Minutes of the PANS-Workshop
Technical University Vienna

June 7 - 8, 2002

Participants

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Programme

Friday June 7, 2002

12.30-13.30 Informal lunch in the Mensa of the TU Wien
13.30-13.45 Welcome, announcements
13.45-14.15 The NUPEX proposal submitted to the EC (Oberhummer)
14.15- 15.00 Teachers Network (Leclerque-Williams)
II International Radiation Education Symposium (Oberhummer)
15.00-15. 45 Progress report on Book (Mackintosh& Rees)
Exposition (Pascolini)
15.45-16.15 Intermission
16.15- 17.15 CD-ROM project (Robin Rees et al.)
17.15 - 18.00 Various items:
GREPS project (Suraud)
Nuclear Energy in Belgium –Book (Deutsch)
19.15 Departure from Hotel for Dinner at Heurigen Maly in Grinzing, Sandgasse 8

Saturday June 8, 2002

9.00-9.15 The PANS proposal submitted to the EC

9.15- 10.30 The PANS-INFO project
10.30-11.00 Intermission
11.00 – 12.30 Energy project
12.30 – 13.30 Lunch at Restaurant near TU Wien
13.30 – 14.30 Continuation Energy project
14.30 – 15.00 Other items (next workshop, etc.)
15.00 Closing workshop

Friday, June 7, 2002

Opening and welcome by Adriaan van der Woude (chair)
technical announcements by Helmut Leeb
apologies were received from Robin Rees

The NUPEX proposal submitted to the EC (Heinz Oberhummer)

NUPEX presents a web-based science communication system for nuclear science and its applications, with teachers as primary, high school students and public as secondary target. It should be a high quality web-based one-stop shop with contents from nuclear science and application. (Presentation: see appendix)

Excerpt from discussion:
Main emphasise of project: Combination of e-learning and class-room instruction.
Content of the web presentation in first approximation equivalent to "Nucleus - a trip into the heart of matter", further referred to as "the book". There will be a list of suggested authors, selection after discussion within the working group.
A questionnaire will be handed out to the target groups to identify their wishes and needs; it will be discussed to which extent these suggestions should be included.

Teachers Network (Christiane Leclercq-Willain)

C.L.-W. presents the Teachers Network. It was part of the previous NUPEX initiative, but not of the present one. As yet, it is a collection of addresses of teachers of European countries (some are missing e.g. Germany, Netherlands, Switzerland, Italy, Denmark, Finland). It should be used to promote activities of PANS and NUPEX (questionnaire of the working group), the book, the exposition, and the CD-ROM-project.

Excerpt from discussion:
Teachers may not have time and/or freedom to go beyond the prescribed syllabus. Nuclear science may not be included at all in high school syllabi.

Task: C.L.-W., Marc Beddegenoodts, Averil MacDonald send newsletters (twice a year) to the Teachers Network to spread information and ask for syllabi of high school physics courses.
Everybody should include names of representatives in the list (handed out by C.L.-W. during the workshop) and e-mail the names to C.L.-W.

Istvan Uray reports on a questionnaire handed out to students at high schools, university non-physics and physics students, as well as to students of an international high school at Riso, Denmark. It should elucidate on acceptance of various nuclear physics topics in Hungary (snapshot like). The questionnaire and the answers were handed out at the workshop. There is a remarkable discrepancy: minimal interest of young high school students and non-physics students in basic nuclear sciences; large interests (increasing with age) in application and consequences. This is almost opposite to the interest of physics students. From the abstract of I. Uray, H. Oberhummer of a paper to the II. IHRES (handed out): "The divergent interests of these two groups may make it very difficult to create a sensible discussion and mutual trust between future scientists and future society."

