

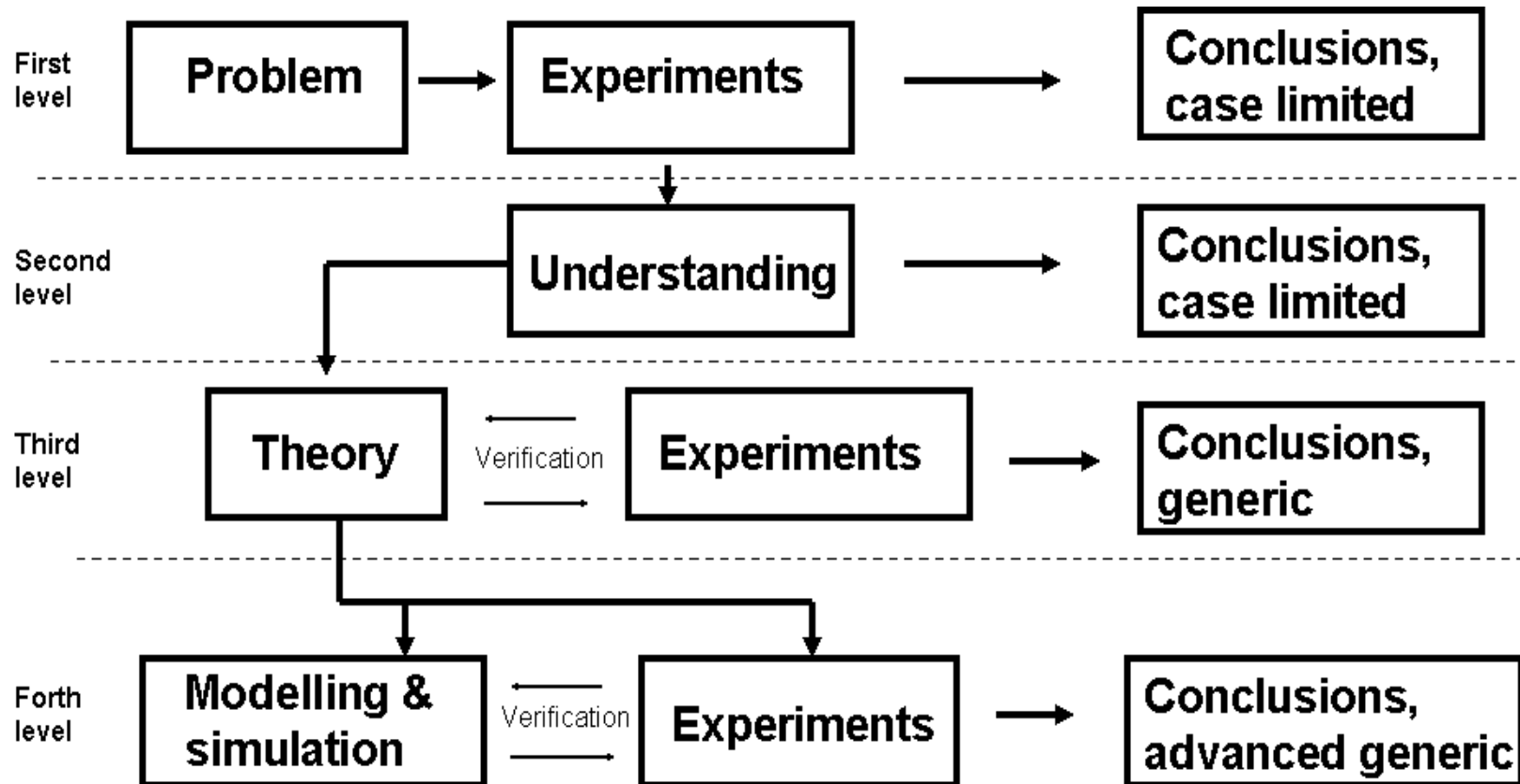
Materials modelling research in VTT

Multiscale Modelling