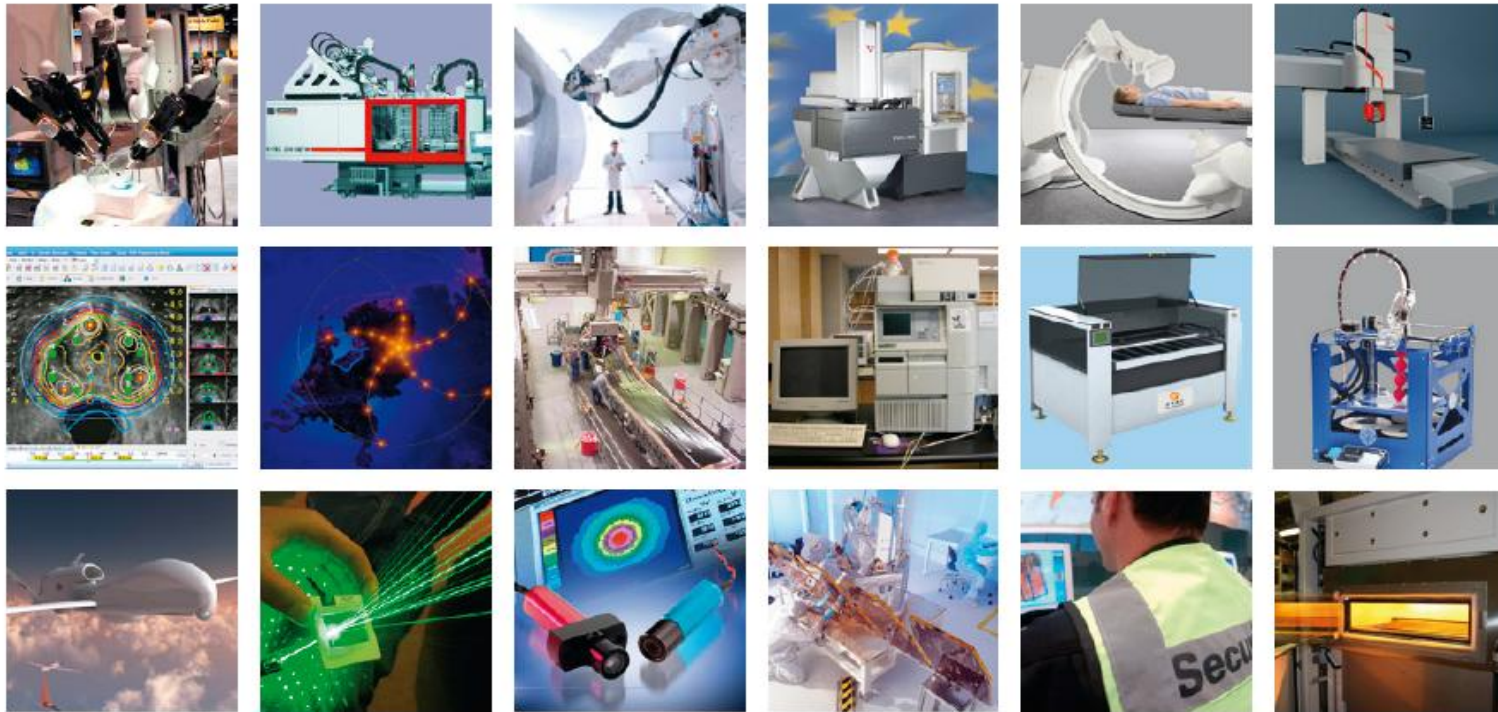


Trends in the high-tech systems industry for 2020



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Senior managing consultant Berenschot

Berenschot

OCTOBER 18TH 2012
RDM CAMPUS
ROTTERDAM

EUROPEAN CEEES SEMINAR
EUROPEAN RELIABILITY AND ENVIRONMENTAL TESTING CONNECTED



Content

- Introduction
- Market trends
- Technology trends
- Management trends
- Sustainability trends

