeton University argues that theoretical computer science has become the new "indispensable science" - at least for natural and social sciences. "In a few decades we will have algorithms that will be considered as fundamental as, say, calculus is today," Chazelle argues.

Behind scientific achievements like the Human Genome Project and public-key cryptography we find key advances in the field of algorithms. Bio-informatics is driven forward by advances in searching, progress in visualization is vital for large-scale data analysis, advances in sensor networks allow crucial data collection, algorithms can facilitate diagnosis and treatment of physical and mental disorders, etc. To understand where their greatest progress can be made, scientist must understand how computer science has influenced their field. Additionally, because computing represents a new way of doing science, it is not always clear what science lies behind computer science. The

presentation will give an overview of how and why computer science plays an important role in the advancement of science.

STRENGTHENING SCIENCE AND TECHNOLOGY TEACHING BY BROADBAND

Hauge, Bjørn Gitle
Hauge, B.G.*; Anderson, G.*; Larsen, S.†
*Østfold University College-Faculty of Engineering, Sarpsborg, Norway
†Østfold University College-Factuly of Education, Halden, Norway

This paper describes a Norwegian Broadband development project which aims at strengthening science and technology teaching in the Østfold County. It includes 4 towns, 10 junior high schools, Østfold University College and Østfold Science Centre. The project involves over 500 pupils and teachers in the school year of 2005/2006, and is financed by The Research Council of Norway through the HØYKOM-program. See: http://www.hoykom.no project nr. 169042/I99.

By connecting the broadband network of Fredrikstad and Sarpsborg municipality together with the network of Østfold Science Centre, the project has created the biggest broadband network in the County of Østfold. This new broadband network connects 50 schools and act as the backbone for a large videoconferencing group, and highway for streaming and multicasting video between these schools and Østfold Science Centre. Østfold Science Centre and the 10 participating schools are producing live video education and video films in science and technology curriculum which is stored at the Østfold Science Centre video server. The different schools are working together to develop video education by using pedagogic tools as the "Nyskjerrigpermetoden", see: http://www.nysgjerrigper.no and storyline. The project has boosted motivation for science and technology by giving pupils opportunity to produce their own educational videos.

TEACHING SCIENCE WITH MULTIMEDIA

Hauke, Hanspeter
Südwestrundfunk, Baden-Baden, Germany

Since 1972 School Television in the South of Germany is a joint venture of Südwestrundfunk and the Ministries of Education of Baden-Württemberg, Rhineland-Palatine and Saarland. Films, CD-ROMs, DVDs. Printed material and online information are available for schools and those engaged in the process of teaching and learning. About 10 years ago School Television has gone multimedia. Since then a lot has changed:

- The programmes have become more motivating
- Interactive CD-ROMs go with the programmes
- DVDs include films and interactive learning features
- A lot of teacher training has taken place

A major role is played by programmes to stimulate pupils' and teachers' interest in science. In the presentation examples of the latest films, CD-ROMs and DVDs will be shown in their context of teacher training and classroom use.

ROCK ART AS COMMUNICATION. THE USE OF SIGNS AND SYMBOLS IN THE OLD EUROPEAN NORTH

Helskog, Knut
Tromsø, Norway

Today, combined visual - oral presentations of knowledge are a means by which people are recruited into the universities to be educated, teach others and do research. This is a continuation of sharing knowledge that began thousands of years ago, and what it is to be human. Humans communicate and share knowledge and ideas through sounds (speech, song), visual expressions (e.g. clothes, objects, ornaments, pictures) and cultural practices. For example, during the last 4000 years BC, the hunter-, fisher-, gather populations of Alta in northernmost Norway carved and painted figures modelled after animals, humans, boats, and patterns on rock surfaces. This was a time when the environment in which people lived was regarded by them as a living integrated whole, and phenomena that today are explained by science were explained as the doings of spirits and other non-human powers. The carved and painted figures were a form of communication between humans, and between humans and other than humans (spirits and animal powers, the dead, etc.), to for example signal territorial rights, and group identity as well as to gain favours. Through proper behaviour and rituals involving rock art, people aimed to secure their well being and defeat their enemies, heal the sick and protect their children, succeed in subsistence activities, secure regeneration of animals and plants, secure favourable weather, and so on. The study of rock art shows the integration of the natural and mathematical sciences with the social sciences and the humanities, as they are all a part of the same environment.

SCIENCE AND JOURNALISM - A HEALTHY RELATIONSHIP?

Hermansson, Karin
Vetenskap & Allmänhet, Stockholm, Sweden

Journalists have a very positive attitude to research and researchers, but they need clear, understandable and easily accessible information about research findings.

A total of five hundred and fifty Swedish journalists have been interviewed about their views on science and their experience of communicating with researchers. Also, the scientific content in a selection of newspapers and magazines has been examined.

Journalists are highly educated people. Consequently, they share the same attitudes to research and researchers as the more highly educated members of the public. They have a high level of confidence in researchers and a positive attitude to scientific and technical developments. The researchers, on the other hand, don't have very large level of confidence in journalists.

Journalists also have a good understanding of which subject areas are scientific, and rarely consider science and technology to be too difficult for most people to understand. Nevertheless, they consider their own lack of knowledge as being the biggest obstacle to producing satisfactory reports on research. Many stated it would be useful if researchers could better summarise and explain their research in a clearer and more simple way. Many would like to see more easily accessible information about research available on the Internet.

KEY QUESTIONS IN CLIMATE RESEARCH

Holmén, Kim
Norwegian Polar Institute, Tromsø, Norway

The presentation will cover some of the major questions that exist in climate research today. Special emphasis will be on climate change and effects of these in the Arctic region. Some of the key findings from the Arctic Climate Impact Assessment (ACIA) report will be presented. At last, examples of research projects planned for the International Polar Year (IPY) that aim at enhancing our understanding of climate change will be described.

SCENARIOS FOR COMMERCIAL DEVELOPMENT IN NORTHERN SEAS - CHALLENGES AND OPPORTUNITIES FOR NATURAL SCIENCES

Husmo, Tore
Stavanger, Norway

The Barents Sea has since the early 80's been a focus for exploratory activities for the oil and gas industry with vast resouces spent and so far no revenues. Most companies have after many disappointing results selected to leave this region and focus their efforts elsewhere. Among the hundreds of petroleum bearing sedimentary basins around the world the Barents region is known for its late uplift over much of the areas open for the industry. It also holds major challenges related to vulnerable and tough environment, to ice, to major logistical challenges and to areas of territorial dispute. A few companies have chosen to be persistent and seek commercial developments in the northern seas, and their long term efforts are now about to end with successful project implementations. The fundamental thinking hasalways been, and will always be, a close link to the local industries, to seek synergies rather than conflicts, and to deploy new technologies both in the search for and economic development of hydrocarbons. More than 20 years after the first drilling and early discoveries, we are now on the threshold of the first successful production start-up. Although the adventures may not match the North Sea in volumes, the importance for North Norway and for our Arctic neighbours will be very significant. What the future brings, we can only attempt to predict - but cutting edge technology implementation, secure operations and clever politicians are essential elements in securing a bright future.

SCIENCE UNDER ATTACK: DISTORTING SCIENCE, FROM THE CLASSROOM TO GOVERNMENT

Krauss, Lawrence M.
Clevland, Ohio, USA

The distinction between science and fiction and between sense and nonsense is becoming blurred in popular discourse. At the same time, science is currently under attack on many fronts, and scientists need to play a part in helping defend science beyond the walls of academia, locally and internationally, politically and in the media. I will discuss the challenge that journalists face in presenting science appropriately, and the challenges we face for presenting science in a society in which scientific illiteracy is rampant, and in which the public is exposed in the media to a host of scientific fallacies presented as fact. At the same time, there are well funded groups whose goal is to suppress and/or distort science. On the one hand, in the United States, the popular debate about the teaching of intelligent design in public schools presents a perplexing quandary for scientists and policy makers. How do scientists take part in a national debate that has been essentially manufactured by a marketing campaign to appear to be a scientific controversy, but which bears little or no contact with the scientific enterprise? This development is taking place in

the context of a larger politicization of science in which governments are attempting to restrict the flow of information,and to control the government access of scientists. I will describe some of these problems as well, and argue that scientists need to become vocal evangelists for science on many fronts, and will also argue that when it comes to public education as it relates to the process and progress of science, popular opinion is an inappropriate guide for policy and pedagogy. Finally, I will end by discussing why science matters more than ever in our modern society.

SELLING SCIENCE TO UNWILLING BUYERS: REACHING OUT BEYOND THE CLASSROOM

Krauss, Lawrence M.
Clevland, Ohio, USA

The biggest mistake almost all communicators can make is to assume that your audience is interested in what you have to say! With physics, this presumption is particularly inappropriate!. However, using mass media, TV and movies to motivate people to learn about the real world can be very useful. These provide not only stories and characters with which the audience is already familiar, but they provide ample examples of misconceptions and confusions that one can use to help teach. And, they can help convince people that they actually are interested in science, even if they don't know it!

YOUNG MINDS - TECHNOLOGY FORESIGHT - A SUCCESSFUL METHOD TO INCREASE TEENAGERS' INTEREST IN FUTURE SCIENCE AND TECHNOLOGY

Lilja, Helena
Project leader of Young Minds - Technology Foresight
The National Museum of Science and Technology, Stockholm / Teknikens Hus, Luleå, Sweden

The Young Minds - Technology Foresight project aims to increase teenagers' interest in future science and technology in a changing world. The method was co-jointly developed by six Swedish museums and science centres* by sharing their expertise, experience and other resources. Technology, ethics and future are the keywords in Young Minds. Using them, pupils can get insight in the development of technology and what role it plays in everyday life. The approach of Young Minds with seminars, presentation and dialogues between pupils, researches and other adults in the museums and science centres, enable the pupils to create their own views. The idea is to encourage them to look at technology from a critical point of view, to seek more information, reflect, discuss and form opinions, and finally to create their own visions. Evaluations of the project have been very positive. Almost half of the pupils asked have become more interested in science and technology. Girls in particular have been positively affected by Young Minds. Seventy-five percent of the teachers say they have gained new perspectives and that the project has been an in-service-training for them. They also consider the content to be well adapted to the school curricula.