and Design for Engineering Application

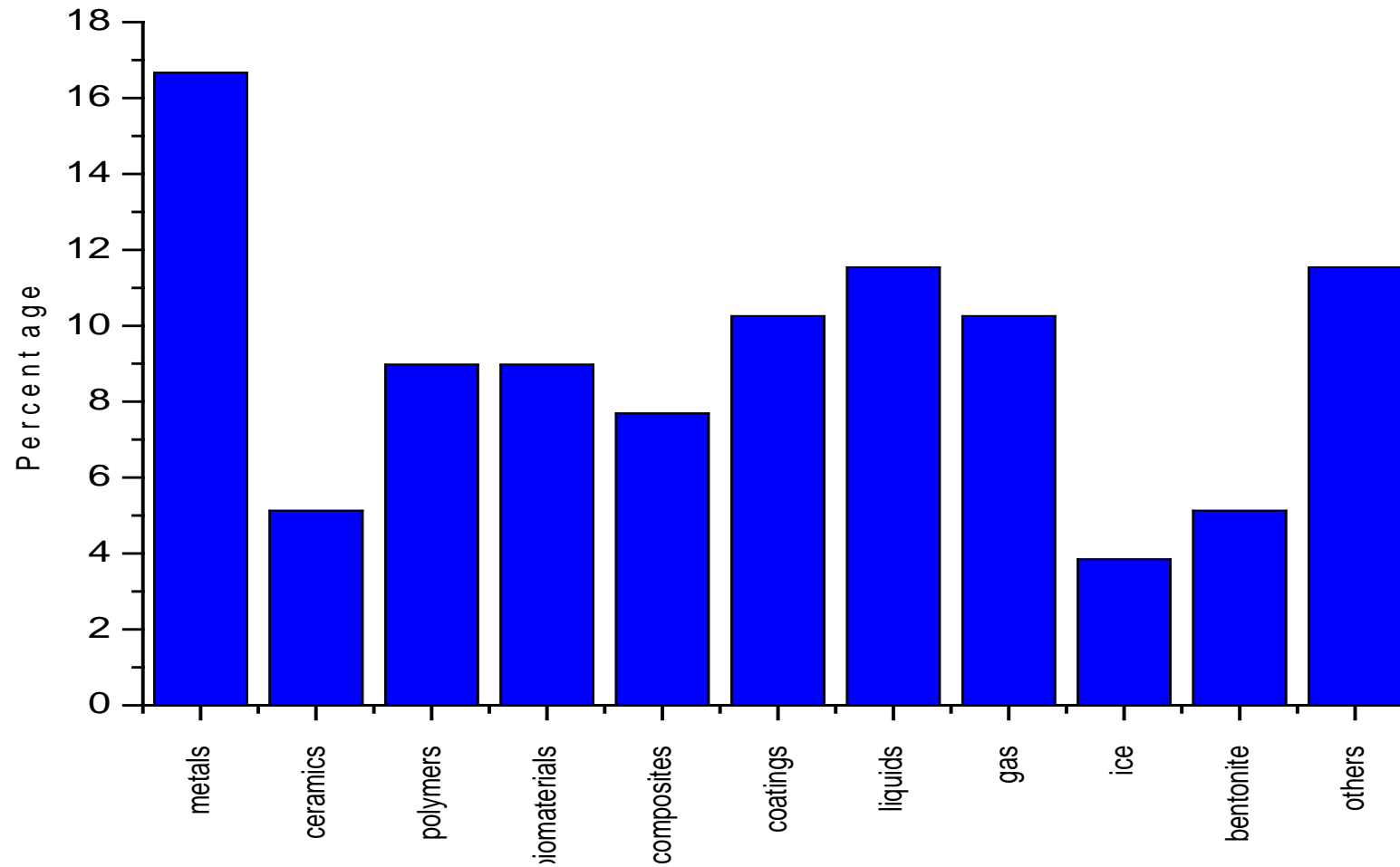