Heinz Oberhummer: Announcement of and information on

II. International Radiation Education Symposium, 20 - 25 August, 2002, Debrecen, Hungary

Request: send links of web-sites to H.O., which have anything to do with radiation education
(shall be included in the conference proceedings, could also go to Teachers Network)

Progress report on the book (Ray S. Mackintosh)

UK/Europe (Canopus)	750 copies sold; no stock left.
US (John Hopkins University Press)	2800 copies sold 700 ordered by New York book club stock of about 300 left.

intent: reprint (with same ISBN and minor corrections finalised by July) in October.
Translations: Serbian Physical Society, Czeck Academia signed contract; Greece agreement was given up; decision expected soon with Germany, Spektrum Verlag, and Sweden, Student litterateur; slow progress with Dutch, French and Portuguese versions.
A serious problem is to have the book reviewed and to get publicity. It was very positively reviewed by CERN Courier and Amer. Journal of Physics, and on radio in UK; review in Nucl. Phys. News soon.

Excerpt from discussion:
Contact teachers associations (they aim at increasing literacy in science), review in EPS news urged for; reprint the sooner the better; use alphagalileo@alphagalileo.org (a journalist information network) to spread effectively news from science.

Task: R.S.M. contact G. Morrison for review in EPS news. Contact teachers association
to promote book.

Travelling Exposition (Alessandro Pascolini)

Exposition sells well, approx. 5000 visitors/exposition of 2 weeks duration in Italy (Milan, Turin, Brescia, Pisa, Florence; Siena scheduled). Exposition advertised at schools (physics syllabi in Italy do not contain any item from nuclear physics!)
Exposition in France: Perpignan, Caen.
Hungarian version in preparation by Debrecen physicists. Shall be launched by the beginning of September (support of 4.000 EUR asked for).

CD project (G. Ohlén)

working group: Alessandro Pascolini, Robin Rees, Ray Mackintosh, Gunnar Ohlén, Geneviève Edelheit.
Idea: produce a CD ROM for the target group: age 14+, students, general public rather than teachers; pan-European effort to attract young people to nuclear physics.

Languages: English, French, German, Italian, Swedish foreseen (up to 8 languages possible).
Content: based on the book, four parts where nuclear physics play a key role: nucleus, astronomy, environment, application each part with identically structured sub-items (baskets): video, animations, history, people, games, exercises. Examples given by Alessandro Pascolini (see appendix).
Role of Robin Rees: pulling together and co-ordinating work of contributors, similar to the case of the book.
Time scale: produce a prototype (20k EUR seed money needed) to find a sponsor for financing a perfectly made CD-ROM (100 k - 200 k EUR needed - animation costly!). If seed money is found in June 2002, production can start in 2003. Distribution in all countries on their own initiative free of charge; however, unclear who pays for 1 million CDs even if the material costs for one CD are marginal (25 - 30 EUR cent). Two meetings this fall to prepare the demonstration CD.

The GREPS project (Eric Surand)

GREPS: Group for reflecting on subatomic physics teaching.
25 physicists all over France, one member per experimental laboratory (CNRS and CEA), theorists (nuclear, particle, atomic, solid state)

Goals:
- make proposition and initiate actions on local and national level about structure of subatomic physics teaching in France, lectures in subatomic physics at universities
- reinforce subatomic physics at universities through contact-network
- reinforce image of subatomic physics and physics among teenagers and their teachers.

Results so far
- several lectures on subatomic physics presented at universities where this topic is not taught.
- survey of situation of subatomic physics in France (lectures, positions)
- report on situation of subatomic physics at universities
- actions (proposed and realised)
E2PHY: Summer school for teachers
RUCA: subatomic physics lectures on the web

High school conferences (subatomic physics for high school students)

New directions:
- library of subatomic physics, web-modules for present clientele (could be extended).
- local "teachers' workshop"
- GREPS website

Excerpt from discussion:
Access to GREPS via IN2P3 (CRNS); research centres are the driving force, not nuclear industry; IN2P3 and DMS finance the program and support strongly any action.
Information: Workshop for teachers in Italy (at Frascati and Gran Sasso Lab) to improve practical skills of and point out experimental possibilities to high school teachers.