* The Future's Museum in Borlänge, Kreativum in Karlshamn, Malmö Museums, Teknikens Hus in Luleå, The National Museum of Science and Technology in Stockholm and Universeum in Gothenburg.

EVOLUTION OF THE GLOBAL ENERGY CONSUMPTION IN THE 21ST CENTURY AND POSSIBLE SOLUTIONS TO COVER THE NEEDS.

Lillestøl, Egil
Physics Department, Bergen, Norway and CERN, Switzerland

An overview of the global energy consumption the last few years is presented. This overview together with estimates of the global population growth gives the bases for prognoses on the energy consumption for the rest of this century. In order to avoid a catastrophic increase in the use of fossil fuels, it is shown that only solar energy combined with nuclear energy has the potential of covering the global needs. A possible safe nuclear reactor based on Thorium is presented, and special weight is put on a CERN project developed by the Nobel Laureate Carlo Rubbia in the 90-ties. It is concluded that Norway as an energy nation should finance the first prototype of such a reactor.

THE GOOD, THE BAD, AND THE IMPROBABLE - FICTION AND MORAL DEBATES

Frans Meulenberg
Department of Medical ethics and philosophy of medicine, Erasmus MC/University Medical Center, Rotterdam, The Netherlands

Fiction is an essential part of our experiences. Both fact and fiction are relevant for our lives and the way in which we act morally. In everyday life we take this blend of fact and fiction for granted. But in science and science-communication it is often neglected that society's values and beliefs inhere in the verbal and visual images through which we communicate. These devices structure our experience of the world. For instance: public knowledge and public images of for instance human genetics, are shaped not only by scientists and journalists. The representation via fiction offers important insights into the way fictional depictions shape the public's response to scientific theory and experimentation, including their moral reasoning.

The stress of the presentation will lay on three possible roles of fiction in the moral debate:

- Discuss: fictional interpretations and visualizations can help the moral debate by making people think about arguments and issues;
- Nourish: fiction is a source of morally relevant fears and feelings, it has a heuristic function;
- Anticipate: fiction can help to anticipate on future developments.

Of course, there are some pitfalls in using fiction. The images created in fiction may function more as 'debatestoppers' than enhancing the debate, due to the fact that the fictional scenarios sketched may be too far fetched. Furthermore, fiction often provides caricatures.

Despite the dangers and problems, fictional scenarios are food for anticipatory reflection on what we think is good, now and in the future. They provide a moral incubation time. No public debate on science can be understood without addressing the role of popular (science) fiction in imprinting vivid and lasting images.

XLAB - THE MOST ADVANCED EXPERIMENTAL LABORATORY FOR YOUNG SCIENTIST

Neher, Eva-Maria
Goettingen, Germany

The number of students enrolling for university studies in all science disciplines dramatically decreased between 1990 and 2000 in all western countries. This conflicts with the rapid development in Science and Technology during the last decades and the need to impart this knowledge for next generations. There are today many activities in Germany initiated by scientists at universities and research institutions. Germany counts almost two hundred School labs. They focus on elementary, primary and early secondary education. The XLAB focuses primarily on students in their last two years of high school, according to the motto to bridge the gap between high school and university studies. The equipment of our laboratories resembles real research laboratories and the experiments in all science disciplines are very sophisticated. The students mostly stay for several days and reach a deep knowledge of the specific subject. XLAB attracts classes and individual students from all over Germany and from other European countries. Each Summer XLAB organizes an international Science Camps for high school and first year university students from all over the world, who work and live together for three weeks. The schedule can be compared with a scientific workshop and the results of each course are presented in a plenum session. XLAB started in August 2000 and will soon reach a number 40 000 student x days. Many of our participants decided to study science.

THE ALMA INTERDISCIPLINARY TEACHING PROJECT

Pierce-Price, Douglas
Pierce-Price, Douglas*; Boffin, Henri*; Madsen, Claus*; Wagner, Fernand†; Ros, Rosa†
*Eso, Garching bei München, Germany;
†EAAE, Garching bei München, Germany

The ALMA Interdisciplinary Teaching Project (ITP) has been started by Eso (the European intergovernmental organisation for astronomical research) and the European Association for Astronomy Education (EAAE) to develop the educational opportunities of the Atacama Large Millimeter Array (ALMA) project. ALMA is a global project to build the world's largest ever telescope operating at millimetre and submillimetre wavelengths. It will act as a focus for educational activities ranging from world-class astronomy, through physics and engineering, earth sciences, biology and physiology, to history, geography, and cultural studies.

ALMA is being built in the Chajnantor region of the Atacama desert in Chile, on one of the highest plateaus in the world at an altitude of over 5000m. The Atacama desert is thought to be the driest place on the planet, and has fascinating geology, including active volcanoes. Unusual flora and fauna, are found in well-defined regions, adapted to the environmental conditions. Human presence in the surrounding area can be traced back 11000 years, with permanent settlements from 4000 BCE.

We will present the current status of the ALMA ITP, and discuss it in the context of new ways of teaching science and technology in secondary education.

SCIENCE THEATRE, A PERFORMANCE FOR ALL SENSES

Rådbo, Marie
Department of Physics, Gothenburg University, Gothenburg, Sweden

The best science theatre manages to cross borders at the same time as it reflects the age in which we live. This year Dramaten in Stockholm, Sweden, has staged One thousand year with God – one second on earth, based on an unfinished novel by Stig Dagerman, a famous Swedish author. The performance became a great success that appealed to an audience of all ages. The theme in the play was inner and outer space, and by means of scientists, dancers, actors, art and music a performance for all senses was presented. I will talk about the ideas and work behind the play as well as the accomplishment. I will also show extracts from the performance.

THE KNOWLEDGE PROMOTION FROM A PUBLISHER'S POINT OF VIEW

Sivertsen, Ole Andre
Science Editor, Damm education, N.W. Damm & Søn AS, Oslo, Norway

It is hoped for this conference that it will attract journalists, media experts, policy makers, educators, and industrial representatives with a vested interest in the subject, and engage them in a fruitful debate to find out what they think. Can they make science attractive? My personal objective is that if science is to be more attractive, the most important place to start is in the school system and the educators.

Changes are about to happen in the Norwegian school system. The upgrade called "the knowledge promotion" in implemented in all schools autumn 2006. The new subject curriculum is less detailed, and the basic skills are given priority and greater attention. The curriculum includes clear objectives specifying the level of competence expected from pupils/apprentices at each level. Decisions on organizational matters, methods and forms of work are delegated to the teaching institutions.

The knowledge promotion is difficult to adjust to - from the point of view of a publisher house. Damm is a challenger in this marked, and has invested a lot to meet the demands of the new reform. The fact that decisions of the curricula are delegated to the local counties and schools, complicates the process. Books can not be written in the same manner targeting a 13 year old pupil and a 15 year old. That means that when developing the education material, we have to take many of the decisions that were supposed to be made locally later in the process.

The educational material we present this year has gone through radical evolution compared to earlier material. The actual books to be used of the pupils are of course upgraded, but we also aim to be the publisher that tries to make a difference for the teacher. We have a slogan saying "Make the teacher a world champion". By this we mean that interest from the pupils evolves with a presenter that shows high theoretical skills, authority, and engagement. To make the teacher "a world champion", we have developed a "teacher's book" that contains facsimiles of each page from the pupils book. To each facsimile we have listed comments, interesting stories and extra projects - all together - the "extra stuff" the teacher needs to rule the classroom.

We need to attract journalists, media experts, policy makers, and industrial representatives to create interest and a political agenda about science, but we also need to raise funds enough to implement the knowledge promotion in a good manner within the classroom. If the schools haven't got recourses to succeed, the rest of our efforts will be wasted.

EUROPEANS, SCIENCE AND TECHNOLOGY: WHAT CAN THE RECENT EUROBAROMETER STUDY IN 32 COUNTRIES TELL US ABOUT INTERESTS, ATTITUDES, PERCEPTIONS AND KNOWLEDGE?

Sjøberg, Svein
University of Oslo, Norway

In 2005, a survey on "Europeans, science and technology" was performed in 32 European countries. The study provides detailed information on a series of important issues: To what extent are Europeans interested in science, compared to other issues? What kinds of science are they interested in? What role do they see for S&T and research in a social and political setting? How well do they trust scientists compared to other groups? What fields do they consider to be scientific? What is the level of factual knowledge about science in different countries? What moral and other obligations do they think scientists have?

The Eurobarometer-studies are the largest surveys in the world. Since the early 1970s they have provided the European Union with information on how Europeans look at important aspects of political, cultural, educational and economical nature. These studies often provide evidence that is used for policy discussions in the EU as well as in member countries. In the presentation, I will present an analysis of the results, with special emphasis on similarities and differences between countries and between men and women.

SCHOOL SCIENCE AND YOUTH CULTURE: MISSING THE TARGET? WHAT WE CAN LEARN FROM ROSE, AN INTERNATIONAL COMPARATIVE STUDY

Sjøberg, Svein
Schreiner, Camilla
University of Oslo, Norway

School science has to reach the minds of young people; it has to give meaning, and felt to be of relevance to their lives. If we want to accomplish this, some questions become urgent: What kind of experiences do young people have, and what do they find interesting to learn about? What do they think about science, technology and society? What do they think about the environmental problems? Are they optimists or pessimists? Do they trust science and scientists? What do they find important for their own future life and work?

