

Basic Research on Complex Materials

Gerhard Dehm, Jörg Neugebauer, Dierk Raabe, Martin Stratmann



Max-Planck-Institut
für Eisenforschung GmbH
Düsseldorf, Germany

WWW.MPIE.DE
d.raabe@mpie.de



**Foundation: 1917 as
Kaiser-Wilhelm-Institut
Eisenforschung**



**Basic
Science**

**Total budget: ca. 100 million
(40% MPG, 38% state)**

Personnel: 250

**Basic science of complex materials
and processes**



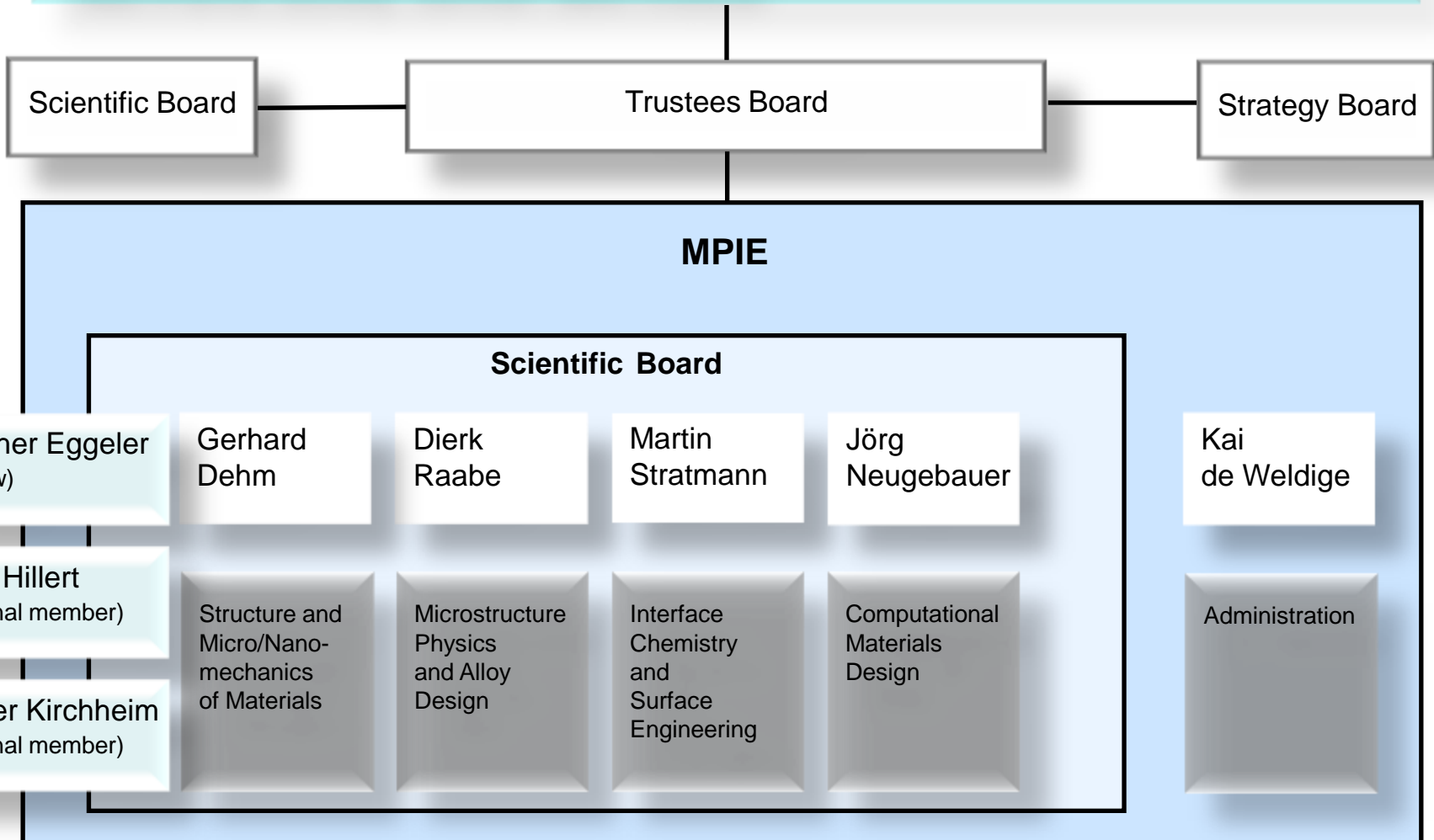
Max Planck

© 2007 Europa Technologies

Image © 2007 AeroWest

Google™

Shareholder:
Max-Planck-Society, German Steel Institute



Directors, External Member, Fellow