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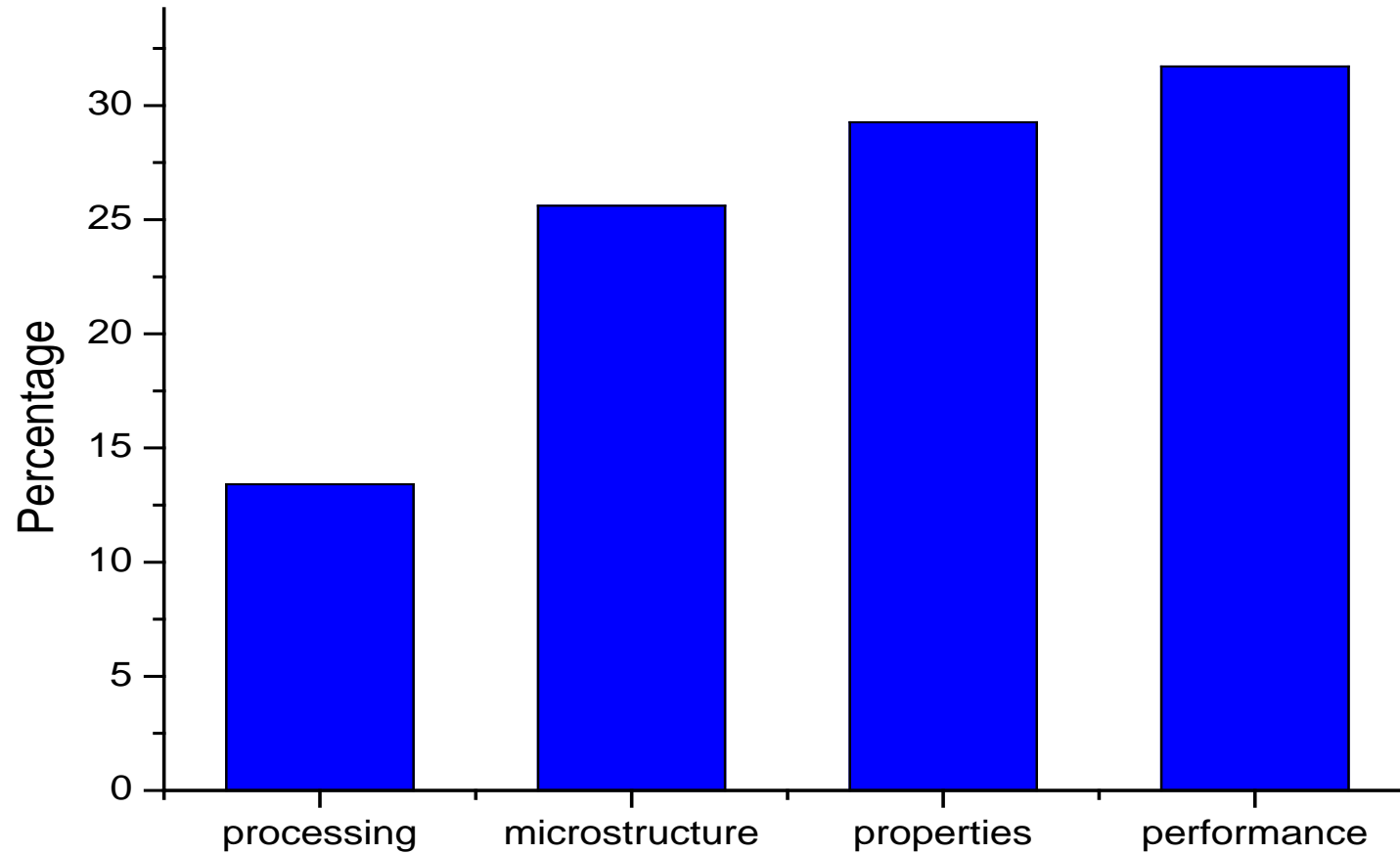
Modelling and its context



