



The European Materials Modelling Council

Call for partnership

NMBP-09-2018: Accelerating the uptake of materials modelling software (IA)



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- Looking for partners interested in implementation of special materials models into applications for industry
- ➔ Offering:
 - ❖ Rich experience with project management, modelling & simulations in academia and industry
 - ❖ Expertise areas:
 - ▶ metallic materials in elastic and elasto-plastic domains,
 - ▶ viscoelastic materials,
 - ▶ ceramics,
 - ▶ lubricants



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Project proposal

Subject:

🔧 Implementation of *special* materials (*special steels, elastomers, ceramics, lubricants, ...*) models to industrial applications

Objectives:

- 🎯 Protocol for characterisation of *special* materials
- 🎯 Module for *special* materials databases (ODIN, MATDB, ...)
- 🎯 Simulation tool for virtual tests in operational environment (Open Source, Cross-platform)

Innovative aspects:

- 💡 Processes for characterisation of *special* materials
- 💡 Cross-platform simulation tools for virtual tests of *special* materials
- 💡 Web services for simulations of *special* materials in operational environment



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Expected Results & Impact

Milestones/Expected Results

- ◆ Report on state of the art of materials characterisation, modelling and simulation
- ◆ Validation of characterisation protocols and materials models in laboratory conditions (TRL 4)
- ◆ Validation of virtual materials tests in relevant environments (TRL 5)
- ◆ Demonstration of simulation applications in relevant environments (TRL 6)
- ◆ Prototype of web application for simulations of materials behaviour in operation environment (TRL 7)
- ◆ Dissemination of results (scientific publications, database, web apps, ...)

Expected Impact

- ★ Accelerating of product development process by availability of materials characterisation for simulations and demonstrations of conformity
- ★ Availability of special materials characterisation for academia, RTOs and industry (stronger cooperation)
- ★ Reactivity of software development companies to requests from various stakeholders



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Prior art

Examples of existing simulation tools and special materials databases

- 🏭 Safran's design tools for [aeronautical applications](#)
 - ✂ Design practices (internal documents)
 - ✂ Computer codes for the design of special rolling bearings
- 🏭 SKF's [calculations tools](#)
 - ✂ [BEAST](#)
 - ✂ [Seal Designer](#)
 - ✂ [Relubrication intervals](#)
- 🏭 Schaeffler's calculations tools
 - ✂ [BEARINX](#)
- 🏭 NTN-SNR simulation software
 - ✂ [Sharclab](#)



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Project partners



Coordinator with experience in project management, modelling & simulation tools, academia, software development, industry



Industrial partners with specific needs in terms of materials characterisation, modelling and simulations



Universities, RTO, ..., owners of special materials models validated in laboratory conditions



Software development SMEs interested to provide support with implementation of various modules