Introduction

- Berenschot:
 - 75 years
 - 370 consultants
 - Started in the industry

- Joost Krebbekx
 - Innovation & sustainability
 - HTS roadmaps

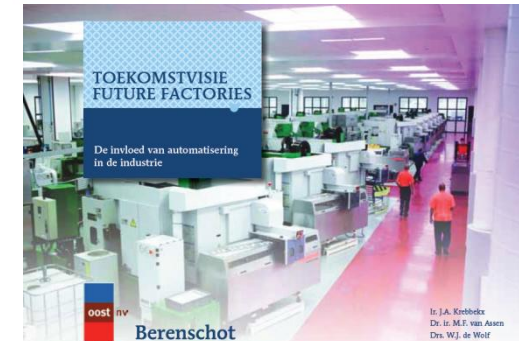


Lange termijn technologie investeringsroadmap

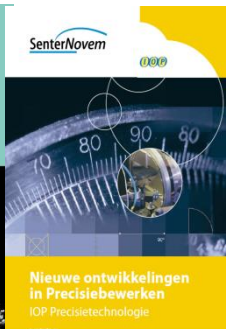
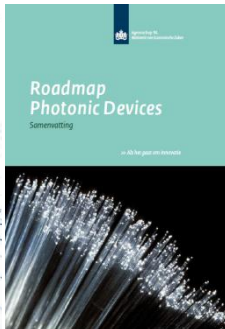


VOOR DE SUPPLY CHAIN VAN DE HIGH TECH SYSTEMS KETENS

Joost Krebbekx | Erik Teunissen | Wouter de Wolf | Joost Simkens



Ir. J.A. Krebbekx
Dr. Ir. M.F. van Assen
Drs. W.J. de Wolf





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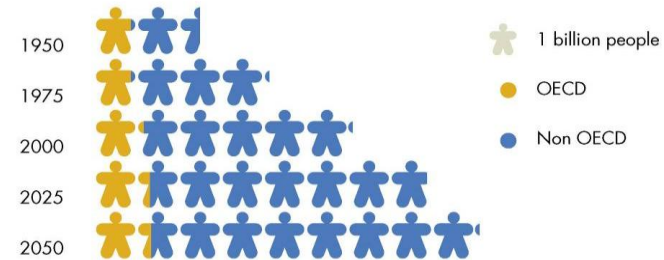
Market trends

Megatrends

- Growth of the population
- Global economies and rising markets
- Bottom of the pyramid
- Security
- Urbanization
- Health and aging
- In control
- Entertainment
- Climate change
- Depletion (easy) sources



World population



More high
tech systems

New high tech
systems



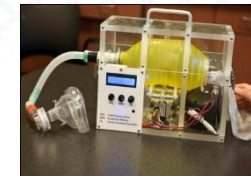
1 Earth

New high tech systems



New medical devices

New additive Manufacturing systems



New bottom-of-the pyramid products



New information & communication generations

New simulators



New cars



New robots



New unmanned planes

Large, expanding global markets

MaBa	Marketsize (global/year) (x bln Euro's)	Growth expectations	Clusterposition NL
Health (equipment)	+ 200	++	+
Energy (equipment)	157	++	+
ICT (semicon)	248	+	++
Lifestyle & leisure (consumer- elektronics)	300	+	+/-
Transport, logistics & security (devices)	120	+	+