Open questions:
Opening of GREPS towards Europe? Translation? Summer schools for European teachers?
How can GREPS and PANS benefit from each other?

Task: List of useful web sites of GREPS should enter into PANS-Info; contact A.v.d. Woude.

Nuclear Energy in Belgium (Jules Deutsch)

Jules Deutsch reports on a book: Energy resources and the nuclear energy: Comparative analysis and ethical considerations by Christian Hoenraet (original in Dutch, French translation available ISBN 90-334-4592-1, English translation in preparation.) Contact: christian.hoenraet@skynet.be
Idea:
- To describe for a wide audience the ways energy is provided by nuclear fission and other sources,
- to discuss environmental effect on energy production on present and future generations and consider the ethical implications of these various scenarios,
- to help the decision makers and the citizens to make better founded decisions.

Saturday, June 8, Christoph Bargholz (chair)

Report by Christoph Bargholtz on the PANS-proposal for a thematic network submitted to the EC and short description of planned activities and responsibilities: network, workshops, working groups, board.

Participants in the PANS - proposal
1. Stockholm University
2. NuPECC
3. EPS
4. Canopus Publishing Limited
5. Gesellschaft für Schwerionenforschung

6. Istituto Nazionale di Fisica Nucleare
7. Atominstitut der Österreichischen Universitäten

Jan Vaagen: Announcement of and information on

International Nuclear Physics Conference 2004 (INPC 04), Goteborg, June 26 - July 2, 2004

Reminder: try online web casting during conference;
PANS should be fit in!

The PANS-Info project (Rafael Reyeros-Bienert)

Web Site Status:
Work that has been done since last meeting:
- Layout finished
- Input additional content
- Optimised programming
- Site moved from TU Munich to INFN Legnaro

Work to be done:
- Short time modifications of the PANS web site
  - documentation
  - redefinition of system requirements
  - list of files and data
  - translate / change static menues
  - optimize search (larger windows)
- long run (update, maintenance, support)
  - updates, one per year
  - maintenance during this period
  - migration of the site (server to server

Promotion of the site by direct e-mailing necessary (need 10kEUR for technical purposes).

The energy project (Helmut Leeb)

We, as nuclear physicists, feel responsible for our science and its impact on society. The book is a result of taking over responsibility. We are also concerned with an utmost challenging problem, that of energy. Can the PANS group be a major actor in addressing the energy problem as a whole or should it concentrate on nuclear energy or do neither nor?
As a result of the discussion at the London meeting a working group has been established (J. Al-Khalili, F. Ingebretsen, H. Leeb, B. Tamain, J. Vaagen) with the mandate to work out proposals for a more focused discussion at the next NuPECC meeting.
The working group sees the main problem with the energy project on a sociological level where pioneers with scientific attitude, law and order people enforcing correctness, and emotionally driven people, all striving for a clean environment, are in mutual conflict.

There is professional, deeply founded, policy-making directed literature available:
NEA Report: Nuclear Education and Training: Cause for Concern?

NEA Report: Nuclear Production of Hydrogen
EU-publications: http://europa.eu.int/comm/energy_transport/en/etf_en.html
NEA Report: Nuclear Energy Fundamentals – a guide for the interested observer

In addition, articles addressing scientists and the interested public have been published:
PHYSICS TODAY, April 2002
Physikalische Blätter 57 (2001) 11
Europhysicsnews March/April 2001: 32/2 (2001) page 52.

And many books are on the market (e.g. Megawatts and Megatons by Richard L. Garwin and Georges Charpak, ISBN 0-375-40394-9, Nuclear Production of Hydrogen, ISBN 92-64-18696-4, www.oecd.org)

Present initiatives:
IAEA: High level meeting on „Managing Knowledge of Nuclear Science, June 2002
NEA/OECD: Update the report on Nuclear Energy Fundamentals
European Summer University of Physics 2002, Strassbourg: Energy for Europe – Physics of Energy Cycles
EC-project: European Nuclear Engineering Network (ENEN) www3.scken.be/ENEN/

National activities: AKE of the Austrian Physical Society
AK Energie of the German Physical Society

The working group sees the mandate of PANS with emphasis on fundamental aspects of nuclear physics and since PANS activities are not triggered by nuclear industries or associated society, nuclear energy issues should not be a primary issue of PANS. Unfortunately, military use and accidental scenarios have led to a negative perception of nuclear physics as a whole. However, application of nuclear techniques have a significant impact on society. We should try to come to a rational discussion via improved information.

