NAFEMS White Paper

Consultation on Engineering Simulation Skills Management

March 2009

Introduction

This report outlines the findings from the consultation undertaken by NAFEMS during 2008 on Engineering Skills Management. The objective of the consultation was to enable NAFEMS to understand more fully the current and desired processes for managing Engineering Simulation skills within industrial organisations that make considerable use of these technologies. This was being done in the context of determining what actions NAFEMS could usefully undertake in this area that would benefit NAFEMS' industrial members.

The Consultation Process

The consultation involved two whole day management forums (UK and Germany), discussions with NAFEMS regional steering committee members (from France, North America and Scandinavia) as well as numerous individual discussions. A number of participants were also asked to more formally prioritise some of the potential actions that NAFEMS could undertake.

The Participants

Representatives from the following companies participated in the consultation process:

- Airbus,
- Astrium,
- Atomic Weapons Establishment,
- Bayern-Chemie,
- BMW,
- Cummins Turbo Technologies Ltd.,
- Deutsches Institut für Bautechnik,
- E.ON-UK,
- EADS,
- Festo,
- Grundfos,
- Hitachi Power,
- Hutchinson,
- Jaguar Land Rover,
- Kohler Mira Ltd,
- Messier Dowty,
- National Physical Laboratory,
- Nexia Solutions,
- Norut,
- Ove Arup Partnership,
- Pall Aerospace,
- PSA Peugeot Citroën,
- Qinetiq,
- Renault,
- Rolls-Royce Aerospace,
- Rolls-Royce Marine,
- Saab,
- Schneider Electric,
- Selex Sensors and Airborne Systems Ltd.,
- Siemens,
- SNECMA,
- ThyssenKrupp Marine Systems,
- Valeo,
- Volkswagen,
- Volvo

The Discussions

NAFEMS sought feedback from the participants regarding the current methodologies used to assess the competence of individuals performing engineering simulation. In the larger organisations there were a wide range of users both in-house and contractors. To provide a focus for the discussions users were categorized in the range from expert to non-specialist and by another categorization from in-house (or local) to remote. From this categorization four generic groups of users were defined, namely; Local Experts; Local Non-specialists; Remote Experts; and Remote Non-specialists (see Figure 1).

The discussions revealed that participants were generally content with the competence of their in-house experienced users (Local Experts) and, in many cases, their experienced contractors (Remote Experts). However the non-specialist users and the remote users did not have their competency assessed to the same level, although a few organisations did have some strategies to address this issue.

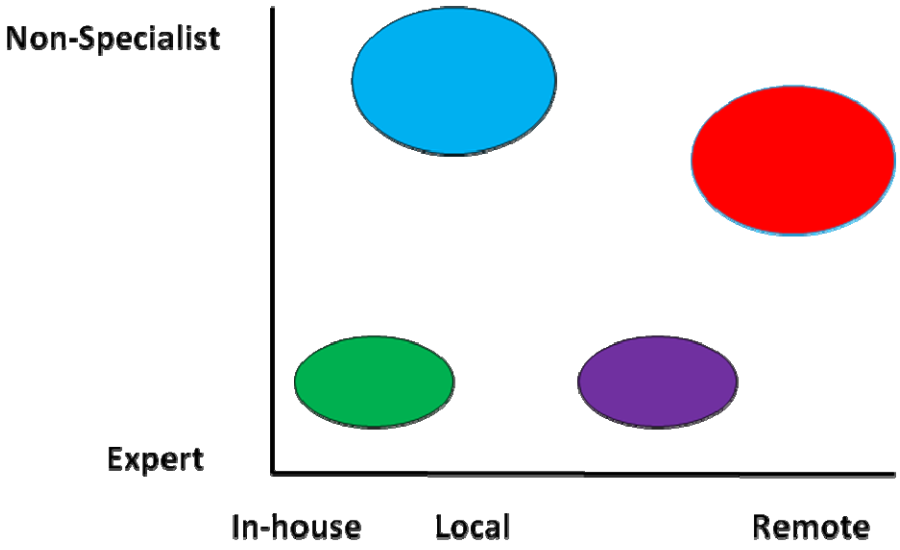

Figure 1: Categories of user

NAFEMS further sought feedback on what skills were required in the area of engineering simulation. A list of skills was generated from these discussions. Virtually all of them were generic skills, i.e. not related to a specific application. These skills could be categorised into the following areas; technology; tools; process; and people skills.

Possible NAFEMS actions

NAFEMS proposed a number of actions that it could undertake that may assist companies in their development of skills in this area. These were:

- Define a Modular Set of Learning Outcomes
- Provide Training Material for each Module
- Deliver the Training for each Module
- Examine/Certify Learners
- Accredit Training Providers

Following discussion around these proposed actions a further possible action was identified, namely:

- Provide information about third party training courses

After further consideration this last possible action was split into two components; information about third party training courses which might deliver the learning outcomes; and information about third party training courses which do deliver the learning outcomes.

Also the possible action to provide training courses was complemented by a further possible action to provide training courses for those modules which are not supported by other suppliers.

Priorities from Industrial Companies

60% of the above companies completed a questionnaire which asked them to rate the importance to their organisation of each of the above possible NAFEMS actions. The actions were rated in order of importance as follows:

NAFEMS should

- develop and publish a modular set of learning outcomes
- provide information about third party courses which do deliver the learning outcomes
- accredit training providers
- develop training material for these modules
- provide training courses for those modules which are not supported by other suppliers
- examine and provide certificates for the learners
- provide information about third party courses which might deliver the learning outcomes
- provide training courses for these modules

75% of the respondents said they may be prepared to commit time to help direct and deliver the priority actions. 60% of the respondents said they may be prepared to contribute financially to a project to deliver the priority actions.

Conclusions

There is a clear desire from industry to have an international standard set of learning outcomes defined. NAFEMS is regarded as the right type of organisation to manage this activity. Also high in the list of priorities is the provision of information on third party courses which deliver the learning outcomes. In practice this will mean some form of accreditation of the courses provided by training providers.

Beyond these, the next priority is to develop training material. This would require considerable investment and would probably be achieved over an extended period of time. Examination and certification of the learners was rated as a lesser priority although even here approximately 50% of respondents rated it useful or beneficial to their company.

NAFEMS now needs to work with industrial partners to develop one or more action plans in order to deliver one or more of the above proposals.