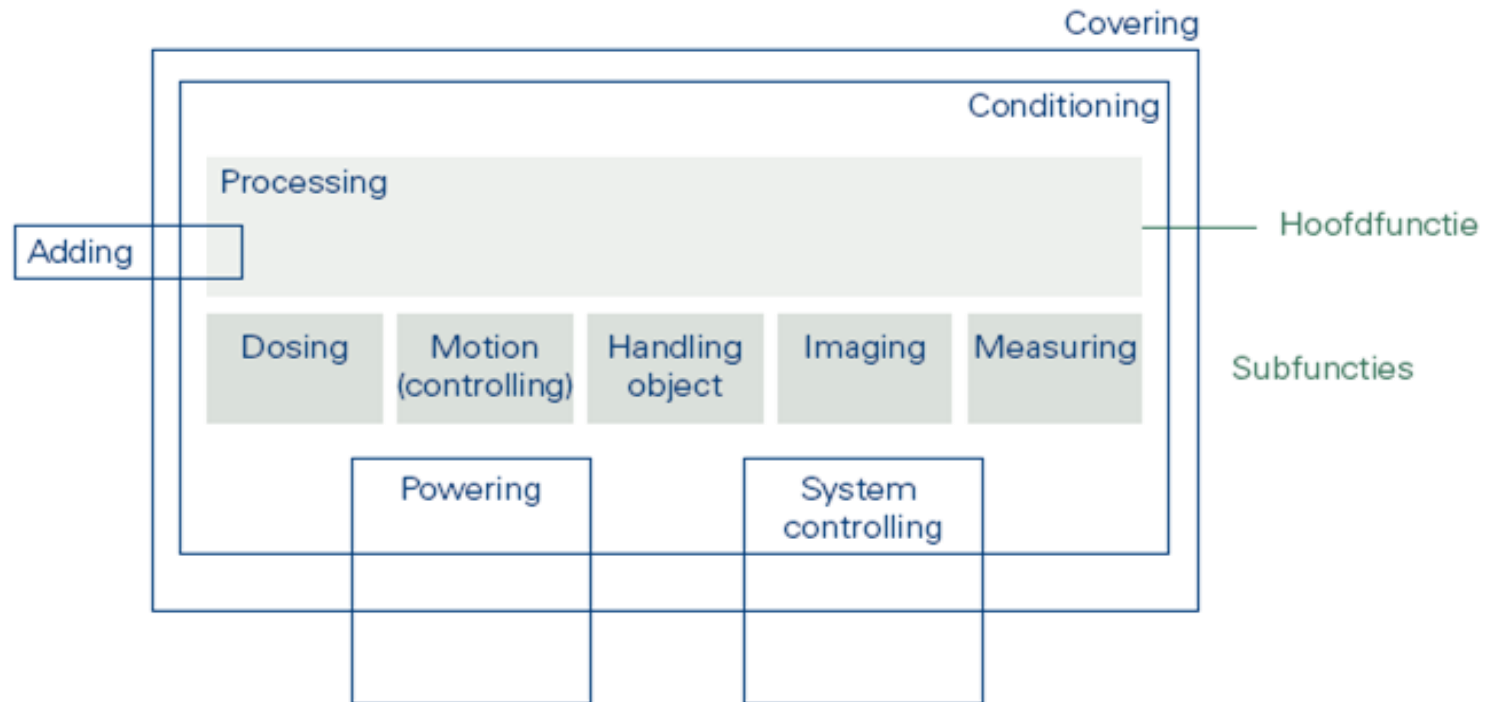
Estimation Berenschot, Figures 2010



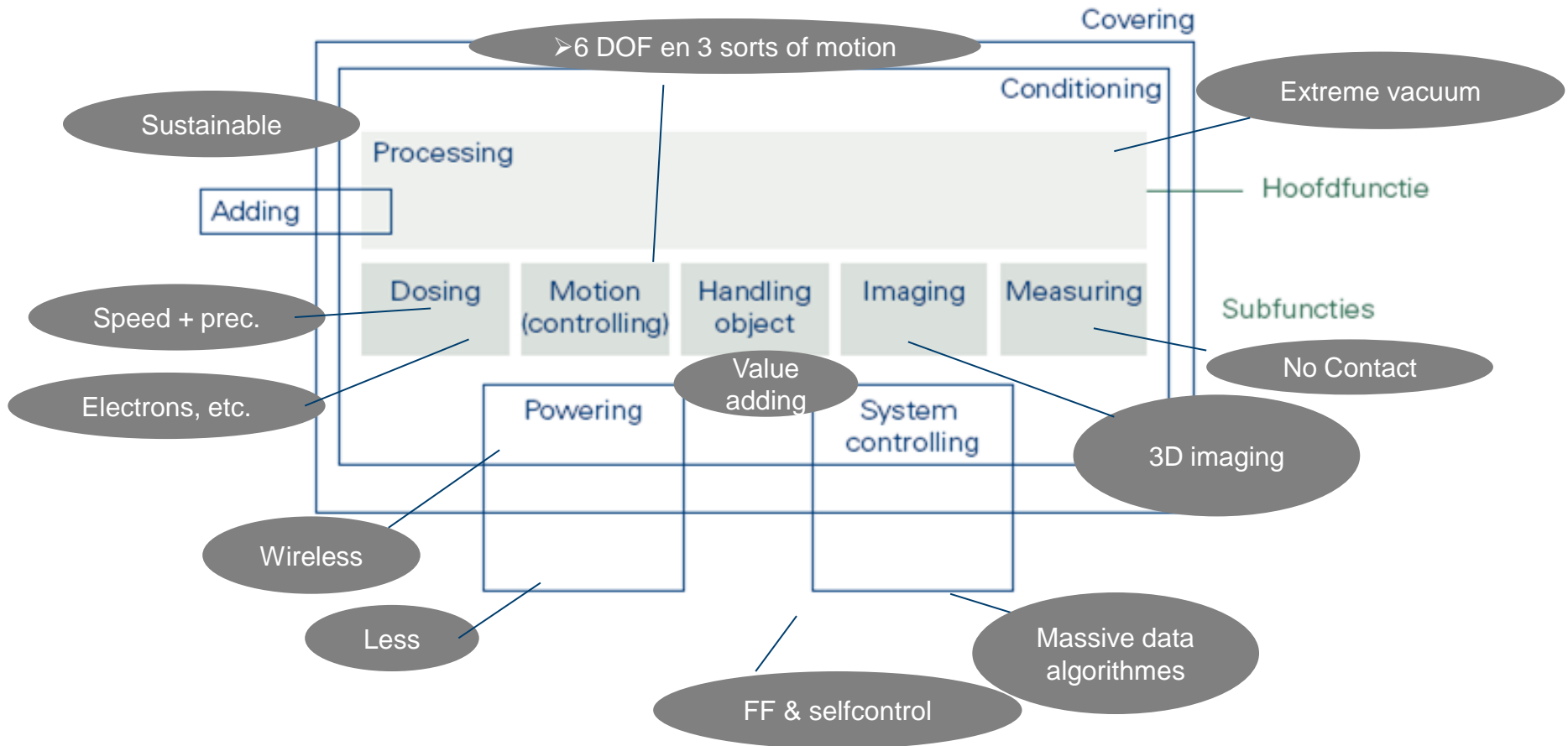
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Technology trends

System technology: modular thinking



Trends per module

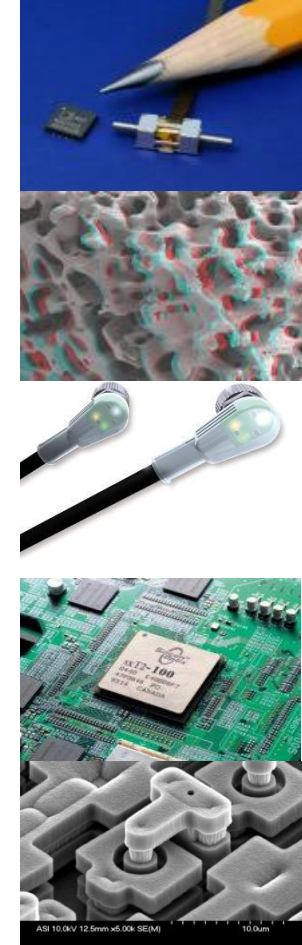


Component technology: new areas

- Elektronische components
- Mechanische HC-components
- Acoustic components
- Optical components