We will address these issues by using data from ROSE (the Relevance of Science Education), an ongoing international comparative project. ROSE has, through deliberations among researchers from all continents, developed an instrument that maps out attitudinal or affective perspectives as seen by 15 year old learners. Some 40 countries take part in the study, and data have been collected from 40 000 students. A key issue will be similarities and differences between countries and between girls and boys. We also want to say something about youth culture in late modern societies and how school science might meet different types of students. It is our hope that the empirical findings from ROSE can inform and stimulate important debates over popularization of science and technology, in schools as well as in science centres and other relevant arenas. Background material as well as articles and publication on ROSE are found at: http://www.ils.uio.no/english/rose

A CAMEL RIDE TO PRIME TIME

Sumner, Janet
The Open University, London, United Kingdom

Putting a University together with a public broadcasting company to produce quality learning material through television programmes is rather like putting an inexperienced rider on a camel for the first time. Camels are notoriously difficult to get on, incredibly uncomfortable to ride, impossible to steer and you almost always fall off, when you try to get off!! However that pretty much sums up the journey that The Open University and the BBC embarked on 30 years ago when they entered into a formal partnership to deliver learning on television. It's been a bumpy ride, but it must have been a successful one because the camel did not bolt and the rider has not become unseated, and with the digital era upon us and the image of a multilayered digital platform simmering like a mirage on the horizon, the OU and the BBC are heading out to explore new vistas. I would like to take you on a journey of my experience of science broadcasting, both as a university academic and a BBC science presenter, and also give you a glimpse of what lies over the horizon. It's a hell of a ride on an impossible beast!

TRAINING OF SCIENTISTS AND JOURNALISTS IN SCIENCE COMMUNICATION

Sundberg, Carl Johan
Stockholm, Sweden

The academic world creates and disseminates knowledge. Over the past 10 years the emphasis has increased on a third task, interaction with society. This includes straightforward information but also a sincere dialogue with society at large, interact with schools and activities in entrepreneurship and innovation (technology transfer). For many universities it has led to a broadened educational agenda including addressing new professional groups but also to bring in new subject areas into the traditional educational programmes. Karolinska Institutet has over the past 8 years offered Medicine for Journalists and Popular Science Communication (for medical and PhD students) as a way to address perceived needs.

ROCKING SCIENCE - HOW TO TWIST MATHS FROM A CHALKSTONE, AND TAKE IT INTO CYBERSPACE.

Thorsheim, Frede
Fjell, Norway

I shall present three main themes in my lecture:

1. **Physics in the factory - communicating science by experience.** I will show how to use experts, skills, products and process from industry and society in learning. Closely linked to the curriculum, a yearly schedule is set up. A school class is invited to experience how maths, physics and other science items are used daily by engineers and skilled workers. The pupils do their own observations and measurements. Back at school, they will solve problems, answer questions given by the teacher or the expert, they will report and present material from their work. The firm *Good Circles* enhances quality in education by promoting such methods to teachers. In a region, counting 30.000 inhabitants, in Western Norway, Good Circles have set up a program to boost education and raise quality throughout the educational system, from kindergarten to Masterprogrammes. To emphasize the focus we recommend expecting mothers to play Mozart to their growing babies.

2. **Science education across borders.** Pupils in Norway and Poland investigate the Industry and exchange results in a virtual universe. School classes who works with the industry as sketched above, will report to each other. An Internet tool is set up by The Norwegian School of Information Technology, NITH. One part of this will be "Active Worlds Educational Universe", a cyber universe in which the pupils may take on an Avatar each and communicate in a village they have built together. In another part, visual as a column on the screen, supervisors and teacher will be able to give instructions, set up tasks, and control who is online. This part also includes chat room, information walls, wikiwiki - all you would expect in a virtual classroom.
3. **Technology class.** Frontline learning. Highly skilled pupils with special interest in technology meet engineers, work with electronics, robotics and cybernetics. A small number of pupils are given the opportunity to investigate the world of science, applied technology and industrial production. Will this have impacts on their performing and influence their later careers? Presented by a former pupil, now aged 17 and engaged in physics at high school.

Changes may be applied.

AN INTEGRATED MANAGEMENT PLAN FOR THE BARENTS SEA

von Quillfeldt, Cecilie H.
Norwegian Polar Institute, Longyearbyen, Svalbard, Norway

The talk will cover a general description, including current and potential threats, of the Barents Sea, the reasons why it has been decided to establish an Integrated Management Plan for the Barents Sea, the main aim of the plan and the Integrated Management Planning Process itself.

The Government aims to have integrated management plans established for the Norwegian waters which fix clear basic conditions for the use and protection of the coastal and maritime areas. As a first step the Government envisages drawing up an integrated management plan for the Barents Sea. Experience gained from this work can then be used as a basis for a decision to develop similar, integrated management plans for the Norwegian Sea and the North Sea. The main aim of an Integrated Management Plan is to help achieve consensus among different trade and industry interests, local, regional and central authorities, environment protection organizations and other stakeholders on the management of a maritime area in accordance with the principle of sustainable development. Management of the ecosystems must be based on the precautionary principle and be implemented with respect for the limits that nature can tolerate. An important element will be the ecosystem approach including the establishment of environment quality objectives. The integrated management plan drawn up by the authorities will create an overall framework, but will need to be supplemented by more detailed plans for the individual sectors, e.g. for the oil industry, fisheries, shipping and so on.

INSPIRING EUROPEAN SCIENCE TEACHING

Warrick, Chris*
Hayes, E**
Wilson, H†
*UKAEA Culham Division, Culham Science Centre, Abingdon, Oxon, UK
**European Molecular Biology Laboratory, Heidelberg, Germany
†European Space Agency, Noordwijk, Netherlands

The rapid pace of scientific discovery requires teachers to continually update their knowledge and adapt their teaching methods. To do this, they need new types of support not only from research scientists, but also from other teachers.

The EIROforum, a collaboration between seven European intergovernmental scientific research organisations, has developed two projects to support Europe's science teachers in delivering inspiring and cutting-edge science lessons.

The quarterly journal Science in School presents the best in European science teaching and current research, with contributions from scientists, teachers and many others. It provides a unique forum for all stakeholders to exchange ideas across disciplines and national borders. It is freely available on the Internet and in print. See www.scienceinschool.org.

Science on Stage offers teachers a unique opportunity to share their best practices through national events across Europe and culminates in an international teaching festival. Europe's most inspiring science teachers present their ideas in a teaching fair, in workshops and in stage presentations. The participants then share their inspiration and enthusiasm with their colleagues at home. See www.scienceonstage.net.

Both projects are supported by the European Union.

NEW BOOK WILL BE CORE OF PUBLIC OUTREACH PROGRAM

Williams, Jack
American Meteorological Society, Washington, D.C., United States

The presenter will describe the book for the general public that he is writing and the American Meteorological Society (AMS) will publish. The AMS plans to use the book as the centerpiece of its public outreach progam. The 250-page book will include about 120 full-color, explanatory graphics and use story-telling techniques of popular science writing to attract intelligent adults who want to learn about weather events and climate change. The book will stress the basic science underlying the phenomena discussed. Twenty-three senior scientists are working with the author to ensure scientific accuracy.

The AMS expects the book to be at least as successful as the author's USA TODAY Weather Book, which has been in print since 1992 with more than 250,000 copies sold. The AMS plans to use proceeds from book sales to help fund its public outreach programs. In addition, book graphics will be adapted for members and television meteorologists to use in presentations about weather or climate. The AMS is planning a complimentary Web site based on book materials. The author will discuss how other organizations could use similar techniques to reach the general public, illustrating his talk with book materials.

Poster Abstracts

(Arranged alphabetically by main author)

TECHNOLOGY-ENABLED COMMUNICATION ACROSS CONTINENTS AND CULTURES

Cronjé, Johannes
University of Pretoria, Pretoria, South Africa

This poster reflects on the cross-cultural communicative experiences of professors from South Africa and students from Sudan, during a two-year Internet-supported Masters' course in Computer-Assisted Education. Four of Hofstede's cultural dimensions were considered as categories of interpretation. The purpose of the research was to determine the extent to which Hofstede's quantitative, functionalist research can be used as a basis for an essentially qualitative, radical humanist enquiry. While Hofstede's work focuses on cultural differences, this article tries to uncover what commonalities were constructed in the process. It was found that dimensions such as power-distance and uncertainty avoidance tended to amplify one another, while together they resulted in a movement away from individualism towards collectivism. The dimensions of masculinity and femininity were not useful in explaining differences as the two meeting cultures were very close together, and both plotted in the middle of the dimension. It is suggested that more research be conducted to uncover the elements that are common to cultures, as emphasizing commonality seems more useful than trying to overcome differences.

THE ENERGY NETWORK

Hetland, K. T.*
Grimenes, A. U.**, Isnes, A.*, Sandås, A.***, Johnsen, B.†, Tveita, L. O.††, Veum, E.†††
*Norwegian Centre for Science Education
**The Norwegian University of Life Sciences (UMB)
***Norwegian Directorate for Education and Training
†The Norwegian Radiation Protection Authority
††Royal Norwegian Naval Academy
†††Statkraft

Almost every upper secondary school in Norway has a number of local secondary schools where they recruit their students. In the project we use this local group of schools to involve students at both levels in a science project. We focus especially on new renewable energy. The partners are official institutions like Norwegian Centre for Science Education, Norwegian Directorate for Education and Training, The Norwegian University of Life Sciences (UMB), The Norwegian Radiation Protection Authority (NRPA) and Statkraft (the third largest producer of electric hydropower in the Nordic region).



The main idea in the project is to create enthusiasm among the students through:

- **Teaching physics themselves.** Students from upper secondary school will be teachers for the students in secondary school, for example that students organize an energy day with many activities (see http://www.naturfagsenteret.no/energi/Steinkjer.pdf)

- **The use of modern weather stations.** The upper secondary schools form a network of weather stations throughout Norway. The data from these stations can be used in different subjects like science, physics, mathematics and geography. Look at http://home.no.net/lotveita/metramme.htm

The weather station network is pictured on the right.

The first project period will last from autumn 2005 to spring 2010. At the moment there are 40 schools and about 90 teachers involved.

Home page: http://www.naturfagsenteret.no/energi.html

INTERNATIONAL BACCALAUREATE FOR THE BARENTS REGION

Hovda-Lien, Margoth
Finnfjordbotn High School, Finnfjordbotn, Norway

Finnfjordbotn upper secondary school is planning to start a two years demanding pre-university course of study for highly motivated students aged 16-19. The programme has earned a reputation for rigorous assessment, giving IB diploma holders access to the world's leading university. The teaching language is English, and the criteria for access are good marks from first year, general studies in upper secondary school. We plan to start from August 2007.