**Gerhard
Dehm**

**Gunther
Eggeler**

**Jörg
Neugebauer**

**Dierk
Raabe**

**Martin
Stratmann**

**Reiner
Kirchheim**

Structure and Micro/Nanomechanics
of Materials

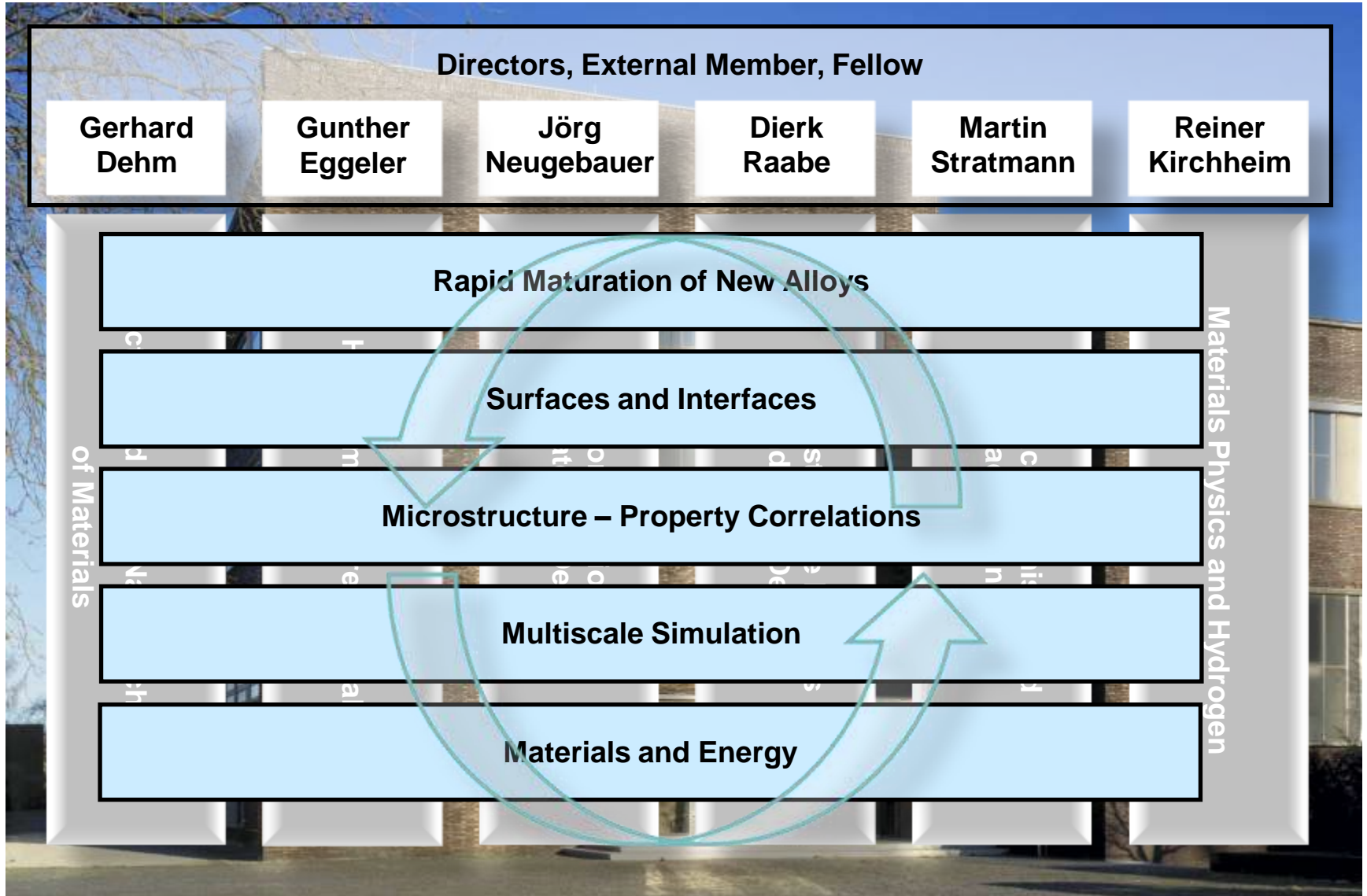
High Temperature Materials

Computational
Materials Design

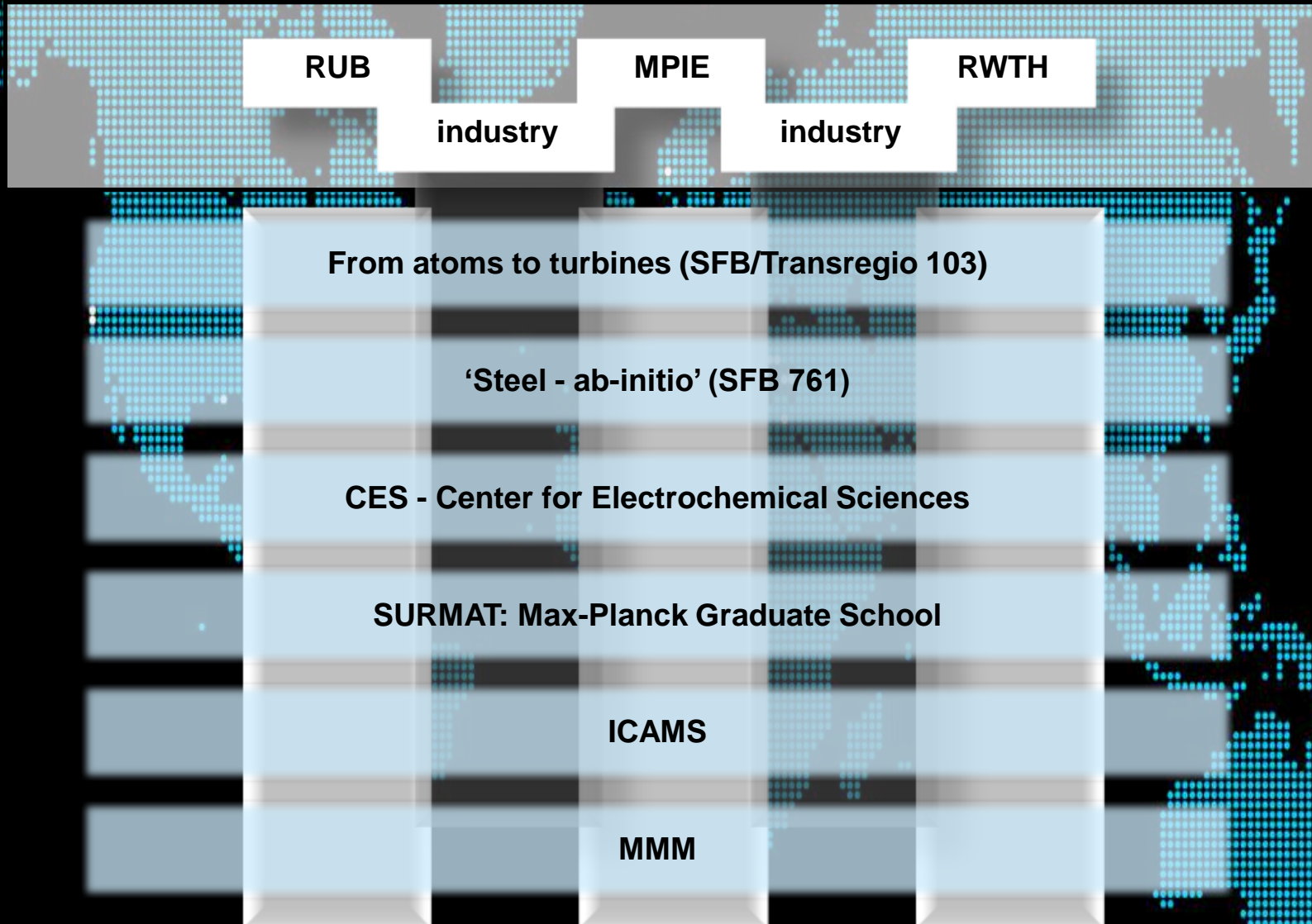
Microstructure Physics
and Alloy Design

Interface Chemistry and
Surface Engineering

Materials Physics and Hydrogen



MPIE network





Interaction of H and metals

(Neugebauer, Kirchheim, Raabe, Stratmann)

High strength, ductile, and light weight metallic alloys

(Raabe, Neugebauer, Dehm, Frommeyer)

Thermodynamics, phase diagrams, kinetics

(Neugebauer, Raabe, Inden, Kirchheim, Sauthoff)

Materials for CO₂-reduced, save, and efficient power

(Sauthoff, Eggeler, Stratmann)

Damage

(Dehm, Neumann, Vehoff)



Corrosion resistant and functionalized surfaces

(Stratmann, Neugebauer, Grabke)

Nanostructures and interfaces in semiconductors

(Raabe, Neugebauer)

Adaptive structural materials and optimal microstructures

(Raabe, Neugebauer, Eggeler, Dehm)

Characterization of complex materials and interfaces

(Dehm, Stratmann, Raabe, Eggeler)

Rapid alloy design and maturation

(Raabe, Stratmann, Neugebauer)