A Web-based Learning Exemplar Using NAFEMS Resource Materials

Wood, Jim; Thompson, Jim

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FENET SEMINAR & TECHNOLOGY WORKSHOPS

Zurich (Geroldswil), Switzerland

Wednesday, 12th June 2002
NAFEMS/FENET Awareness Seminar: „Web Based Training for Engineering Analysis“

Thursday, 13th – Friday, 14th June 2002
FENET Technology Workshop

Workshop Objectives
To provide a forum in which best available knowledge is collated and disseminated to the finite element community through a pair of workshops. A key objective is to collate contemporary wisdom and deliver this in a form that is directly useful to industry.

Workshop Topics
Durability and Life Extension (DLE):
FE Issues Related to Structural Integrity Issues (Fracture, Fatigue, Creep)

Multi Physics and Analysis (MP):
Computational Modeling of Loosely Coupled Interaction in Multiphysics Problems

Product and System Optimization (PSO):
The Use of Evolutionary Algorithms

Education & Dissemination (E&D):
A Proposed User Survey and Possible Approaches to Reducing Barriers to the Effective Use of FEA in Industry

Preliminary Version: 2nd May 2002
CONTENTS

AT A GLANCE  Page 3

FORMATS  Page 4

NAFEMS/FENET AWARENESS SEMINAR  Page 5

Web Based Training for Engineering Analysis

FENET TECHNOLOGY WORKSHOPS

Multi Physics and Analysis (MP):  Page 6
Computational Modeling of Loosely Coupled Interaction in Multiphysics Problems

Durability and Life Extension (DLE):  Page 7
FE Issues Related to Structural Integrity (Fracture, Fatigue, Creep)

Product and System Optimization (PSO):  Page 8
The Use of Evolutionary Algorithms

Education & Dissemination (E&D):  Page 9
A Proposed User Survey and Possible Approaches to Reducing Barriers to the Effective Use of FEA in Industry

TRAVEL INFORMATION  Page 10

ACCOMODATION INFORMATION  Page 11

REGISTRATION FORMS

NAFEMS/FENET Awareness Seminar  Page 12

FENET Technology Workshops  Page 13
AT A GLANCE

Seminar and workshop location
Hostellerie Geroldswil
Am Dorfplatz
CH-8954 Switzerland
Internet: www.hostellerie-geroldswil.ch
e-mail: info@hostellerie-geroldswil.ch

Duration
Wednesday, 12th of June 10:30 - 16:30 (19:00)
Thursday, 13th of June 09:30 - 17:30
Friday, 14th of June 08:30 - 16:30

Accommodation
Please book your hotel room as soon as possible by yourself. Information about hotel accommodation in Geroldswil please find on page 11.

Attendees
The NAFEMS/FENET Seminar and the FENET workshops are open to all FEM users.
In addition if you also want to present at, or contribute to the workshops, please contact the RTD Theme co-ordinators mentioned in this invitation.

Contact
If you have any questions don’t hesitate to contact us:
WERBOS GbR
IT – Marketing, Services, Consulting
NAFEMS Contact for Germany, Austria, Switzerland
Schillerstr. 6
85567 Grafiing b. München
Germany
Phone ++49 - (0) 80 92 - 8 35 50
Fax ++49 - (0) 80 92 - 8 35 51
e-mail nafems@werbos.de
www.werbos.de

Attendance costs

NAFEMS/FENET Awareness Seminar

<table>
<thead>
<tr>
<th>Type</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAFEMS + FENET member</td>
<td>free *</td>
</tr>
<tr>
<td>Non-Member</td>
<td>Euro 125,-</td>
</tr>
</tbody>
</table>

VAT at 17.5% should be added for all Delegates

FENET Technology Workshops Euro 235,-

The costs for the FENET Technology Workshops cover each day two coffee breaks, lunch, and the hire of the conference rooms. The costs also covers dinner on Thursday, 13th June 2002.

* Subject to availability of free member place credits.

