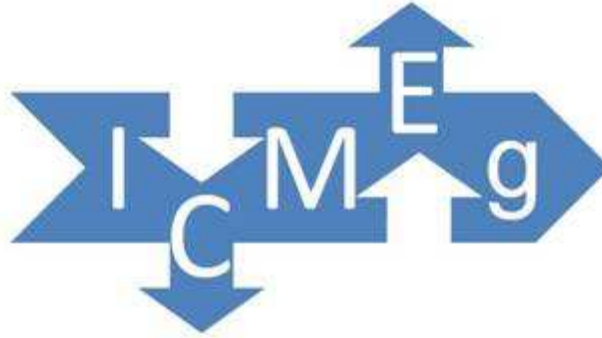


Integrated **C**omputational **M**aterials **E**ngineering expert **g**roup

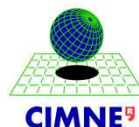


a brief overview of a new
European coordination action

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ICME

Integrated Computational Materials Engineering - ICME - uses a variety of software tools in a simultaneous or consecutive combination. Major developments in the area of ICME by now have successfully been driven essentially by academic and industrial users of simulation software.

Even though ICME is a new and powerful discipline, coupling of different software tools is still in its infancy. If such a coupling is realized at all, major issues are significant efforts in terms of time and workforce to be spent when using the ICME approach.

Once established, an open and easily accessible formulation of a global standard for information exchange in ICME settings will

- significantly facilitate the exchange of data between different tools
- create new options and functionalities of the present tools
- allow for easy integration between commercial and academic approaches
- provide the pathway for life-cycle modeling of components/products
- allow for global optimisation of process chains
- stimulate many further new developments



The **ICMEg** project

The Group

ICMEg – the Integrated **C**omputational **M**aterials **E**ngineering expert **g**roup – aims at developing a global open standard for information exchange between the heterogeneous varieties of numerous simulation tools. **ICMEg** is open to anybody willing and capable to contribute.

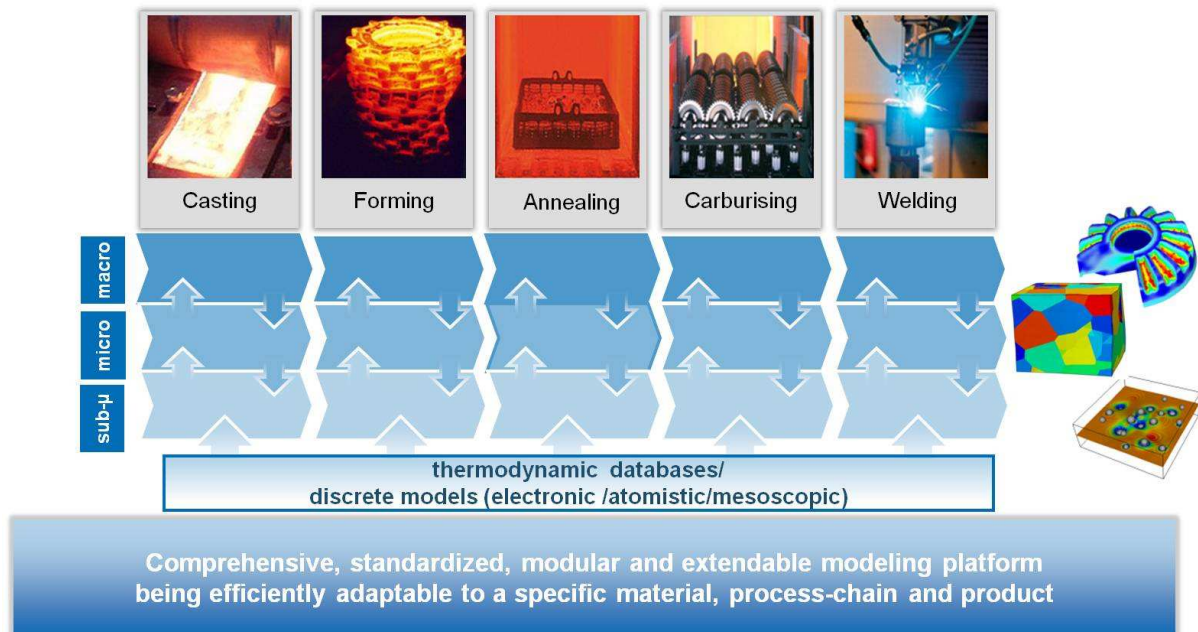
The initial nucleus for ICMEg is the **ICMEg consortium** being funded by the European Commission. It comprises 11 partners from 6 European countries. The partners are academic institutions, SME and private non-profit software providers from the areas of computational materials modeling and simulation of materials processing. Each of them individually already has initiated own platform strategies towards ICME. To account for the global approach being taken by ICMEg, the consortium strongly interacts with a number of associated partners around the globe especially from the US, Japan and India.