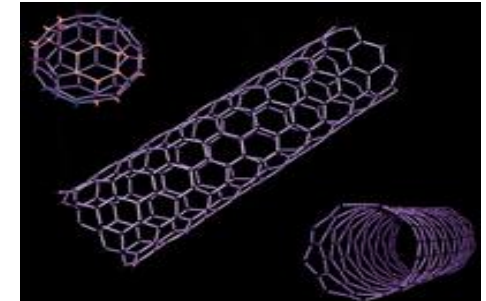
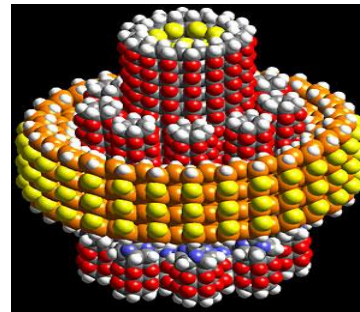
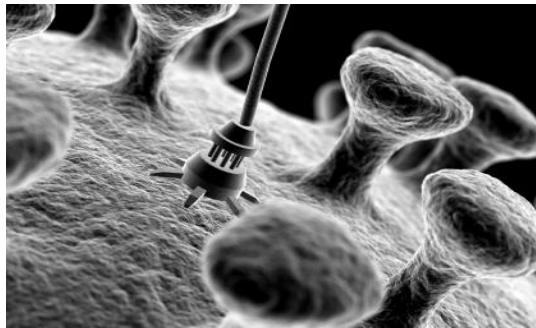


- Photonic components
- PV-components
- Biomedical components
- Fluid components
- Magnetic components



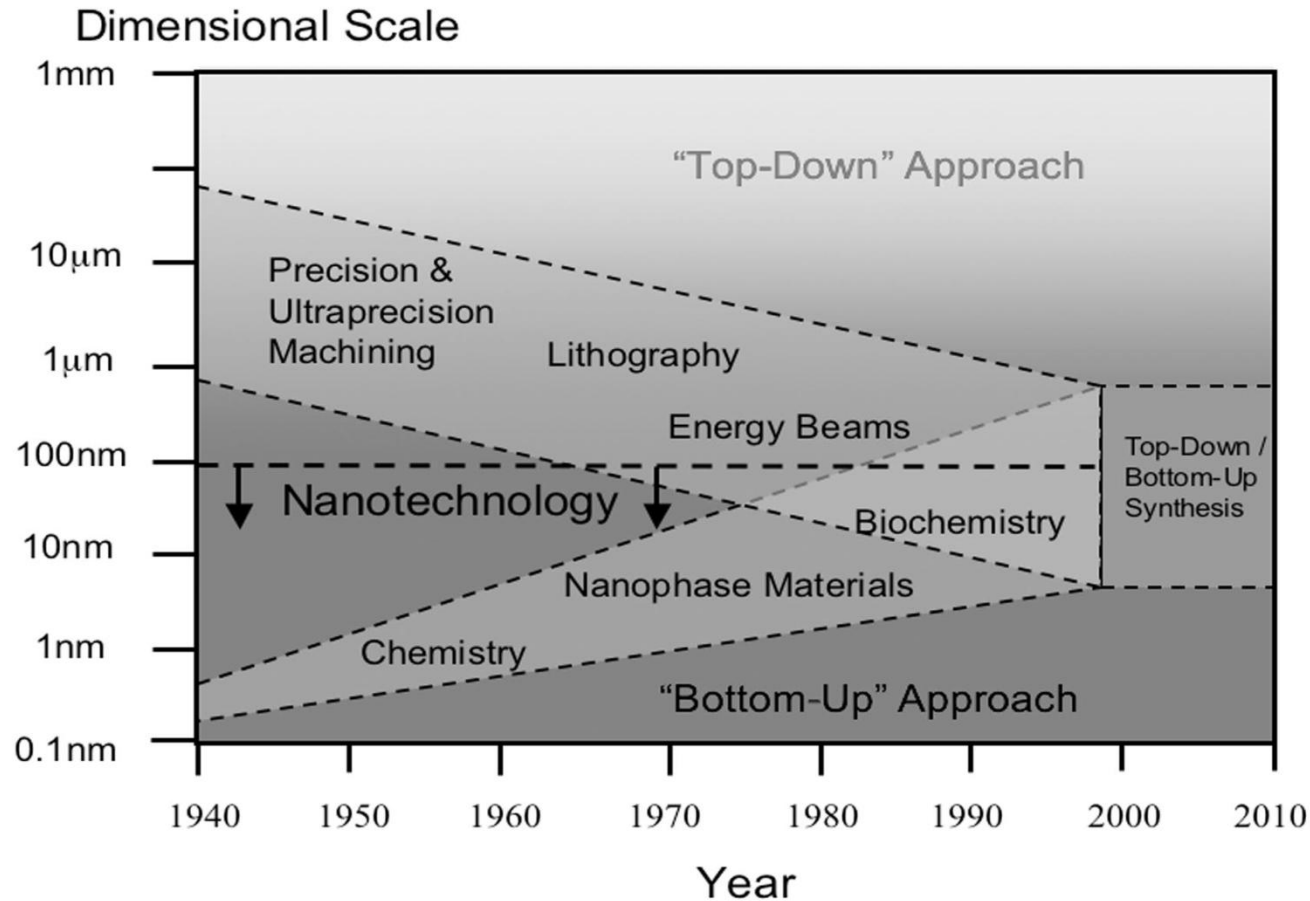
Component technology: nanosub-sub-sub-systems