Payment:

Bank transfer
We will send an invoice after your registration. Please transfer the amount of money in advance of the workshops to following bank account:
Kreissparkasse Ebersberg
Marktplatz
D-85567 Grafiing b. München
Germany
Bank number: 700 518 05
Account number: 399 048

Credit Card
Please fill in details on the registration form or you can pay directly in Geroldswil with either Master Card or Visa Card. No other cards can be accepted.

Cash
You can pay in cash (Euro only) at the registration desk in Geroldswil (please make sure you have the exact amount of money).

Registration
For your registration please use the registration form at page 13. Please register separately for the NAFEMS/FENET awareness seminar on page 12.
FORMATS

NAFEMS/FENET Awareness Seminar

Wednesday, 12th June 2002

10:30 - 16:30 / 19:00

NAFEMS/FENET Awareness Seminar
Room 5

Web Based Training for Engineering Analysis

FENET Technology Workshops

Thursday, 13th June 2002

09:30 - 13:00
Workshops
Room 1
Multi Physics & Analysis
Room 2
Durability and Life Extension

14:00 - 17:30
Workshops
Room 1
Multi Physics & Analysis
Room 2
Durability and Life Extension
Room 3
Product & System Optimisation

Friday, 14th June 2002

08:30 - 12:00
Workshops
Room 1
Multi Physics & Analysis
Room 2
Durability and Life Extension
Room 3
Product & System Optimisation
Room 4
Education & Dissemination

13:00 - 16:30
Plenary Session
Room 5
Education & Dissemination
Web Based Training for Engineering Analysis

**Workshop Aims**
The workshop intends to provide delegates with an overview of emerging tools and products, which seek to provide web-based training in the area of engineering analysis. It will review a number of active projects in this field with presentations given by leading experts and will cover intended future developments. Opportunities will also be given for hands-on experience of the MOPLE Virtual Learning Centre.

**Who Should Attend**
The workshop is primarily focused towards practicing FE Analysts or Academics, who have a remit towards education and continuous professional development of staff or students within their organisation.

**Agenda**

10:30 Coffee & Registration
10:45 **Chairman’s Welcome**
   Gilbert Peffer, CIMNE, Spain
11:00 **FE Transfer: A Web Based Course for the Application of FEA in Structural Mechanics**
   P Fritzsche, FH Aargau, & J P Bersier, EIA Fribourg, Switzerland
11:30 **A Web-based Learning Exemplar Using NAFEMS Resource Materials**
   Jim Wood, Strathclyde University, Jim Thompson, University of Paisley, UK
12:00 **A Typical Case from the Practice, Explained Step by Step for Beginners: Understanding of Material Failure in a Heat Exchanger by Means of Thermal and Structural Analysis**
   Yasar Deger, Sulzer, Switzerland
12:30 Lunch
14:00 **A Multimedia Distance Learning Approach to Post Graduate Level Teaching of Finite Element Analysis in Engineering Applications**
   Ray Matela, The Open University, UK
14:30 **MOPLE Virtual Centre, an Internet Environment for Hosting Distance Learning Courses**
   Jose Luis Onate, CIMNE, Spain
15:00 **E-Learning With an industrial FE Simulation System**
   John Rance, Rockfield Software, UK
15:30 **Viable Strategies for Web-Based Training**
   Gilbert Peffer, CIMNE, Spain
16:00 **Review & Discussion**
   Gilbert Peffer, Chairman
16:30 Close & Coffee

**Optional Activity**
17:00 - 19.00 **Hands on Workshop for MOPLE Virtual Learning Environment**

This Seminar is partly funded by the EC IST Programme through the MOPLE Project.

Please register separately on page 12!
Multi Physics and Analysis (MP):

Computational Modeling of Loosely Coupled Interaction in Multiphysics Problems

In the last two workshops several topics have been identified in the area of Multi-Physics and Analysis (MPA):

- The strategies used to solve the different problems (de-coupled, loosely coupled, strongly coupled);
- The identification of two main fields of study in the field of MPA (fluid-structure interaction and thermo-mechanics);
- The continuing need for good solution algorithms and computing strategies.
- The lack of benchmarks and existence of only a small number of validated software tools.