Three methods are suggested to this aim:
1. documentation (book, report, journal contributions, folder)
2. web-site with e-learning
3. dialogue (exposition, conferences, student workshops, specific lectures)
The working group proposes to follow the dialogue line. Referring to official information on the energy issue would avoid the reproach of being biased and duplication of work. The target groups are academia and students, high school students and their teachers, general public, companies for energy provision. The dialogue could start immediately via web-site and e-learning and students workshops, where students from science, engineering, economics should actively work together under guidance of high level scientists. Furthermore, the adult education system must be approached and used for dialogue.

Result of discussion:
Most of the attendees do not feel competent on the energy subject as a whole and are rather reluctant to embark on a book project. They rather prefer the dialogue in order to prepare students for an energy future and keep their intellectual capacity, to strengthen the cultural aspect of energy, to use environmental issues as a hook to bring in nuclear physics as a catalyst, to provide help to a public being entrenched with fear, and to de-dramatise the word/prefix “nuclear”.
To this aim:

- make known the many applications of nuclear science (and nuclear energy as one aspect of it) via the CD-ROM project, PANS info, web-site, e-learning
- distribute the posters on radioactivity (G. Edelheit will try to send the pdf-version)
- create new posters on application (suggestion by A. Macdonald). They should address the age group 14+ and should be distributed to high schools for display
- organise student workshops (A. Kugler volunteers).

Task: Working group should continue their work and focus on the new aspects, with the added help of A. Macdonald.

Other items:

- Next PANS workshop: Nov. 8-9, 2002, in Dresden
- figures of the book can be used freely, ask R. Mackintosh for the original figures,
- original figures of the CD-ROM can be provided by on request by A: Pascolini http://wwwps.lnf.infn.it/notiziario, http://multimedia.infm.it/archimedes
- Jules Deutsch draws attention to http://www.alphagalileo.org a journalist information network where information on nuclear science can be effectively distributed.
- EPS position paper: The importance of European fusion energy research (signed on behalf of the Executive Committee of the EPS by Sir A. Wolfendale, EPS president) was handed out. According to J. Vaagen, it was neither discussed nor approved by the EC.

End of the meeting 15:30

Hartwig Freiesleben

Appendix 1

NUPEX-Proposal
(NUclear Physics EXperience)

A web-based Science Communication System for
nuclear science and its applications

Summary of proposal for EU-Call
"Raising Public Awareness of Science and Technology"
Call : 15 January 2002, Submission: 15th April 2002.

Objectives

- Creation of a web-based science communication system (webSCS) communicating nuclear science and its applications to the public

- *Primary target group:* Teachers as science communicators facilitating their work
  Secondary target group: high-school students and public
- High quality web-based one-stop shop for contents in nuclear science and applications in at least 5 European languages

Description of work

The NUPEX project will include the following tasks and steps:

- Research on target group needs and market/supply of nuclear science information
- Set up of the didactical model for web-based science communication system (webSCS)
- Creation of the webSCS by adapting existing learning content management system
- Structuring, authoring and translation of content
- Evaluation and testing of content
- E-publication in at least 6 European languages
- Dissemination and marketing