The IB studies include a higher level of languages, mathematics, experimental sciences and social science than in the national system. Voluntary social work is part of the curriculum. The IB goal is to educate the whole person and fostering a more compassionate and active citizen. About 1233 schools in 116 countries teach the programme.

Finnfjordbotn will be the first school in the Northern Norway teaching this programme, and being a boarding school we can have students from the whole Barents region.

Our industry asks for this programme. We need better competence in foreign languages, mathematics, natural sciences and intercultural learning for the future of the petroleum industry, the marine sector and tourism.

We prepare the programme in cooperation with the industry and we will get into partnership with companies. The students will get the possibility to do a study inside a company, and the industry will get in contact with hardworking and competent students for later recruiting. We think the IB will be useful for developing the level of competence in the north.

SCHOOL YARD SEISMOLOGY AND GEOSCIENCE LEARNING

Husebye, Eystein S.
Federenko, Y.V.
Dept. of Earth Science, University of Bergen, Norway & Polar Geoph. Inst., Kola Sci. Centre, RAS, Apatity, Russia

The SeisSchool Norway project, and its recent planned extensions to NW Russia and Balkan countries, aims to create interest in geoscience and seismology among high school students. Similar projects have been initiated in several other countries under the general umbrella EduSeis. Few of them appear to have been very successful and reasons appear to be a) lack of professional seismic equipment installed on school premises and b) data

access and analysis tools remain clumsy. We try to incorporate such constructive features in our own designed 3-component school seismograph the Cossack Ranger II consisting of three parts: seismometers, A/D converter and data logger. The seismometer is an inexpensive geophone (GS-11D of 4.5 Hz), and an advanced (own design) geophone-preamplifier-A/D-converter system with approximately flat acceleration response in the o.45 - 45 Hz range. Preference is for installations in schools with permanent Internet access - we use the Internet clock for an universal timing accuracy of +/- 0.01 sec. The cost of a Cossack Ranger II seismograph is only around 2000 Euro and hence affordable for many schools. Equally important is that their earthquake recordings are suitable for basic seismological research ventures. Currently the school stations operate in a trigger mode and detected earthquake records are stored in an organized manner using a database management system. Every school could extract their own recordings and also that of other schools in near real time via Internet and non-copyrighted software. We use an OCTAVE -type software package for display and processing of the school recordings albeit most of our application schemes are not as yet fully developed.

Naturally, students need a more comprehensive seismological/geoscience background than that stemming from either from our Web pages and their textbooks and lectures so we are creating a number of so-called electronic learning modules with many animations for providing such knowledge. The first and very successful one is The Dynamic Earth (themes: continental drift & plate tectonics) and another one Seismic Record Analysis (themes: seismic waves, propagation and their processing). We also encourage students in 'our' schools to participate in Young Scientists competition in Norway; so far 2 of our teams was among the very best ones with poster presentations in Oslo. In another case, our student team had a whole page presentation in the local newspaper.

Factors contributing to the success of our SeisSchool project is i) instrumentation is professional, ii) easy access and processing feasible and iii) earthquake occurrences and catastrophes are fascinating phenomenon catching the attention of even bored high school students. In our planned extension to Balkan countries, a new challenge emerge namely as a mean for mitigating earthquake hazards and informing the public at large on proper preventive steps to be taken if disasters strike.

Using Internet for data transfer operational costs of SeisSchool networks are cheap and affordable. However, software developments and archives of various kinds should be organized internationally and is now in under considerations. Teachers would play a key role as team visits to other schools and countries would clearly attract even more students to SeisSchool activities.

WANT TO KNOW THE LATEST ON EUROPEAN ICT RESEARCH?

Karenssen, Jernet
GOPA Cartermill, Brussels, Belgium

A vast number of IST projects have already praised the visibility and attention they received after being published by IST results. "The article is excellent. It has already been cited by several Web reporters dealing with medical innovations," Andy Wolff from Saliwell said.

For 3 years IST results has been covering stories on successful achievements of IST projects, displaying their technological outcomes within the context of a potential market uptake. The service was set up by the European Commission to facilitate access and visibility to emerging products. The EU has already invested more than 7 billion euros in

ICT research, allowing the development of many thousands innovations. It is a free service for society and industry, offering in-depth feature articles, contextual news and project events. Since its start, it attracts an ever-increasing number of technology users, investors and media from all market sectors. Articles have been republished in prominent publications like Financial Times, New Scientist, Wired and ZDNet, providing valuable publicity for the featured projects.

With a broad audience consulting the service daily in order to identify best practices, new project partners or commercialisation and investment opportunities, IST Results is demonstrating that communicating science can enhance awareness on ICT progress and offer business opportunities for research and industry.

THE XPLORA PORTAL: USING ICT IN SCIENCE EDUCATION

Massoli, L.
Sarnow K.
European Schoolnet - EUN, rue de Treves, 61 1040, Brussels, Belgium

This poster presents the content and the services offered by the Xplora portal, the new European gateway for science education, launched in 2005, within the European Science Education Initiative". The portal, aimed at teachers and pupils, intends to propose an innovative use of ICT in science education balancing information services with communication, networking and exploration activities.

The crisis in following scientific careers and the lack of scientists in the European context is quite recognized. In this context, the use of ICT could ensure some improvements, offering to pupils and teachers tools for more active learning science while giving them networking and cooperation potential to communicate with peers and scientists.

The services offered on the Xplora portal can be categorized in:

- information content: news, information about events and seminars, lessons and laboratory activities, presentation about open source software;
- communication services: “online discussions with experts” on several science topics;
- exploration services: registered users, may participate to the “community” activities of the portal. Teachers and students can also take part to web experiments, database and collaborative projects.

The experience of the Xplora portal indicates that an interactive approach in using ICT in science education may facilitate pupils and teachers involvment in the learning process.

THE RESEARCH AND RESEARCH INFORMATION OF AUSTRIA TOWARDS EUROPE.

Dr. Sabine Stadler
Austria

Austria ia a Eu member-state since 1994 and has a high participation rate in the EU-scientific programmes. Austria has a wide range of research institutions for scientists to work and to fullfill the demands of the EU-research norms, including the code of conduct of researchers. Austria is a small nation in the World-Wide-Web and has all kind of possibilities for work in the net. The addresses in the speech are the most available ones for the demands of Norwegian people in Austria. Austria holds a bilateral relationship to

Norway in the field of Oil and ICE research and in the field of tourism to the Poles. The Norwegian science is famous in Austria, as many feminist researchers, mean women novels and natural scienes are read from Norway. In the field of communication only the electronic communication is used. Austria is a communicative partner in the field of communication and holds a wide net overr TV and radio stations to distribute results of sciences. Austria participates in all programmes in the EU, including the calls for third countries, and competes in all programmes for third countries. Due to the neutral tradition of Austria bilateral programmes are run with Switzerland, Norway and Russia. Austria offers also the stable tradition of culture an music to Norwegians and is a silent place to stay. Austria has formulated also the 7 the framework of research and will participate in the field of health, consumer protection, nanotechnologies and social sciences like the last 10 years.

CV Invited Speakers

(Arranged alphabetically by last name)

Carla Botten-Verboven,
Director, Federation of Norwegian Industrie,



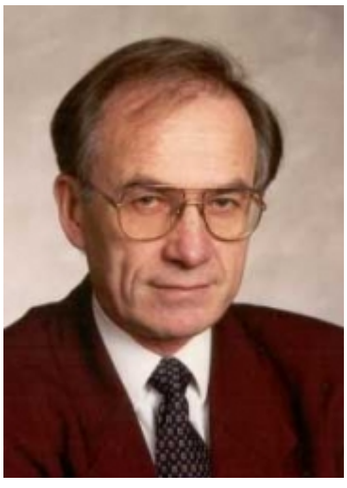
has a MSc degree from Aberdeen University. She is 43 years old and originally Dutch. Former working experience from the Quality Assurance department at AHOLD BV, The Netherlands. After moving to Norway she has at first worked as a scientific assistent at the Norwegain Institute for Consumer Research followed up by a position as the director for education and training for the Federation of Norwegain Process Industries (PIL). Carla Botten-Verboven is now the director for education and training in the Federation of Norwegian Industries.

On 28.November 2005 the new organisation Federation of Norwegian Industries (Norsk Industri) was established. The Federation of Norwegian Industries has 2,000 member companies with 110,000 employees. The Federation of Norwegian Industries is the result of a merger between the Federation of Norwegian Manufacturing Industries (TBL) and the Federation of Norwegian Process Industries (PIL). The new federation will comprise approx 25% of the NHO Community and will be by far the largest sectoral federation of NHO.

Total annual turnover for the sectors which the Federation of Norwegian Industries represent was NOK 328 billion in 2004, and is expected to exceed NOK 350 billion in 2005. Total exports for 2005 equalled a little over NOK 50 billion for the second quarter of 2005, which again will constitute annual exports of more than NOK 200 billion for 2005.

Website: www.norskindustri.no

Asgeir Brekke,
Physics Department, University of Tromsø, Norway,



has a long experience working in the field of northern lights' research, first as a research assistant at the Auroral Observatory in Tromsø in 1966 and later as an associate professor and a full professor of physics at the University of Tromsø (UiTø), He is also adjunct professor of geophysics at The University Centre on Svalbard (UNIS). Brekke obtained a Master of Science degree in 1969 at the University of Oslo and a Dr. Philos degree at UiTø. For the last 30 years he has been strongly involved in the EISCAT project and is at present the chairman of the international EISCAT Council.

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Massimiano Bucchi,
Associate Professor of Sociology of Science and Sociology of Communication at the University of Trento, Italy,



received his PhD in Social and Political Science at European University Institute, Florence in 1997. He has published five books, including Science and the media (London and New York, Routledge, 1998) and Science in society. An Introduction to Social Studies of Science (London and New York, Routledge, 2004) and several essays in international journals such as History and Philosophy of the Life Sciences, Nature, New Genetics and Society, Science and Public Understanding of Science.

He is a member of the International Scientific Committee for Public Communication of Science and Technology (PCST), a founder and member of Observa-Science in Society (www.scienceinsociety.org) Scientific Committee and has taken part in many International Advisory Boards, including the Advisory Group for the European Science in Society Forum (2005).