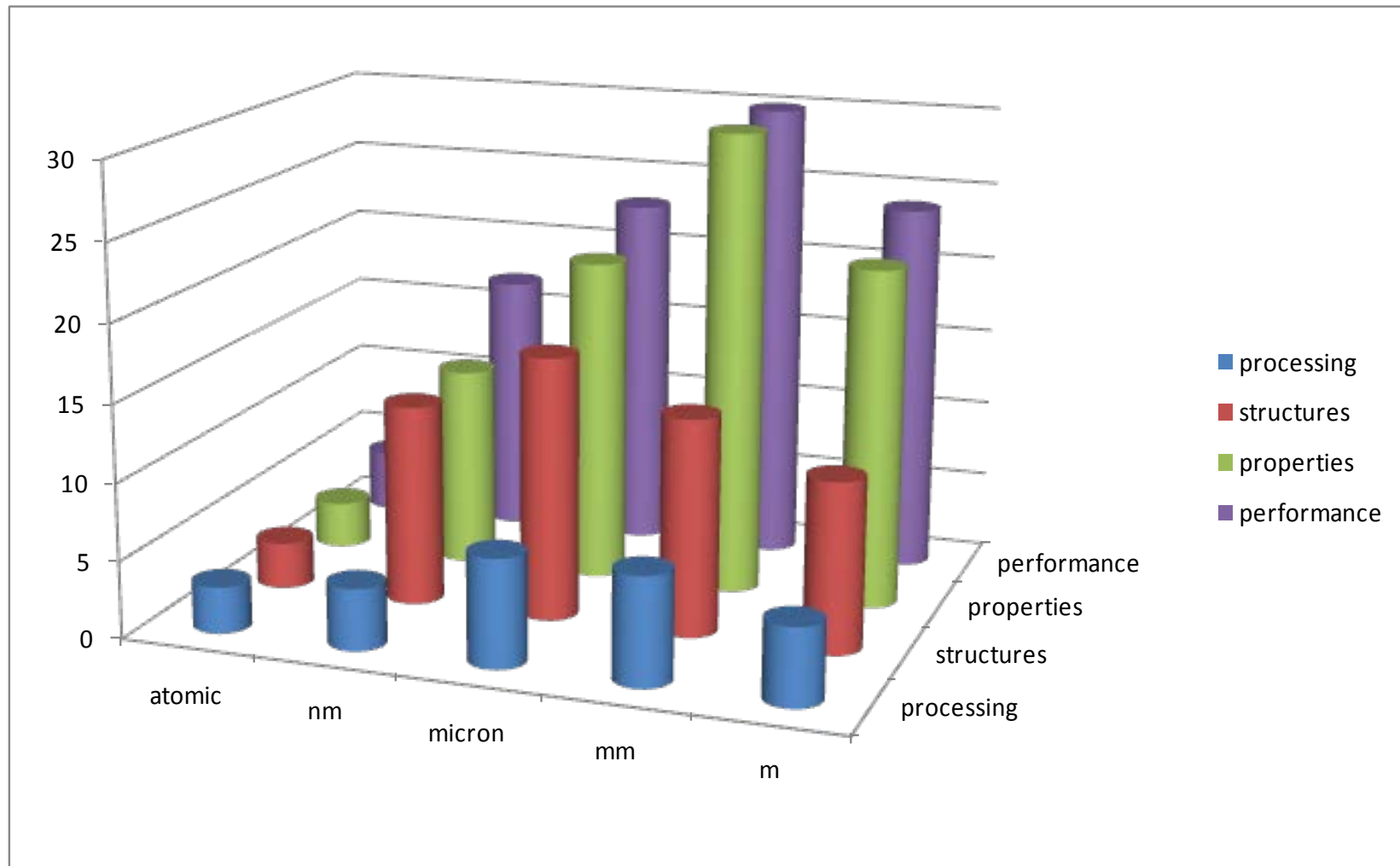
Materials



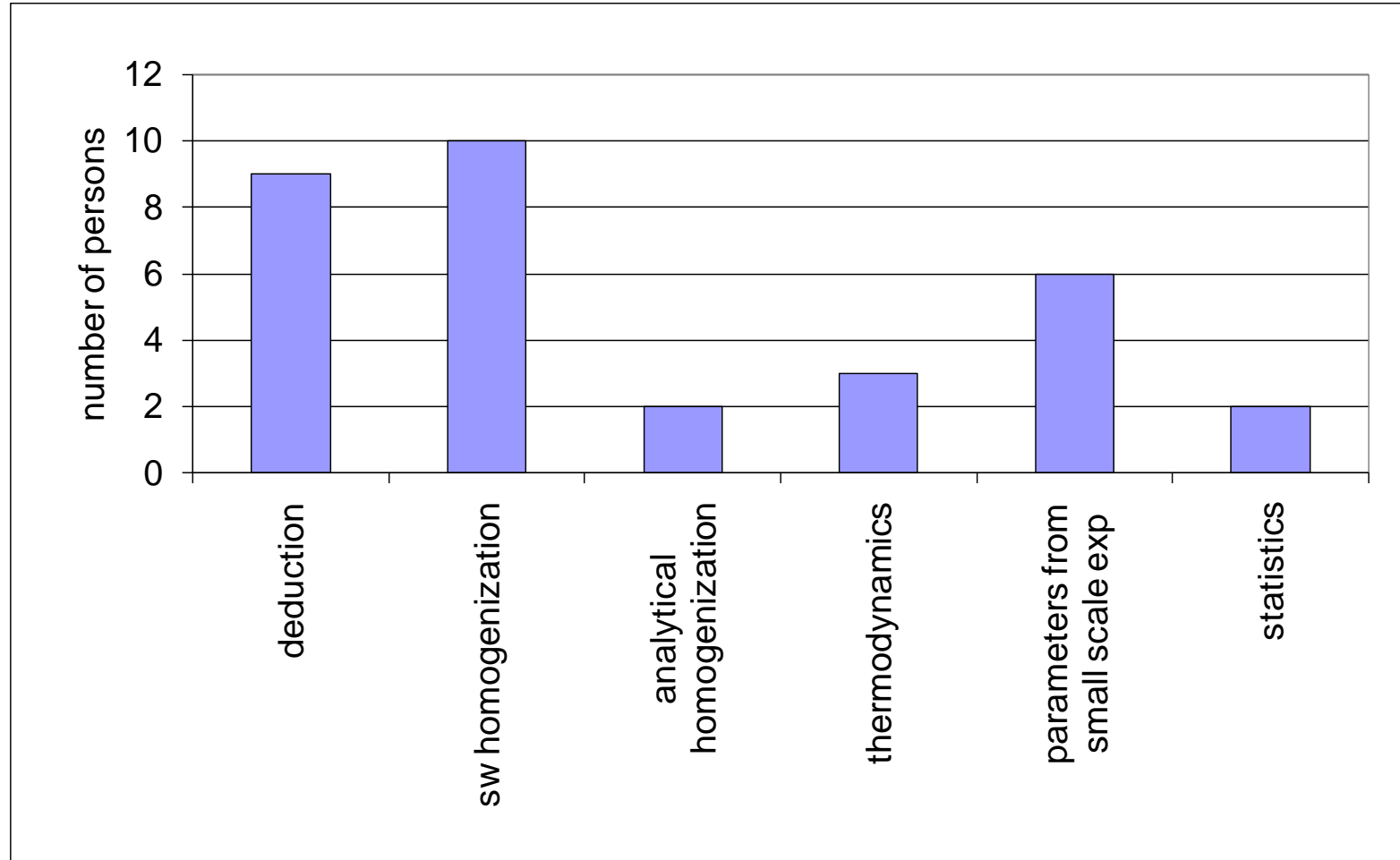
What is modelled



Size scales



Scale transition methods



Conclusions

- The survey was conducted 2011 in the Multiscale Materials Modelling project to review present activities at VTT related to materials modelling, used techniques, HW and SW tools as well as problems and visions of the modellers.
- The materials and phenomena are various and the modelling tasks usually challenging with several phases, phase changes and several size scales.
- The largest material group is metals, but coatings, ceramics, biomaterials, polymers, composites, bentonite and ice are also modelled extensively.
- Material degradation and surface/interface phenomena are the most common to model, but also fracture, moisture/heat transfer and thermodynamics are common modelling tasks. Material properties and performance were the most common categories.
- Materials modelling is an important part of the research conducted at VTT and the demand for modelling is increasing.



**VTT creates business from
technology**