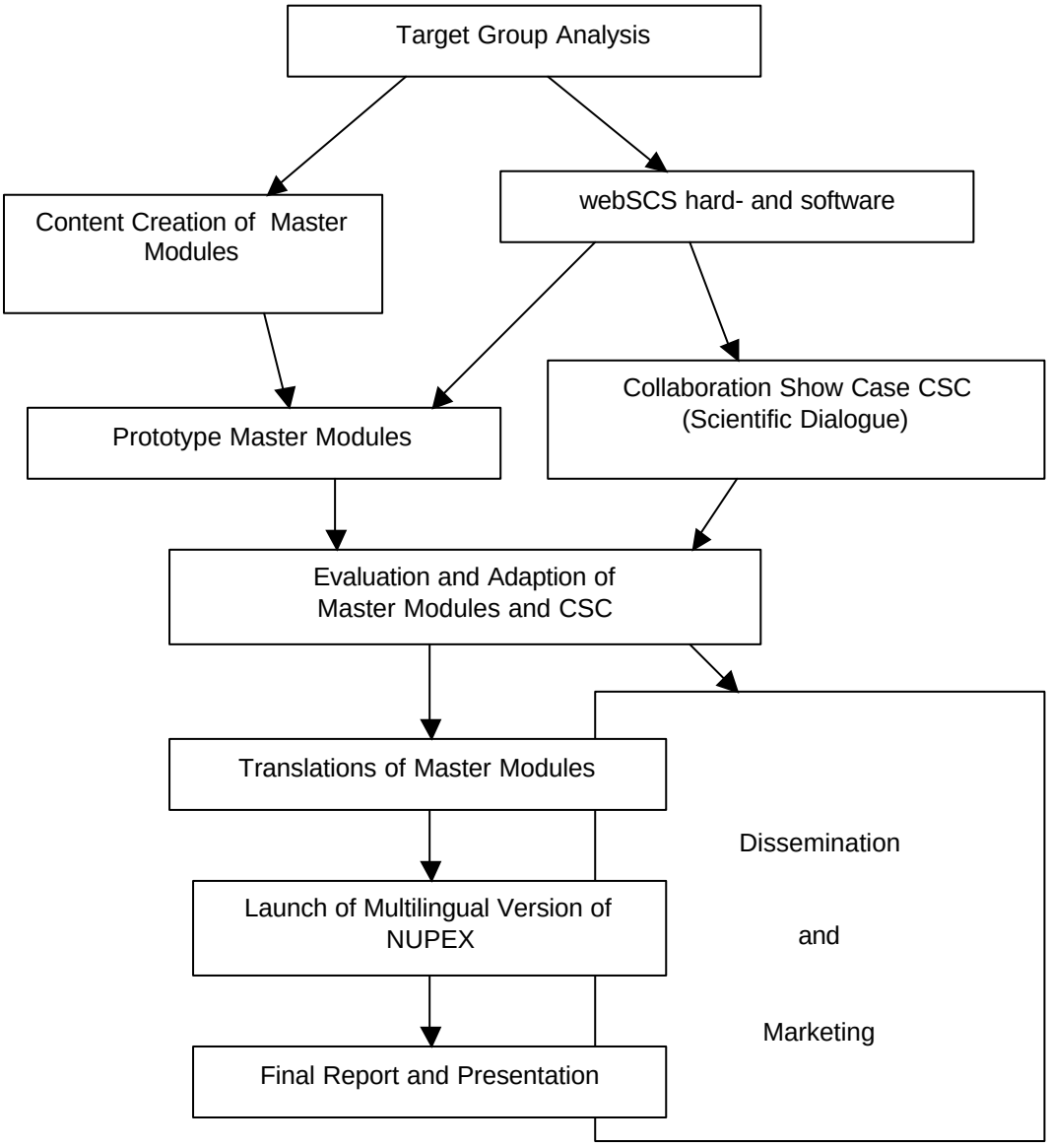
Science writers will create master modules in English. Content editors for each involved European language will be responsible for translation of modules, collection of educational learning material and local dissemination. Science mediators from the public and the media sector will promote NUPEX in collaboration with the scientific community.

