introducing

PSE
COMPETENCY TRACKER

Online Competency Framework
and Management System

NAFEMS

PSE
COMPETENCY TRACKER

Online Competency Framework and Management System for Simulation Engineers

The PSE Competency Tracker is an online system for tracking and measuring Professional Simulation Engineer Competencies. The PSE Competency Tracker allows users to browse the PSE Competencies online and amend their competency record throughout their career. Companies can use the PSE Competency Tracker to track and manage the competencies of their individual staff and pooled workforce.

- Competency Framework for Simulation Engineers

- Educational Resource Guide

- Online Competency Management & Tracking System

PSE competencies

Contained within the PSE Competency Tracker, PSE Competencies are a comprehensive list of standard competencies in the Analysis and Simulation industry. Encompassing thousands of statements, the competencies are subdivided into 26 technical areas. For each technical area, a list of suggested educational resources is provided.

PSE Competencies:

- offer a guide to self-learners in Analysis and Simulation
- provide a useful resource for education and course development
- provide a standard set of competency statements

measuring & tracking competency

Using the online PSE Competency Tracker individuals can plan and monitor their development as a simulation engineer, tracking their competencies as they are achieved.

Companies can do the same for their staff, creating a database of the combined simulation skills of their workforce.

key features

for individual analysis & simulation engineers

- Access and browse the detailed list of competencies, sorted by level of competency
- Identify relevant educational resources
- Measure current competency and generate a detailed personal report identifying areas for development
- Track progress throughout career*
- Export a PDF report to support your PSE Certification application

for team managers

- Identify staff possessing specific competencies
- Identify gaps in competency and training requirements
- Assemble an ideal project team with what-if analysis*

for technical leaders & human resource managers

- Define competency profiles for specific job roles*
- Define competency objectives*
- Track staff progress
- Identify training and recruitment needs
- Assist with workforce and succession planning

*under development

benefits

for individuals….

- **Identify competencies relevant to your work**

- **Clearly evaluate personal competency level**

- **Identify relevant educational resources**

- **Identify relevant codes of practice**

- **Plan and achieve PSE Certification**

- **Reach your professional objectives**

for companies….

- **Identify competencies which are relevant to your organisation**

- **Demonstrate a commitment to excellence internally and to external partners**

- **Maintain a high level of motivation of technical staff**

- **Identify and retain key technical resources**

- **Improved staff development**

- **Improved recruitment and succession planning**

- **Increased quality, efficiency and reduced risk**

defining competencies

The PSE Competency Tracker defines the competencies that a good analysis and simulation engineer should possess. These competencies have been peer-reviewed over several years by NAFEMS' technical working groups and external experts and create a new standard of competency for analysis and simulation.

Competencies are defined for twenty-six technical areas, incorporating over 1400 individual competency statements. This enables a clear assessment of individuals' competency level.

PSE Modules include:

- Core Finite Element Analysis
- Mechanics, Elasticity and Strength of Materials
- Materials for Analysis and Simulation
- Fatigue
- Flaw Assessment and Fracture Mechanics
- Nonlinear Geometric Effects and Contact
- Beams, Membranes, Plates and Shells
- Dynamics and Vibration
- Optimisation
- Plasticity
- Core Computational Fluid Dynamics
- Thermo-Mechanical Behaviour
- Management General

- Verification and Validation
- PLM Integration and CAD-CAE Collaboration
- Simulation Process & Data Management
- Buckling and Instability
- Multi-physics Analysis
- Composite Materials and Structures
- Fundamentals of Flow, Mass and Heat Transfer
- Creep and Time-Dependency
- Multi-Scale Analysis
- Probabilistic Analysis
- Noise, Acoustics and Vibro-Acoustics
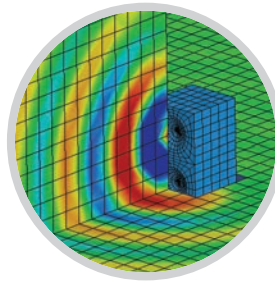- Electromagnetics
- Multi-body Dynamics

PSE Competencies are for simulation engineers at every level – from those new to the field to those with several years of experience.

Specific to engineering analysis and simulation, PSE Competencies are not specific to any particular software package – creating a benchmark of competency for all simulation engineers.

With more than 1400 individual statements, the competencies are detailed and comprehensive to:

- enable a clear assessment of an individual's competency level

- carefully encompass important aspects of each area of competency

- aid personal development

The contained competencies can be developed through on-the-job learning as well as training courses and formal post-graduate courses.

educational resources

Links to educational resources are provided within the PSE Competency Tracker to assist individuals in achieving the competencies. Managers may also wish to use the list of educational resources to improve training and staff development.

More than 400 suggested educational resources are listed including books, articles, codes of practice, etc., that are useful to develop the competencies described in the Tracker. For each resource, the corresponding list of competencies is provided.

competency tracking & management

A key feature of the PSE Competency Tracker is the ability to easily track and manage the PSE competencies of individuals and pooled workforces.

The PSE Competency Tracker web based system allows the skills that are developed by individuals to be tracked and logged. This can then be used:

- by individuals to plan and monitor their career development as a simulation engineer

- by companies to do the same for their staff and to keep a database of the combined simulation skills of their workforce

NAFEMS members

All NAFEMS members have free access to the PSE Competency Tracker including its tracking and management functionality.

The PSE Competency Tracker can be used by individual employees to plan, track and manage their competency level.

Managers can track and manage individual and pooled workforce competency records enabling progress to be monitored, training and recruitment needs to be identified, and assist with workforce and succession planning.

customised

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NAFEMS members have online access to the standard PSE Competency Tracker. We recognise, however, that many organisations may have requirements beyond an off-the-shelve competency management system.

The PSE Competency Tracker can be highly customised on request. To discuss your organisation's particular requirements, please contact pse@nafems.org

The PSE Competency Tracker can be used to support your application.

PSE (Professional Simulation Engineer) Certification allows engineers and analysts within the international simulation community to demonstrate competencies acquired throughout their professional career. Independently assessed by NAFEMS, the international association of the engineering analysis, modelling and simulation community, the certification enables individuals to gain recognition for their level of competency and experience as well as enabling industry to identify suitable and qualified personnel.

The Certification incorporates an extensive range of competencies across various analysis types. It is multi-level, supporting the philosophy of lifelong learning and continuous professional development. PSE Certification is suitable for both experienced engineers/analysts and those in the early stages of their professional career.

Providing a standard of competency for the international simulation community, successful applicants receive recognition as a Professional Simulation Engineer (PSE) at Trainee, Standard or Advanced Level. As competencies are developed, PSEs will advance to the next level.

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www.nafems.org/pse