

# Multiscale modelling and design for engineering applications -

## Material modelling

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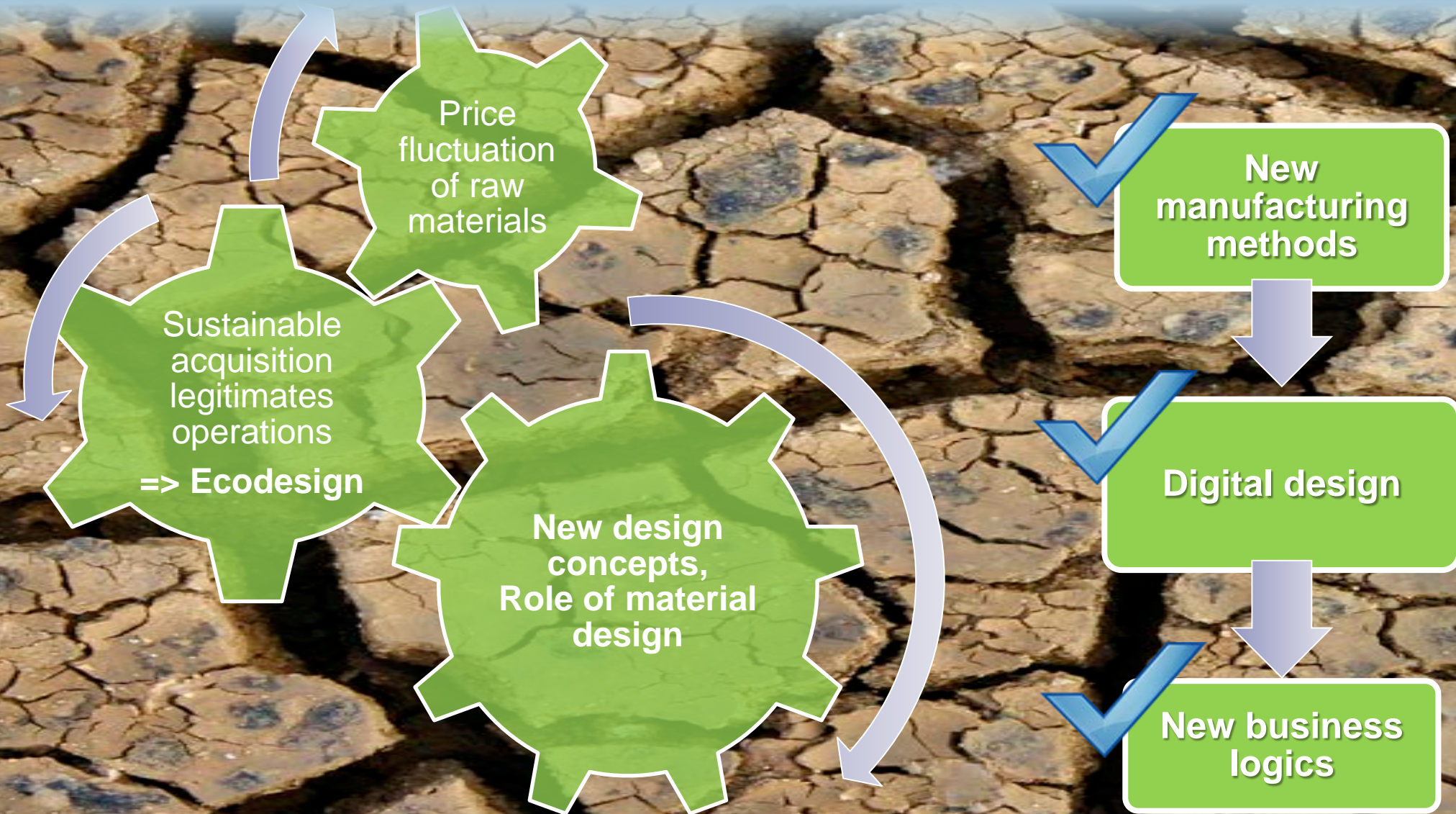
1. Research and innovation directions