Description of webSCS

The web-SCS will include the following components and features:

- Homepage leading to the different functional areas
- Structured and commented collection of multimedia educational and outreach material and hyperlinks
- Learning and information system on the Internet with modular content structure
- Educational modelling language (EML), terminology systems (Thesauri), advanced search technologies (pattern matching and semantic networks)
- Dialogue system: Virtual meeting rooms including modern communication and collaboration technologies, dialogue groups, bulletin boards, dedicated web collaboration on specific nuclear physics projects

Flow chart of project components



Description of consortium

No	Short name of organisation	Coun-try	Short Name	Role in project
1	bit media e-Learning solution	A	bit media	Co-ordination, e-didactics, e-learning system, scientific dialogue system
2	Open University	UK	OU	Content editor of English master modules
3	r&r.com	D	r&r	Market research, dissemination and marketing
4	Atominstitut of the Austrian Universities	A	AIAU	Content editor of German version, dialogue and scientific dissemination in Austria, content co-ordination
5	Instituto Nazionale di Fisica Nucleare	I	INFN	Content editor, scientific dialogue and dissemination of Italian version
6	Université Libre de Bruxelles	B	ULB	Content editor, scientific dialogue of French version and dissemination in Belgium
7	Institute of Comm. and Comp. Systems	EL	ICCS	Content editor, scientific dialogue and dissemination of Greek version
8	Malta Council of Science & Technology	MT	MCST	Content editor, evaluation, scientific dialogue and dissemination of English version
9	Institute Problemow Jadrowych	PL	IPJ	Content editor, scientific dialogue and dissemination of Polish version
10	Institute of Nuclear Research	HU	ATOMKI	Content editor, dialogue and dissemination of Hungarian version
11	Nucl. Phys. European Coll. Com.	EU	Nu-PPECC	Dissemination, public relation

Summary

Co-ordinator: bit media, A

Involved institutions:
4 research institutions, 3 universities, 2 outreach institutions &
2 companies

Relation to other specific activities:
PANS: Exchange of educational graphic and multimedia material
European educational portals: Dissemination

Duration of project: 24 months
Start of project, if funded: 1. 10. 2002

Total costs: Euro 556707.-
Own resources: Euro 125696.-
Requested contribution from the EU: Euro: 432.011.-

Appendix 2

NUCLEUS, the CD rom

The material will be presented along 4 paths: [nucleus], [astronomy], [environment], [applications]. Nucleus is the conceptual route similar to the book. astronomy is the astronomy route, environment is the radiation and environmental route, and applications is the applications path.
There are links between the four paths.
Additional material is organized in [video - animations], [history] , [in depth], [people], [games], [exercises], baskets common to all the paths reachable when relevant. A [glossary] and a map of the site is always at disposal.

page 1 the title and the bottons for the selection of the language

initial animation: ***the levels of matter-the phases of universe***
a girl → her hand → a cell → the DNA → an atom →a nucleus →a nucleon →quarks → the calabi-yau universe → the big bang → quark-gluon plasma → nucleons →nuclei → atoms →stars → present universe → the girl.
The girls blows bubbles, which burst but four

page 2 general homepage
the four bubbles become bottons representing the four possible paths of exploration [nucleus], [astronomy], [environment], [applications]
Additional bottons bring to [back], [help], [exit]

page 3 path homepage
for each path the path logo remains with the index of subjects

bottons bring to [home], [glossary], [help], [exit], [forward]

page 4 subject page
the path logo remains with the [index] botton in a fixed zone to be used for showing pictures, videos, animations, etc.
Every picture has its caption; bottons allow to see the sequence of pictures of the chapter [forward], and [back]
A second zone presents the text with buttons to go [up] and [down]
the orizontal bottons remain [home], [glossary], [help], [forward], [back] and [exit],
the vertical bottons [video - animations], [history] , [in depth], [people], [games], [exercises] glow when the corresponding material is present and can be activated

exit page the colophon

programming will be done with Director or similar tools
all bottons are described by icons and not by text
the size of the screen is 800 times 600