These topics render Multi-Physics problems too complex and wide ranging to study as a single phenomenon, such that it is proposed to separate the study of MPA problems into two workshops and study one single topic in each, namely:

- Loosely coupled analysis.
- Strongly coupled analysis.

This strategy will enable a highly focused area for discussion for the attendees of each of the workshops.

Workshop Objectives

The aim of the workshop is to identify and discuss recent advances in loosely coupled problems. Accordingly, the specific objectives of the workshop are:

- To define a validation and verification strategy for loosely coupled simulation methods and software.
- To identify and select benchmark problems incorporating experimental results for validation of loosely coupled numerical simulation codes.
- To select existing and new numerical solution procedures for loosely coupled analysis using FEM.
- To identify industrial problems where loosely coupled analysis is needed.

Candidate contributors to the Workshop are:

- Developers of FEM software for coupled problems and also developers of tools for coupling together specific existing software tools for each of the phenomena.
- Engineers working in multidisciplinary problems.
- Experimentalists contributing examples and data for validation of multidisciplinary analysis codes.

Workshop Chairman

If you would like to make a presentation or contribute to this workshop, please contact

Prof. Eugenio Onate
Tel: +34-932057016
Fax: +34-934016517
E-mail: onate@cimne.upc.es

Deadline for receiving a ½ page abstracts: 31st May 2002
Durability and Life Extension (DLE):

FE Issues Related to Structural Integrity (Fracture, Fatigue, Creep)

The first two workshops on the FENET technology theme of Durability and Life Extension have identified several topics related to structural integrity which are common to several industry sectors. This workshop will focus on the FE analysis of fracture, fatigue and creep problems, and will identify further workshop topics on the theme of structural integrity.

The main objectives of this workshop are:

• To provide an overview of the current state of FE technology in applications related to structural integrity, particularly in fracture, fatigue and creep.
• To provide a discussion forum to identify the need for FE benchmarks in structural integrity.
• To identify specialist workshop topics in structural integrity.

Invitation

Presentations are invited on topics related to the main theme of FE analysis of structural integrity problems (fracture, fatigue and creep). In particular, presentations identifying difficulties in FE analysis, benchmarks and case studies are welcome.

Workshop Chairman

If you would like to make a presentation or contribute to this workshop, please contact

Prof. A.A. Becker
Tel: +44 (0) 115 951 3791
Fax: +44 (0) 115 951 3800
E-mail: a.a.becker@nottingham.ac.uk

Deadline for receiving abstracts: 25th May 2002
Product and System Optimization (PSO):

The Use of Evolutionary Algorithms

The specific technology we are going to look at in depth is the use of Evolutionary Algorithms in the context of Product and System Optimization. The plan has been to invite companies who offer this technology or who work with it, each to present their view in the contest of a round-table in order to target the following objectives:

• A general illustration of Evolutionary Algorithms applied to Product and System Optimization.
• The acquisition of requirements and contribution for the preparation of “best practice” document.
• Suggestion from the company/organization which can be regarded as some form of validation that could be adopted as a “benchmark” situation.

Preliminary agenda for Thursday, 13th of June 2002

14:00 Introductions and outline of workshop
14:10 Survey of Evolutionary Algorithms
   Professor Carlo Poloni, University of Trieste
14:30 Round Table on: “when and how” Evolutionary algorithms should be used
17:00 Session summary

Preliminary agenda for Friday, 14th June 2002

08:30 Report on Copenhagen meeting
   Professor Carlo Poloni, University of Trieste
09:00 Requirements capture for “best practice” guidelines in Evolutionary Algorithms
10:40 Selection of validation benchmarks
11:50 Conclusion

Workshop Chairman

If you would like to make a presentation or contribute to this workshop, please contact

Prof. Grant Steven
   Tel: +44 (0) 191 374 3935
   Fax: +44 (0) 191 374 2550
   E-mail: grant.steven@durham.ac.uk

Prof. Carlo Poloni
   Tel: +39 0406763808
   Fax: +39 0406763812
   E-mail: poloni@univ.trieste.it

Deadline for receiving abstracts: 31st May 2002
Education & Dissemination (E&D):

A Proposed User Survey and Possible Approaches to Reducing Barriers to the Effective Use of FEA in Industry

Following on from the Copenhagen workshop, where the various barriers to the effective use of finite element analysis were identified and discussed, this second workshop will consider methods of reducing some of these barriers.