**VTT' vision 2020 – selected solutions to grand societal challenges**



## Challenge: Limited resources



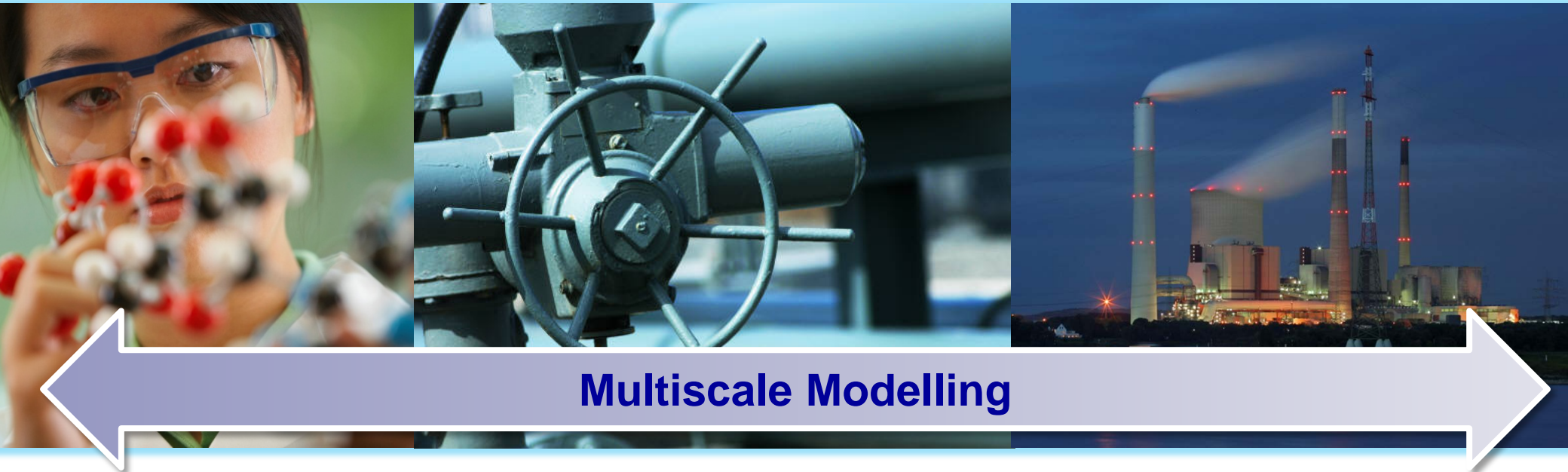
## Joint vision

Finland will become a global leader in **new manufacturing and design business** of high performance, custom made products based on digital paradigm.

**Designed materials** today, and especially in the future are based on modelling the interactions between the material performance, properties, microstructure and processing methods.

*(molecular design, self assembly, performance, sustainability, reusability,...structure at all scales - multiscale)*

## Multiscale modelling enables the necessary

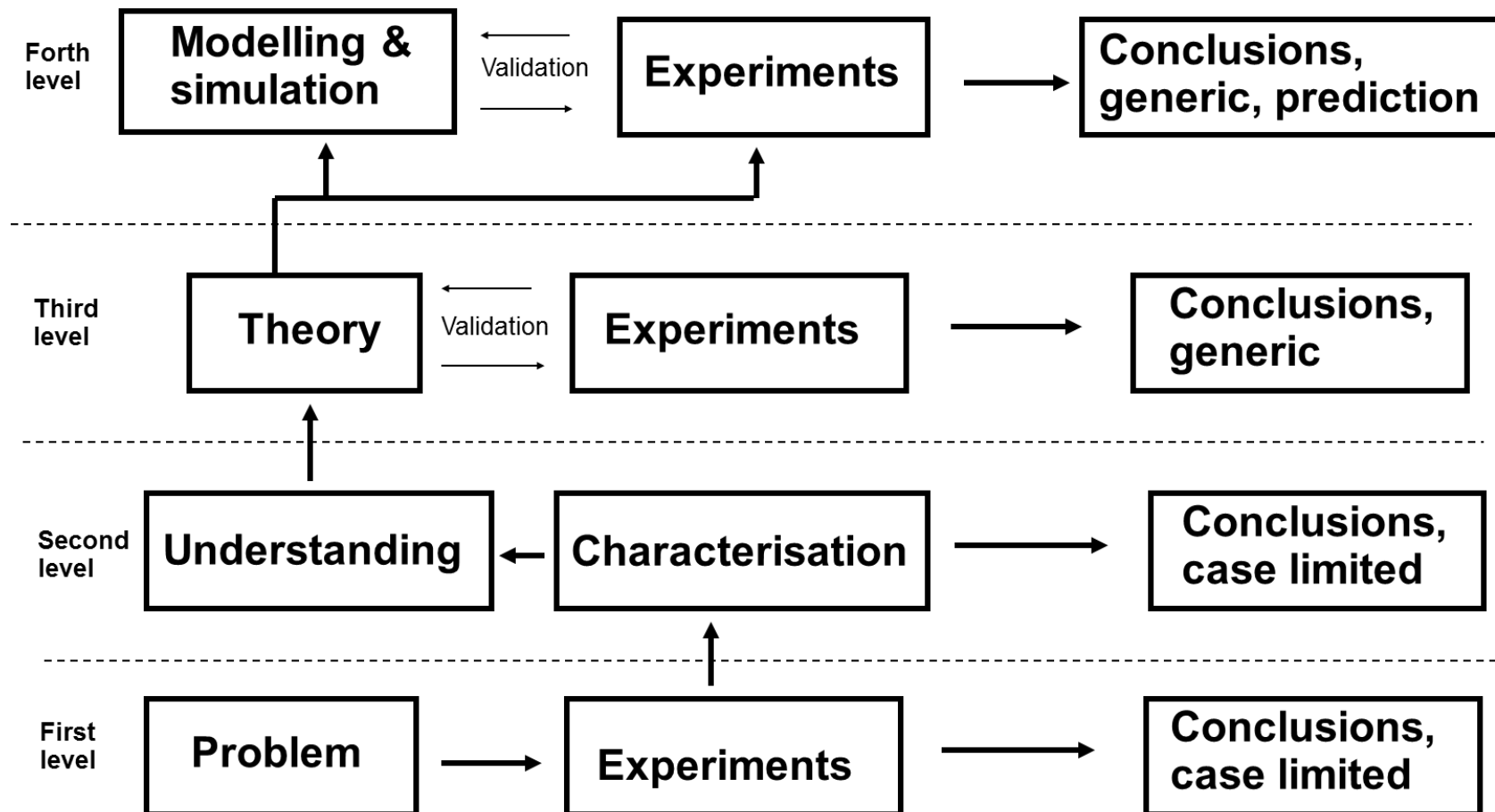


Lack of resources  
Energy efficiency  
Increased performance

Tailored properties, performance.  
Optimised manufacturing and  
production.  
Smart, condition-based  
maintenance.



# LEVELS OF MATERIAL RESEARCH AND DESIGN





**VTT creates business from  
technology**