He has carried out research and given seminars at several prestigious international institutions, such as the Royal Society of London, Sussex University, Universität Bielefeld, ETH Zurich, University of Wisconsin, University of California Berkeley, Royal Swedish Academy of Sciences, University of Edinburgh, University of Tokyo, Museu da Vida Rio de Janeiro, Austrian Academy of the Sciences and received several recognitions for his work, including the Mullins Prize awarded by the Society for Social Studies of Science (1997) and the Lelli prize for the best dissertation in sociology (1998).

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Ivan C. Burkow,
Managing Director, Norwegian Institute of Fisheries and Aquaculture Research, Tromsø, Norway,



has a PhD in organic chemistry from University of Tromsø. Burkow has a broad professional experience from research institutes and universities in management and research.

Burkow has since 2003 been managing director of Fiskeriforskning (Norwegian Institute of Fisheries and Aquaculture Research). In the period 2001-2003 he was director general of research at the same institute. Burkow has also been director of NILU (Norwegian Institute for Air Research) at The Polar Environmental Centre in Tromsø (1994-2001), associated professor at the University of Tromsø (1992-1994) and researcher at FTFI (Institute of Fisheries and Technology Research) (1986-1992).

Burkow has experience in management of research organisations as director and board member. He has been supervisor and university teacher in chemistry from ground to PhD level. His main scientific activities are related to persistent organic pollutants and marine lipids in the Arctic, with focus on new contaminants, transport processes, bioaccumulation and biological effects. Burkow is author of a number of peer-reviewed scientific papers. Burkow has extensive experience in international collaboration, especially in Europe (including Russia) and North America.

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Dr. David Carlson,
Cambridge, United Kingdom,



directs the International Programme Office for the International Polar Year, hosted by the UK National Environmental Research Council at the British Antarctic Survey. Dr. Carlson has devoted more than 15 years to guiding and managing large international science programmes, starting from the very large Tropical Ocean Global Atmosphere programme in 1992 and 1993 and continuing through a decade of complex programmes focused on many aspects of weather, atmospheric chemistry, and climate. Dr. Carlson holds a PhD in Oceanography and led several successful research programmes in upper ocean physics and chemistry, oceanic microbiology and carbon cycling, and marine chemical ecology. Dr. Carlson has received university awards for innovative and effective teaching and receives many requests to talk about the science of climate change to public audiences.

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Vladimir de Semir,



Born in Barcelona (Spain), 19 September 1948.

Journalist, specialized on scientific and medical issues since 1982
Commissioner for Scientific Culture - Barcelona City Council.
Associated professor of Scientific Journalism and director of the research centre Science Communication Observatory at the Pompeu Fabra University (Barcelona).
President of the international network Public Communication of Science and Technology
Director of the magazine Quark (Ciencia, Medicina, Sociedad y Cultura)
Creator and editor of the supplements on Science and Medicine, from the newspaper La Vanguardia (1982-1997)
Founder of the Catalan Association of Science Communication
Councillor of City of Knowledge at Barcelona City Council (1999 – 2003)
Science Journalism Award 1994, given by the Spanish Scientific Research Council

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Börje Ehrstrand,



Headmaster of the Rinkeby, the Askeby and the Knutby Schools in Stockholm, Sweden,

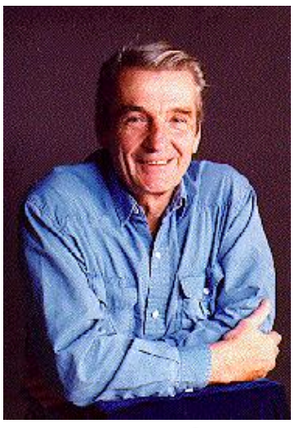
leads outside school programs for the suburb of Rinkeby as Head of the Community Centres dedicated youth and Head of the Culture School activities (music, dance, drama). Mr. Ehrstrand also leads the Rinkeby Centre for Education and Advice to adults/parents.

The Rinkeby School (compulsory school for children 13-16 years) has 430 students from 63 countries, speaking 30 different languages. When Börje Ehrstrand took over the school in 1989 it was the most run down school in Stockholm. Since then, the school and Mr. Ehrstrand have received several awards and recognitions, such as LABEL European Quality Award for Language Education, The European Crime Prevention Award, The Nordic School Leader Award, and Queen Silvia's 'Allmänna Barnhusets Stora Pris' (for improved conditions for the school children of Rinkeby). The school's students are national champions in maths for the second year in a row.

The Rinkeby School has a holistic view on pedagogy (teaching philosophy) and creative use of resources. They work with external partners to ensure that they learn from the best. Examples of these partnerships are: formalized collaboration with 14 universities and 300 companies; Stockholm School of Economics runs the 'Rinkeby Business Lab', a diversity program; and the winner of the Nobel Prize in Literature visits the school every year.

Website: www.rinkebyskolan.se

Ivar Giaever,
Physics Department, Rensselaer Polytechnic Institute, USA,



is an institute professor at the School of Engineering and School of Science working under the Physics Department at the Rensselaer Polytechnic Institute in Troy, New York. Giaever is also a 'professor at large' in affiliation with the University of Oslo, Norway. He currently holds a third position as the president of Applied BioPhysics, Inc., in Troy.

After receiving his Mech.Eng. degree from the Norwegian Institute of Technology in 1952 and his Ph.D. in theoretical physics at the Rensselaer Polytechnic Institute in 1964, Giaever recieved numerous honorary degrees in science and in engineering. He has been given the Oliver E. Buckley Prize in 1965, the Nobel Prize in 1973 "for experimental discoveries regarding tunneling phenomena in semiconductors and superconductors, respectively", and the Zworkin Award in 1974. Giaever is also a member of many Academies in the United States and abroad.

His current research interests include solid state physics (superconductivity, tunneling) and biophysics (immunology, tissue culture, manipulating single molecules).

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Øistein Hanssen,
University of Tromsø,

Photo: Stein Berntzen
Riddu Riddufestivalen 2004



has researched old folk music instruments for many years with a focus on the northern regions. The roots run so deep that he explains them as prehistoric music traditions.

With a wide range of experience as an intermediary, he seasons historical themes with his own musical pieces.

His music and narratives show signs of his Sami, Norse, and Finnish descent in Northern Norway - like so many others here on the Northern Cap.

It is a unique and moving experience to hear the instruments he has made himself with his engineering background, his historical knowledge, and his untiring enthusiasm as his tools.

Øistein Hanssen
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Hanspeter Hauke, Dipl.Päd.

Baden-Baden, Germany,



is a producer, editor, and senior consultant for science and education at the "Südwestrundfunk" for German Television. He has studied political science, English, French, media, and applied economics. From 1981 through 1989, Hauke worked as a high school teacher. Hauke's current work and responsibilities include:

- co-operation with educational institutions,
- teacher training,
- producer of programmes with pedagogical content,
- editor of "Schulfernsehen Südwest",
- executive producer of CD-ROM "Wizadora", and
- university lecturer.

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Knut Helskog,

Professor of archaeology, Tromsø University Museum,



Helskog's present research focuses on two central aspects among prehistoric hunter-gather-fisher populations: 1) The excavations of prehistoric settlements in northern Scandinavia, and Karelia and the Kola Peninsula in Russia may be used to understand the variety of structures, community layouts, associated social organization and choices made in the exploitation of resources; 2) Analysis of prehistoric communication, cognition and beliefs, rituals and myths from signs and symbols depicted in rock art.

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Dr. Karin Hermansson,
Stockholm, Sweden,



is Research Manager at Vetenskap & Allmänhet (Public & Science), VA, a Swedish non-profit association which aims to promote contact and dialogue between the public and scientific researchers.

Karin received her PhD in Microelectronics from Uppsala University in 1995, and then spent a year working as a post-doctoral research assistant in Denmark. Following this, she worked as the European Marketing Manager of BCO Technologies in Northern Ireland. From 1998, Karin worked as a researcher in micro- and nanotechnology at the Swedish research institute Acreo before joining VA in January 2005.

As research manager, Karin is responsible for VA´s annual survey into the public´s attitudes towards science and researchers, and also for additional studies into the attitudes of several important groups, such as researchers, school teachers, journalists and politicians. VA also works to organise and encourage meetings between researchers and the public in order to facilitate dialogue in new and unconventional settings. More information about VA and their work can be found at www.v-a.se.

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Kim Holmén,
Research Director, Norwegian Polar Institute, Tromsø, Norway,



received his Ph.D. in Meteorology at Stockholm University in 1987. Thereafter, Holmén traveled to the USA where he did his Post.Doc. work at the University of Miami from 1987 through 1989, after which he returned to Sweden as an Associate Professor at the Department of Meteorology at Stockholm University. In 2003, Holmén moved to Tromsø where he began work with the Norwegian Institute of Air Research. In 2005, Holmén became the Research Director at the Norwegian Polar Institute in Trosmø. He also is an adjunct professor at the University Centre in Svalbard (UNIS).

Holmén's research interests are within the fields of climate change and biogeochemical cycles. His research has mainly been concerned with climate change and the carbon cycle. His main interests have been on climatic interactions with the biogeochemical cycle of carbon with emphasis on processes in marine chemistry and atmospheric chemistry. Particular attention has been devoted to the quantification of sources and sinks of greenhouse gases to the atmosphere. During his years as associate professor in Stockholm, a very extensive teaching experience at all levels of academic education was also accrued. Holmén's field work has included 18 years of monitoring activities in Ny-

Ålesund, Svalbard, two expeditions to Antarctica and studies of forest uptake of carbon dioxide in Siberia.

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Kim Holmén
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Tore Husmo,

Stavanger, Norway,



is a graduated geologist from University of Bergen 1984. He worked 12 years for various Exxon subsidiaries in Norway, USA and US - holding both technical and managerial positions before joining Statoil late 1995. In Statoil, Mr. Husmo has served in supervisory and managerial roles in various exploration business units, including Geological advisor Norwegian Shelf, Concession Round Manager, Exploration manager FSU and Vice President Eastern Hemisphere for International Exploration. Mr. Husmo now serves as the International Business School Principal, with responsibility for:

- competence development programs for employees & managers working for Statoils international business area,
- National oil company (NOC) and government employees & managers through 'NOC-NOC' cooperation agreements, and
- trainee programs and international university agreements.