It was agreed at the Copenhagen workshop that a questionnaire be prepared to enable the views of a much wider representative section of users to be established, given the key importance of this issue to the FENET community. The design of a web-based questionnaire will be discussed and it is anticipated that a preliminary survey of the views of FENET members, using the questionnaire, will be available for examination.

Topics examined during the workshops will be wide-ranging and will include:

- a review of some recent software developments to provide new functionality, improved ease of use, support for casual users and designers
- training initiatives to improve uptake of analysis tools, including web-based initiatives

It was clear from the Copenhagen meeting that two issues in particular present barriers across a number of business sectors:

- the integration of the analysis and simulation function into the wider business enterprise
- materials modelling and data

A preliminary examination of these issues will made, although it is likely that both will form the basis of subsequent workshops.

Workshop Chairman

If you would like to make a presentation or contribute to this workshop, please contact Dr. Jim Wood

Tel: +44 (0) 1505 614593
Fax: +44 (0) 1505 614593
E-mail: jwood@mecheng.strath.ac.uk
TRAVEL INFORMATION

Zurich, Switzerland

Zürich is conveniently located at the heart of Europe. Nestling beside Lake Zürich with stunning views of the Swiss Alps, this exciting city is just 10 minutes away from its international airport. In Zürich everything is that bit smaller - but with so many things to do, this simply means you have all the more time for an unforgettable visit.

information:
www.zurichtourism.ch

How to find Geroldswil

Zurich by plane
Regular scheduled flights from every continent and most countries and major cities of the world land at Zürich’s international airport. A train service every quarter of an hour whisks passengers to the city center in just ten minutes; the taxi journey takes about twenty minutes.

information:
www.uniqueairport.com

Zurich by train...
Over a thousand trains halt daily at Zürich’s centrally located main railway station. Direct and frequent services to all the large Swiss cities and major European destinations guarantee a pleasant journey.

Zurich by car...
A well developed motorway network links Zürich with other large Swiss cities and neighboring countries, ensuring shortest possible journey times.

Coming from the east of Switzerland
• Highway N1, Nordring Bern/ Basel
• Exit Weiningen
• Centre of Geroldswil on the righthand side

By train (Zurich main station)
Public means of transport from Zurich main train station (about 30 min.)
• Train „S12“ or „S3“ direction Dietikon/Baden (12 min.)
• Get off the train in Dietikon
• Bus „301“ or „304“ opposite the train station (9 min.)
• Get off the bus in Geroldswil centre

By car
Coming from Zurich or Basel
• Highway N1, exit Dietikon/ Spreitenbach
• Direction Oetwil an der Limmat
• Centre of Geroldswil on the lefthand side

Seminar and workshop location: Hostellerie Geroldswil
Am Dorfplatz • CH-8954 Switzerland
phone +41 - (0) 1 - 747 87 87 • fax +41 - (0) 1 - 747 88 88
e-mail: info@hostellerie-geroldswil.ch
Internet: www.hostellerie-geroldswil.ch

You will find the Hostellerie right opposite the bus station. In the same building where also the Kantonbank of Zurich is located.
ACCOMODATION INFORMATION

Hotels in Geroldswil

Please book your hotel room by yourself as soon as possible. We have optioned rooms for attendees until 20th May 2002 in the Hostellerie Geroldswil and Hotel Sommerau Ticini Dietikon (shuttle service). We recommend to stay in one of the two hotels.

Please use the keyword „NAFEMS/FENET“ when you book your room.

1) Hostellerie Geroldswil (seminar and workshop location)
Travel information see page 10!
single room:
125 SFr. (about 85,- Euro) / night incl. breakfast
double room:
180 SFr. (about 122,- Euro) / night incl. breakfast per room
Hostellerie Geroldswil
Am Dorfplatz • CH-8954 Switzerland
phone +41 - (0) 1 - 747 87 87 • fax +41 - (0) 1 - 747 88 88
e-mail: info@hostellerie-geroldswil.ch
Internet: www.hostellerie-geroldswil.ch

For other hotels in or around Geroldswil please contact the Hostellerie Geroldswil.