The ICMEg consortium

The Vision

The vision of **ICMEg** is a new strategy of materials and process development. In this strategy a variety of academic and commercial simulation tools – present and future – can be easily combined across different process steps and also bridging different length scales. This “plug & play” type architecture will be based on an object oriented, standardized information exchange:

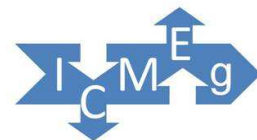
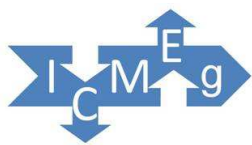


The Mission

ICMEg will build up a scientific network of stakeholders interested in boosting ICME into industrial applications. The stakeholders will benefit from sharing knowledge and best practice. A deeper understanding between the different communities of materials scientists, IT engineers and industrial users will thus be promoted.

The **first objective** of **ICMEg** is to establish and to maintain a network of contacts including

- simulation software providers around the world
- governmental and international standardization authorities
- ICME type users of simulation software
- different associations in the area of materials and processing
- academic developers of simulation software



The **second objective** of ICMEg then is to

- stimulate knowledge sharing in the field of multiscale materials design
- define an ICME language in form of an open and standardized communication protocol
- communicate this standard worldwide to make it widely accepted
- discuss and to decide about future amendments to the initial standard
- establish a legal body for a sustainable further development

The Roadmap

The European ICMEg project has officially been launched early October 2013. Within a three years period the ICMEg consortium aims at

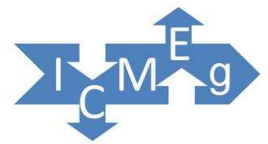
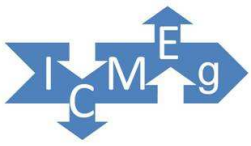
- organizing two international **workshops**
- editing two **books** on (working titles):
 - „Directory of software providers for ICME“
 - „Software standards for successful ICME“
- specifying **standards** for information exchange in ICME settings
- founding an **association** of software providers for ICME

The **ICMEg consortium** will inform, invite and network anybody willing and capable of contributing to the discussions. Spreading the information about ICMEg activities will proceed via mailing lists, during conferences, via websites and social media, via publications like the present article and other suitable information channels.

The first **workshop** is essentially meant to create and to establish an initial network of providers for software solutions for ICME. The major result of this first workshop will be a comprehensive and thematically structured overview about existing models, solutions and stakeholders in the field and will be published as a **book**.

The major scope of ICMEg is to generate a **global and open standard** for information exchange in ICME settings. The expertise of a single institution – however – cannot cover all aspects to be considered when elaborating suitable **standard** formulations for the heterogeneous variety of models and tools. A collective and global effort of different communities thus is mandatory.

This collective effort will be initiated and further moderated by the **ICMEg consortium**. With respect to the collective discussion, a **forum** will be established and maintained on the ICMEg website (www.icmeg.eu). The discussions in this forum will be stimulated and moderated by the members of the ICMEg consortium, its international advisory committee and other volunteers.



The results of respective discussions - in the frame of a full consensus process open to all interested and qualified parties - are eventually expected to evolve into a “de facto standard” being agreed by a large number of stakeholders. Initial standard formulations will be discussed and reviewed in the **second workshop** and be documented in a **further book**. The **association** to be founded will assure a sustainable further development of the initial standard formulations after the end of the ICMEg project. The de-facto standard may and will eventually be conveyed into a formal legal standard at a later stage by involving international standardization bodies.

It is obvious that the vision of ICMEg can only be reached in a global, collective and collaborative effort. This effort not only has to integrate models and tools, but especially people, thus:

**please feel
cordially invited and
even strongly encouraged
to join and to support this global effort!**

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