Prof. Lawrence M. Krauss,

Case Western Reserve University,



is an internationally known theoretical physicist with wide research interests. He has investigated questions ranging from the nature of exploding stars to issues of the origin of all mass in the universe. He is the author of over 200 scientific publications, as well as numerous popular articles on physics and astronomy. He is the recipient of numerous awards for his research and writing, among these Oersted Medal , the highest award of the American Association of Physics Teachers, for his contributions to the teaching of physics.

He is the author of several popular books, including, The Fifth Essence: The Search for Dark Matter in the Universe, The Physics of Star Trek, Quintessence: The Mystery of the Missing Mass, the Atom: An Odyssey from the Big Bang to Life on Earth...and Beyond. His new book entitled Hiding in the Mirror, The Mysterious Allure of Extra Dimensions from Plato to String Theory and Beyond, an exploration of our fascination with the idea of extra dimensions, in art, literature, and science, appeared in October 2005.

Krauss is one of the few prominent scientists today to have actively crossed the chasm between science and popular culture. For example, besides his radio and television work, Krauss has performed with the Cleveland Orchestra, narrating Gustav Holst's The Planets at the Blossom Music Center in the most highly attended concert at that venue, and was nominated for a Grammy award for his liner notes for a Telarc CD of music from Star Trek. In 2005 he also served as a jury member at the Sundance Film Festival.

Website: www.phys.cwru.edu/~krauss

Egil Lillestøl,

Physics Department, University of Bergen, Norway,



received his Philosophical Doctor Degree from the University of Bergen, Norway in 1970, and became a full Professor in Experimental Particle Physics at the same university from 1984. After several functions at CERN in Switzerland he got a joint position at CERN and at Universitety of Bergen in 1993.

From 1990 and up through the present, Lillistøl. has been responsible for allocation of resources at CERN and in Norway and has therefore abstained from signing scientific publications. During this same period, he has been very active in outreach activities. Up through 1990 he has published around 100 papers.

Outreach Activities.
Beginning around 1975 Lillestø has had numerous interviews with the written press as well as radio and TV-programs together with public talks in Norway and other countries. In particular, he has had one TV-program and two radio programs with Stephen Hawking and two 40 minutes TV-programs from CERN participation in a Dutch feature movie “Part-time God”, 1992.

Lillstøl co-authored the popular science book “Search for Infinity”, 1994, which was later translated into 11 languages.

In 1998, he was awarding a prize as the best teacher at the Faculty of Natural Sciences, at the University of Bergen.

He has also been awarded the Meltzerfond and University of Bergen’s outreach Prize, 2003.

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American Association for the Advancement of Science,
Area(s) of expertise: Education and science literacy,



is Head of the Directorate for Education and Human Resources Programs of the American Association for the Advancement of Science (AAAS). The directorate includes programs in education, activities for underrepresented groups, and public understanding of science and technology. Dr. Malcom serves on several boards—and is an honorary trustee of the American Museum of Natural History. She serves as a Regent of Morgan State University and as a trustee of Caltech. Dr. Malcom is a former trustee of the Carnegie Corporation of New York. She is a fellow of the AAAS and the American Academy of Arts and Sciences. She served on the National Science Board, the policymaking body of the National Science Foundation, from 1994 to 1998, and from 1994-2001 served on the President's Committee of Advisors on Science and Technology. Dr. Malcom received her doctorate in ecology from Pennsylvania State University; master's degree in zoology from the University of California, Los Angeles; and bachelor's degree with distinction in zoology from the University of Washington. She also holds thirteen honorary degrees. In 2003 Dr. Malcom received the Public Welfare Medal of the National Academy of Sciences, the highest award given by the Academy.

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Dr. Eva-Maria Neher,
Managing and Executive Director of the XLAB-Goettingen Experimental Laboratory for Young People, University of Goettingen, Germany,



founded an experimental science laboratory on the science campus of the University of Goettingen, Germany, in 2000. Since that time, thousands of students have stayed in the XLAB yielding nearly 40,000 days of work across all participants. The students attend extensive lab courses in all science disciplines. XLAB attracts students not only from Germany but also from all over the world.

In December 2004, XLAB relocated to a newly erected, very attractive building in the center of the science campus. All year round the laboratories of the XLAB are open for classes and individual students from Germany and Europe. Since 2003, XLAB has offered international Science Camps in August and beginning in 2006, an early camp in July will be available to attract students from the Nordic countries.

Eva-Maria Neher, whose background is in biochemistry and microbiology, taught medical students at the university from 1978 to 1985. After marrying the Nobel laureate Prof. Erwin Neher, Eva-Maria Neher had five children, which temporarily interrupted her scientific career. From 1992 to 2000, Eva-Maria Neher gave experimental courses at a private high school, while at the same time, started setting up the XLAB.

Eva-Maria Neher is member on the board of NYEX (Network of Youth Excellence) and member on several advisory boards.

In 2002 she was honored with the Order of Merit of Lower Saxony and in 2005 she received the Communicator prize of the German Society of Molecular Biology and Biochemistry.

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studied Dutch literature and language (University of Amsterdam). He works as part-time researcher at the Department of Medical Ethics and Philosophy of Medicine at the University of Rotterdam, devoting himself to role for fiction in medical ethics and medicine. His first essay was Frankenstein Revisited - Fiction and movies on cloning and the public debate (NWO, 2002). After that, he conducted the European Committee project Science, fiction and science-fiction – the role of literature in public debates on medical ethical issues and in the medical education. At this moment he conducts the Dutch project Education through fiction: the effects of images, icons and ideas on moral reasoning about genomics.

Furthermore he is a science-writer. For more than ten years he writes a bi-weekly column on 'literature and medicine' for a Dutch medical journal (Medisch Contact). He wrote three books on literature and medicine, while editing two volumes. Furthermore he co-edited a book on science-communication. Forthcoming is a book on Eerste liefde – relikwieën en bedevaartsoorden ('First Love – relics and pilgrimages') and an anthology on Dementia in literature, both to be published in 2006.



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has his MSc in software engineering, applied mathematics and operational research from University of Strathclyde, Glasgow, Scotland 1986. Olsen has worked on large software applications providing traceability for crude oil and natural gas from 1986. He is the senior researcher at the Norwegian Institute of Fisheries and Aquaculture since 1993. Currently, Olsen is working with applications of ICT in the food and fish industry, especially related to production management, simulation and traceability. He has initiated, co-ordinated and participated in numerous traceability projects, including development of generic software tools for internal traceability in various seafood sectors. Olsen is also co-ordinator of the EU 5FP TraceFish project and co-ordinator of the Traceability Systems Group in the EU 6FP TRACE project. He is in charge of development of the CEN-CWA 14659 Farmed Fish standard, the CEN-CWA 14660 Captured Fish standard and the TraceFish XML standard. Olsen also serves as national representative in ISO TC34/WG9 and as an adviser to the EU, the Nordic Council of Ministers and the Nordic Industrial Fund on these subjects.

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has recently submitted her doctoral thesis based on the project ROSE (The Relevance of Science Education) at the University of Oslo. Her research interest involves cross-cultural aspects of youth's attitudes and interests related to school science. She draws on sociological perspectives on youth culture for understanding Western young people's views on science and technology.

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Chairman of The International Organization for Science and Technology Education and member of Advisory Group on the Science and Society action plan of the 6th Framework Programme of the EU.
Received the reward for outstanding contributions to physics education in 2005 from International Union for Pure and Applied Physics.
Current research interests: Social, cultural and ethical aspects of science education, science education and development, gender and science education in developing countries.
Organizer of the ROSE project (The Relevance of Science Education (2002 ---), a comparative study in 40 countries on pupils' interests, attitudes etc. of importance to science teaching and learning. Information and articles on the website

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Janet Sumner,
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is a Research Fellow and Lecturer at the Open University in the UK, she is also Broadcast Project Leader for BBC-Open University science programming and a presenter on prime-time BBC programmes.

She did her PhD in volcanology in Germany and has since travelled the world researching active volcanoes, the results of which she publishes regularly in international journals.

In 1997-2000 Janet Sumner took a career break, trained as a camera operator and worked freelance for many German television companies, culminating in participating in the 'Starship Millennium Project' the first ever fully interactive round the world voyage.

She resumed her research in 2001 and is a campaigner and role model for women returning to Science Engineering and Technology. In 2005 she was selected as one of Britain's 'Top Younger Scientists, Engineers and Technologists'.

As Broadcast Project Leader she works closely with the BBC's Specialist Factual Science and Natural History Units to produce and manage OU-BBC science broadcasts; overseeing academic input, learning content and future broadcast strategy.

Janet Sumner is committed to public engagement and learning delivered through broadcasting and is actively involved in presenting science on BBC prime time programmes.

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Carl Johan Sundberg, MD, PhD,
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is the Coordinator Science & Society at the President's office at the Karolinska Institutet. His research is focused on angiogenesis and mitochondrial biogenesis in human skeletal muscle. He has designed medical exhibitions at science centres and worked in the medical units of Swedish and American media. Sundberg is Course Director for e.g. Science Based Companies, Medicine for Journalists and Popular Science Communication. He has received the Karolinska Institutet Prize for Teaching Excellence, a Certificate of Commendation for Communication in the Life Sciences from EMBO, Ångpanneföreningen's Prize for Research Communication and the European Commission´s Descartes Communication Prize for Excellence in Science Communication 2005. He was vice-president of Euroscience and the founder of and Chairman of Euroscience Open Forum 2004.

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Peter Sylwan,
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is a freelance science journalist with a degree in agronomics from The Swedish University of Agriculture. He has worked with science journalism and popular science since 1967. He has worked in radio and television, has made documentaries and has written several books that popularize the latest progress in several scientific disciplines.