2) Hotel Sommerau Ticini Dietikon
Please contact via Hostellerie Geroldswil
single room:
125 SFr. (about 85,- Euro) / night incl. breakfast
double room:
180 SFr. (about 122,- Euro) / night incl. breakfast per room
(recommended for attendees travelling by car)
Hotel Restaurant Sommerau Ticini Dietikon
Zürcherstrasse 72 • CH-8953 Dietikon
How to find Hotel Sommerau:
By plane (Zurich Kloten) / By train
Please use travel information for Hostellerie Geroldswil.
But leave the train at Dietikon — from the trainstation, turn left and follow the „Poststrasse“ to the highway „Zürcherstrasse“ (5-minute-walk)
By car
Highway Bern/Basel — direction Baden — take exit Urduff Nord — follow the sign Dietikon-Centre — after 400m, you will find the Hotel left-hand side — you can use the garage at no charge

Hotel 1)
Workshop and seminar location

Hotel 2)
I wish to attend the NAFEMS/FENET seminar “Web Based Training for Engineering Analysis”
Wednesday 12th June 2002, Zurich, Switzerland

NAFEMS & FENET Members Free *
Non-Member £75     Euro 125

(VAT at 17.5% should be added for all Delegates)
Alternatively you may register online at www.nafems.org
* Subject to availability of free member place credits.

Personal details
Title _______________  Initials ___________________   Family Name ______________________________________________
Organisation ____________________________________________________________________________________________________
Address ____________________________________________________________________________________________________
____________________________________________________________________________________________________
____________________________________________________________________________________________________
Tel. No. _________________________________________   Fax. No. __________________________________________________
e-mail: _________________________________________

Payment Details (if applicable)

Credit Card

☒ Amex    ☐ Mastercard    ☐ Visa

Authorized name ________________________________

Card Number

Expiration Date _______________________________ Company P O. ______________________________________________

Signature _________________________________

Please return to:
Anne Creechan
NAFEMS Ltd, Whitworth Building, Scottish Enterprise Technology Park, East Kilbride,
G75 0QD, United Kingdom
Tel: +44 (0) 1355 22 56 88   E-mail: anne@nafems.org   Fax: +44 (0) 1355 24 91 42   www.nafems.org
I would like to register for the FENET Workshops
Thursday, 13th June and Friday, 14th June 2002 in Geroldswil/Zurich, Switzerland
Attendee Costs: 235,- Euro

I will attend the following workshops:

### Thursday, 13th June
- AM: Multi Physics & Analysis
- AM: Durability & Life Extension
- PM: Multi Physics & Analysis
- PM: Durability & Life Extension

### Friday, 14th June
- AM: Multi Physics & Analysis
- AM: Durability & Life Extension
- PM: Education & Dissemination
- PM: Education & Dissemination

Payment Details
- I will pay:  
  - ✣ after invoice  
  - ✣ Cash  
- Credit Card:  
  - ✣ Mastercard  
  - ✣ Visa  

Authorized name: ____________________________________________
Card Number: ........................................................................
Expiry Date: __________________________ Company P O. ________________________________
Signature: _________________________________________

- I am interested in the FENET project (please specify your RTD Area / Industry Sector)
  - RTD Area:  
    - ✣ Durability & Life Extension  
    - ✣ Multi Physics & Analysis  
    - ✣ Education & Dissemination
  - Industry Sector:  
    - ✣ Land Transport  
    - ✣ Aerospace  
    - ✣ Civil Construction  
    - ✣ Marine and Offshore  
    - ✣ Consumer Goods  
    - ✣ Biomedical  
    - ✣ Process and Manufacturing  
    - ✣ Power and Pressure Systems

Personal details
Title: _______________ Name: _______________________________________________________________________________________
Company: _______________________________________________________________________________________________________
Address: _______________________________________________________________________________________________________
Tel. No.: __________________________ Fax. No.: __________________________
e-mail: __________________________ Date, Signature: __________________________