He is one of the co-authors of the book Framtidens arbete och liv, Natur och Kultur (Tomorrow's Work and Life, Nature and Culture), Stockholm 1997. The main subject of the book is how both working and everyday life change as we enter what is sometimes called The New Economy, the Information Age or the knowledge society. Additionally, Sylwan has recently published another book entitled Tillit: En bok om meningen i livet - från den stora smällen till morgondagens middagsmat (Trust: A book about the meaning of life - from the Big Bang through tomorrow's dinner).

From 1988-98 Peter worked closely with researchers at the Institute of Futurology and participated in several of the institute's projects. From 1996-98 he was the science editor for the Swedish newspaper 'Dagens Nyheter'. Peter has won several awards for his ability to popularize and present complex scientific knowledge to non-specialists.

Peter now teaches the course "Creative Communication" at the Institute of Communication. The course emphasizes the ability of emotions and the arts to promote understanding between people, and the significance of art in story-telling.

Book website: www.nok.se/nok/titlar/27/10748-5.htm

Cecilie H. von Quillfeldt,
Norwegian Polar Institute (NPI), Svalbard, Norway,



received her Ph.D. in marine botany from the University of Tromsø in 1996. She was then holding a postdoc position at the University Centre in Svalbard for two years. Von Quillfeldt has also completed several courses covering the following subjects in their relation to both Arctic and Antarctic regions: natural environment, peoples, history, resources and problems of development, government and social relations. She has undertaken scientific expeditions to different areas of the Arctic and the Antarctic from 1985 to the present. She is trained as a taxonomist but has also taken interest in other relevant issues influencing the abundance, distribution, biodiversity, production, physical-biological couplings and interactions within the ecosystem. Currently, von Quillfeldt is working at the Norwegian Polar Institute as an environmental adviser. For the last three years she has been in charge of several projects developing basic information to the Management Plan for the Barents Sea. Additional responsibilities are related to marine protected areas, marine management plans, environmental monitoring programs, biodiversity and related topics in polar areas, some of which also include international processes in the Arctic and in the Antarctic. For more than 20 years she has been lecturing in marine botany at different Universities on the mainland of Norway and in Svalbard.

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Exhibitions

Science/AAAS

Science magazine is published by the American Association for the Advancement of Science (AAAS), the world's largest general scientific society. Founded in 1880 by Thomas Edison, *Science* ranks as the world's leading scientific journal, with over 135,000 subscribers. Each week, *Science* provides the best in peer-reviewed original research, scientific research articles and reports, commentaries on recent news and events—a unique perspective on what's happening in the world of science, across all disciplines.

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Agitatio

Agitatio is a developer and publisher of mobile learning-games. We produce unique games that provide excellent gameplay, learning integrated within the games, and good technical quality.

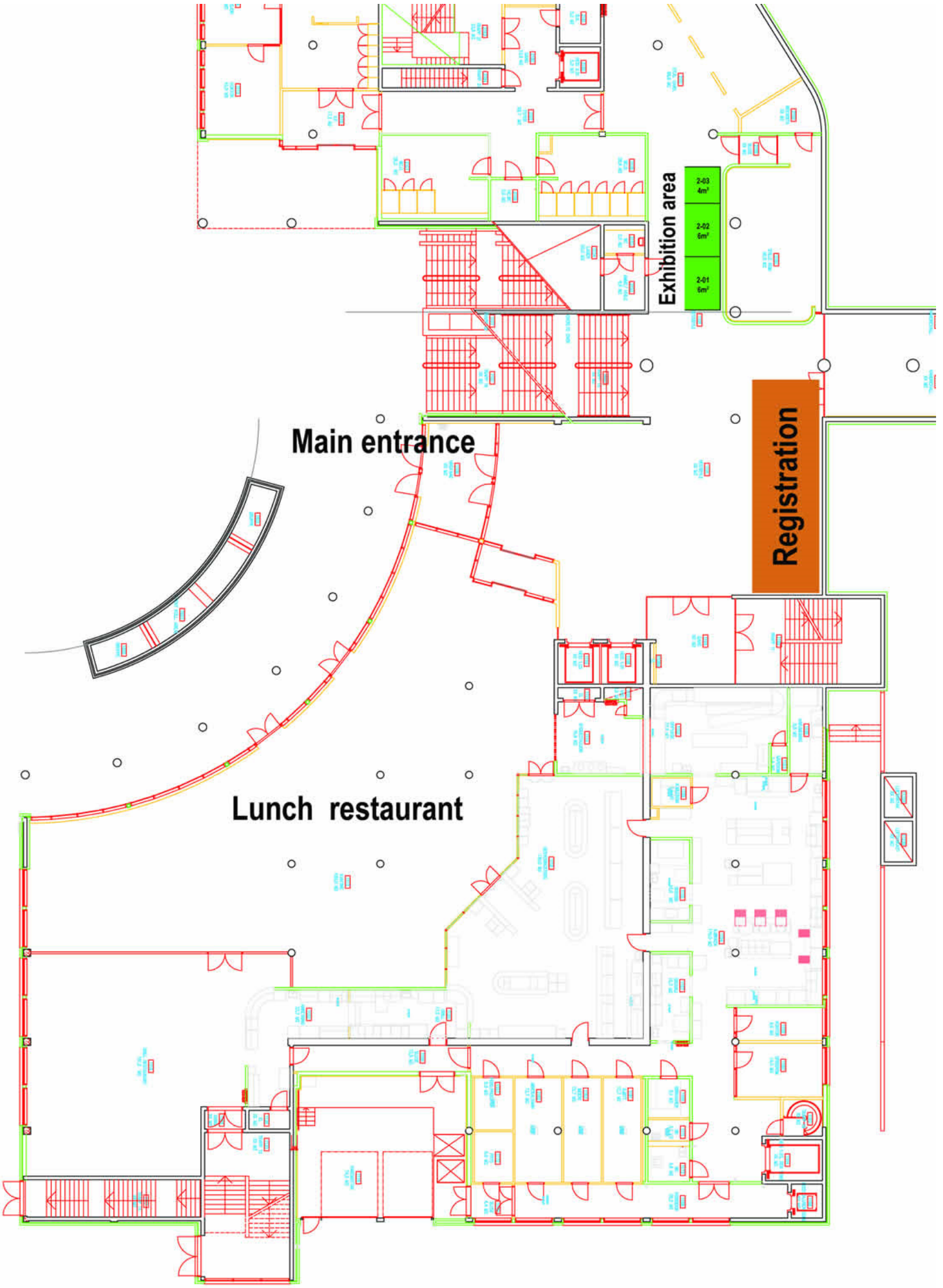
A well-designed game is fun, it is entertaining, and above all it is a challenge. For the digital generation, a well designed learning game can deliver an outstanding learning experience, being both engaging and effective. It`s useful fun.

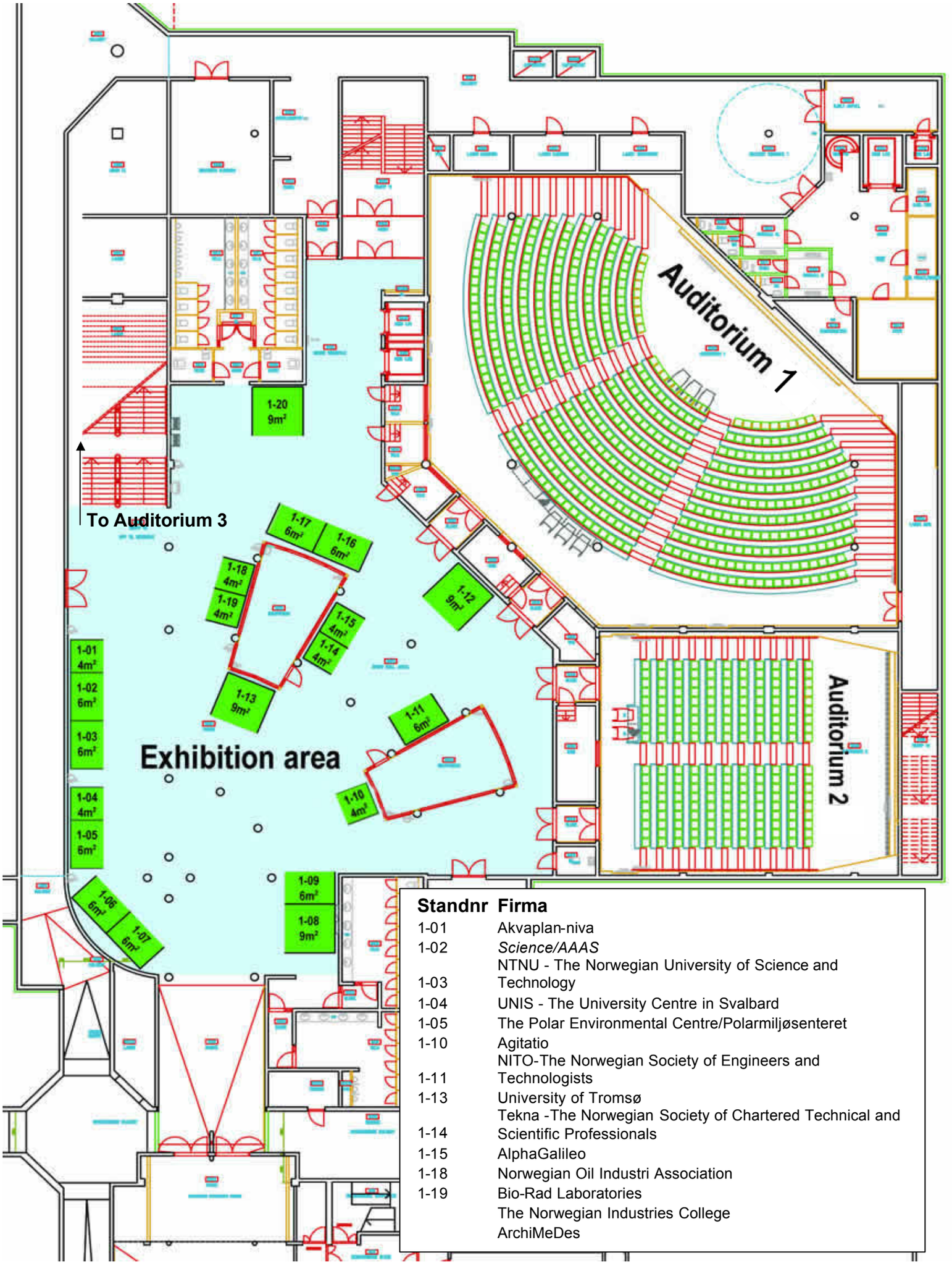
Why mobile learning-games? Current mobile devices are perfectly suited to deliver an excellent gaming experience anywhere, anytime. Moreover, it is the most frequently used electronic device on the planet...

The Polar Environment Centre, Tromsø

The Polar Environmental Centre is Norway's focal point for research, environmental monitoring and advisory services in the Polar areas and the Barents region. Most fields of study within the natural environment of these areas are represented in the centre. Studies of air, water, land and living organisms are carried out in research and development projects and through management-related work.

The nine independent institutions of the centre are: Headquarters for Norwegian Polar Institute and Akvaplan-niva, departments of the Norwegian institutes for Nature Research (NINA), for Air Research (NILU), for Cultural Heritage Research (NIKU), Geological Survey of Norway (NGU), Norwegian Radiation Protection Authority, Norwegian Mapping Authority and the National Coastal Administration.


Exhibition area
2-03
4m²
2-02
6m²
2-01
6m²
Registration
Main entrance
Lunch restaurant



Standnr	Firma
1-01	Akvaplan-niva
1-02	*Science/AAAS*
1-03	NTNU - The Norwegian University of Science and Technology
1-04	UNIS - The University Centre in Svalbard
1-05	The Polar Environmental Centre/Polarmiljøsenteret
1-10	Agitatio
1-11	NITO-The Norwegian Society of Engineers and Technologists
1-13	University of Tromsø
1-14	Tekna -The Norwegian Society of Chartered Technical and Scientific Professionals
1-15	AlphaGalileo
1-18	Norwegian Oil Industri Association
1-19	Bio-Rad Laboratories
	The Norwegian Industries College
	ArchiMeDes

ArchiMeDes

ArchiMeDes – Architecture, Media, Design: ArchiMeDes develops exhibitions for museums, cultural institutions, associations, public institutions and companies. From the design to the planning and all the way to implementation and logistics, ArchiMeDes is the ideal prime contractor for exhibitions with demanding content and form.

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NITO - The Norwegian Society of Engineers and Technologists

NITO, with approximately 54 500 members, is the biggest union in Norway for engineers and technologists. NITO was established in 1936 and is an independent, non-affiliated and non-political union. NITO is the only union in Norway negotiating exclusively for engineers and technologists.

NITO plays an important role as an advisory body on public matters, parliamentary bills, White Papers etc. related to the forming of and recruitment to technological education.

NITO works for the continuous development of further education programmes. In order to assist our members improve their level of competence, NITO offers a large number of specialised courses covering technological and administrative subjects.

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The University Centre in Svalbard

The University Centre in Svalbard (UNIS) is a state-owned limited company. The universities of Oslo, Bergen, Tromsø and NTNU in Trondheim are represented on the board. The objectives of UNIS are to provide university level education in Arctic studies, to carry out high quality research, and to contribute to the development of Svalbard as an international research platform. The archipelago's geographical location in the High Arctic makes it an ideal venue for laboratory work and also for the acquisition and analysis of specialist data.

UNIS researchers work in collaboration with Norwegian and foreign research institutions and are actively involved in a large number of joint research projects.

AlphaGalileo

- The online press centre for the latest in European research.

AlphaGalileo is the world's leading independent resource for European research news. Our aim is to promote European research by providing a one-stop shop for the world's media. Currently **more than 5,000 journalists** are registered with us. We take press releases, event details, book announcements, background information and broadcast material from Europe's leading research institutions and make them available to the world's press and broadcasting media.

The service is run by an independent not-for-profit company, AlphaGalileo Foundation, which is based at offices in the UK.

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NTNU – Innovation and Creativity

The Norwegian University of Science and Technology (NTNU) in Trondheim represents academic eminence in technology and the natural sciences as well as in other academic disciplines ranging from social sciences, the arts, medicine, architecture to fine arts. NTNU has national responsibility for engineering studies at master level in Norway. Faculty of Natural Sciences and Technology and Faculty of Information Technology, Mathematics and Electrical Engineering provide educational programmes, leading to bachelor-, master- and Ph.D. degrees as well as integrated 5 year master's degrees in engineering, within a variety of specialisations. Selected international master's degree programs are offered.

Bio-Rad Laboratories

As the pace of technological advancement increases, it becomes more and more important to find innovative ways of promoting scientific understanding to the younger generation. Bio-Rad's Biotechnology Explorer Programme, which connects current research science to the classroom by using topical real life examples, has been helping to make this a reality.

With this innovative programme, Bio-Rad are giving our future scientists the opportunity to experience exciting, 'hands-on' science earlier than ever before. The Biotechnology

Explorer Programme includes kits and training materials designed to teach students some of the scientific techniques used on a daily basis in genetics research.

Tekna -The Norwegian Society of Chartered Technical and Scientific Professionals
The pay you deserve. Professional development. Promotion of the members' interests vis-à-vis decision-makers and public opinion. These are the three main reasons given by our 45 000 members for joining Tekna.

Professional development and updating is given high priority by Tekna members. Tekna organises a large number of conferences each year. Tekna has definite ambitions to influence the political debate in a direction favourable to its members. Members employed in the private, local government and central government sectors derive great benefit from Tekna's work to improve its members' pay and working conditions.

OLF The Norwegian Oil Industry Association

OLF The Norwegian Oil Industry Association is a professional body and employer's association for oil and supplier companies engaged in the field of exploration and production of oil and gas on the Norwegian Continental Shelf. OLF is a member of the Confederation of The petroleum industry is a high-tech industry which functions as a driving force for other business and industrial development.
OLF's task is to lead the industry's joint effort for development of a progressive and competitive petroleum industry with a good reputation and good connections with the authorities, stakeholders and public opinion. OLF shall be a unifying, efficient and effective organization which shall emerge as the petroleum industry's foremost advocate in matters that concern the entire sector.

Aqvaplan-Niva

Akvaplan-niva is a leading consultancy and research company, covering the disciplines aquaculture, marine and freshwater biology. Services offered include: marine and freshwater environmental monitoring, impact and risk assessments, coastal zone planning, aquaculture design, management consultancy, and aquaculture production development. Akvaplan-niva has carried out a large number of assignments for authorities, oil companies, aquaculture industry, and research foundations in Norway and elsewhere. We have a highly qualified, international staff with approx. 40 scientists, and work in close alliance colleges at the Norwegian Institute for Water Research (NIVA), Akvaplan-niva Barents in Russia, and our partners in the Polar Environmental Centre in Tromsø.

University of Tromsø

The world's northernmost university has 6,500 students and 1,800 employees. Strategic priority is given to arctic research and research in the fields of marine science, biomedicine, telemedicine, space physics, linguistics, multiculturalism, and research related to Saami and indigenous people. The curriculum consists of more than 100 study programmes: science, marine studies, medicine, the humanities, social sciences, law, and economics. Three faculties offer study programmes in science. Postgraduate programmes are taught in English in Biology, Physics, Chemistry, Geology, Mathematics, Statistics, Telemedicine and E-health, Medical Biology, International Fisheries Management, Peace

and Conflict Transformation, Visual Cultural Studies, Theoretical Linguistics, and English Linguistics.

The Norwegian Industries College

The Norwegian Industries College is Norway's leading industrial school. In terms of both developing courses and carrying them out, the college set a new record in 2004. Almost 4,400 participants completed courses with us. Our expertise is based upon more than 40 years experience.

Understanding of industry

As part of the Federation of Norwegian Industries we have a very good understanding of industry. We know the industry. We know all about the constraints and challenges that companies face and we know that increased employee competence is competition factor number one for companies.

Our mission is to develop something that meets the need there and then. Fundament for our ability to perform is the good dialogue we have with member companies and others in the industry.

Professional administration

Participants are fully employed and dependent on good administration, so that all is properly organised and they can concentrate on the most important thing, namely their trade or profession.

The same applies to the company. The Norwegian Industries College is a professional partner and assists training personnel and managers in their jobs by raising competence levels for itself and its employees. Regardless of level, whether it is a small themed course or an engineering or management development programme, we apply substantial resources in course development and implementation.

Sponsors



Ministry of Education and Research



Troms County Council
(Regional support, RDA)



The Research Council of Norway



Norwegian University of Science and Technology



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University Centre in Svalbard



Abelia Association of Norwegian ICT- and knowledgebased enterprises.



Norwegian Oil Industry Association



Federation of Norwegian Industries



Norway largest union of engineers and technologists







Statoil is an integrated oil and gas company with substantial international activities.



Norway based communications, IT and media company.



City of Tromsø





Consultancy and Research Services in Aquaculture and Marine and Freshwater Environments



The Norwegian Society of Chartered Technical and Scientific Professionals

Thanks

The Steering Committee thanks all the organisations behind the conference. We especially thank the University of Tromsø for hosting the conference and contributing substantially to the economy of this venture. No technical problems around the meeting facilities have been to difficult to solve by the staff at the University.

Professor Knut Helskog, Tromsø University Musuem, helped us find the rock art used for the coference logo and various artwork scattered through this program.

We would also like to thank:

Tromsø Event Service, for their excellent handling of the logistics of the conference

Blåst Glasshytta, for making the trophies for the Media Contest and all the hand made gifts for the Invited Speakers

Nygård Hagebruk, producing the northernmost roses in the world for the flower decorations in collaboration with Kvaløyrasa, the flower delivery service.

The Phytotron, Department of Biology, producing and making wild Cloudberry plants to flower at the right time.

Geoffrey Kempton, Graphical designer, Servo Kommunikasjon AS, Oslo is behind the graphic design on all our printed and electronic materials.

Lundblad Media, Tromsø, is our printer of all information materials including the final programme.

Michael Wynn and Paul Johe, for designing and keeping the webpage up-to-date as well as compiling the conference program.

Abelia - Association of Norwegian knowledge- and technology based enterprises



- Det lønner seg å være medlem av Abelia

Education Consultancy
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