Nanoantennas, nanomotor, nanogears

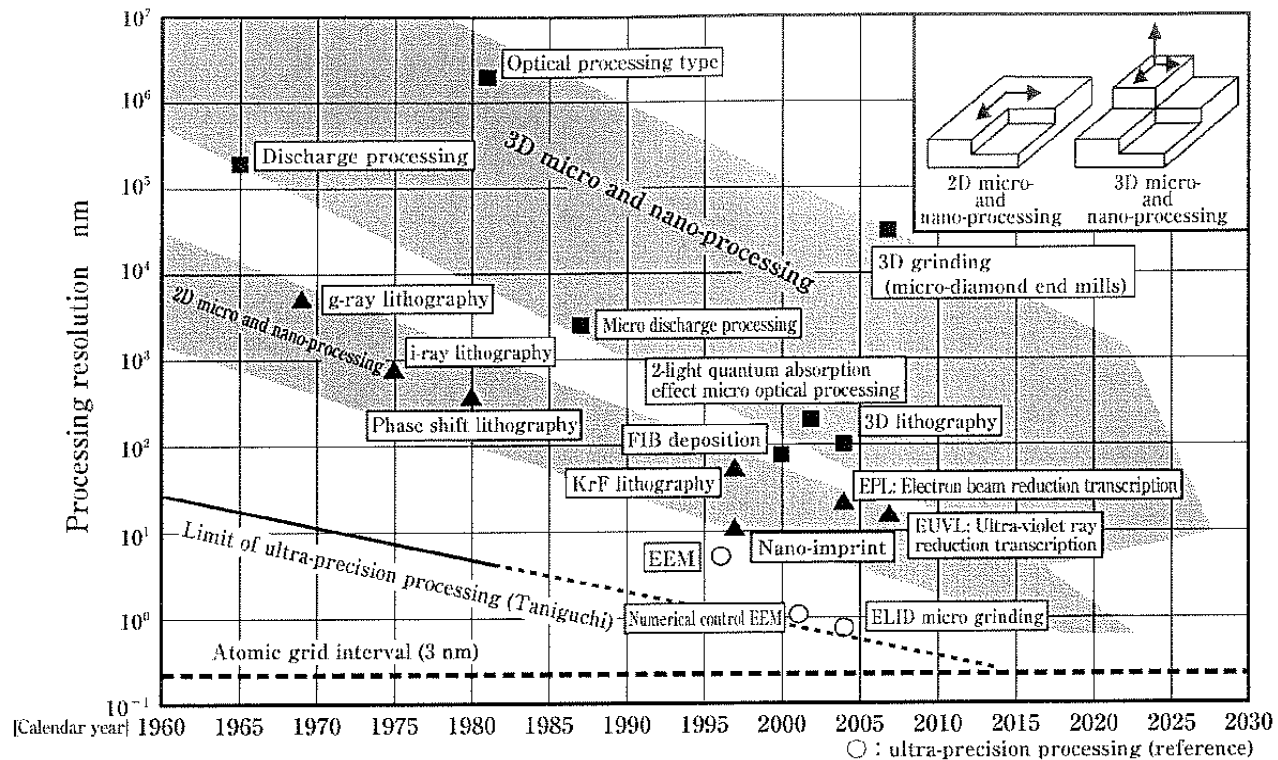


Next step: connecting them in sub-systems

Manufacturing technology: rising of the bottom-up technologies



The Tanaguchi precision roadmap goes 3D

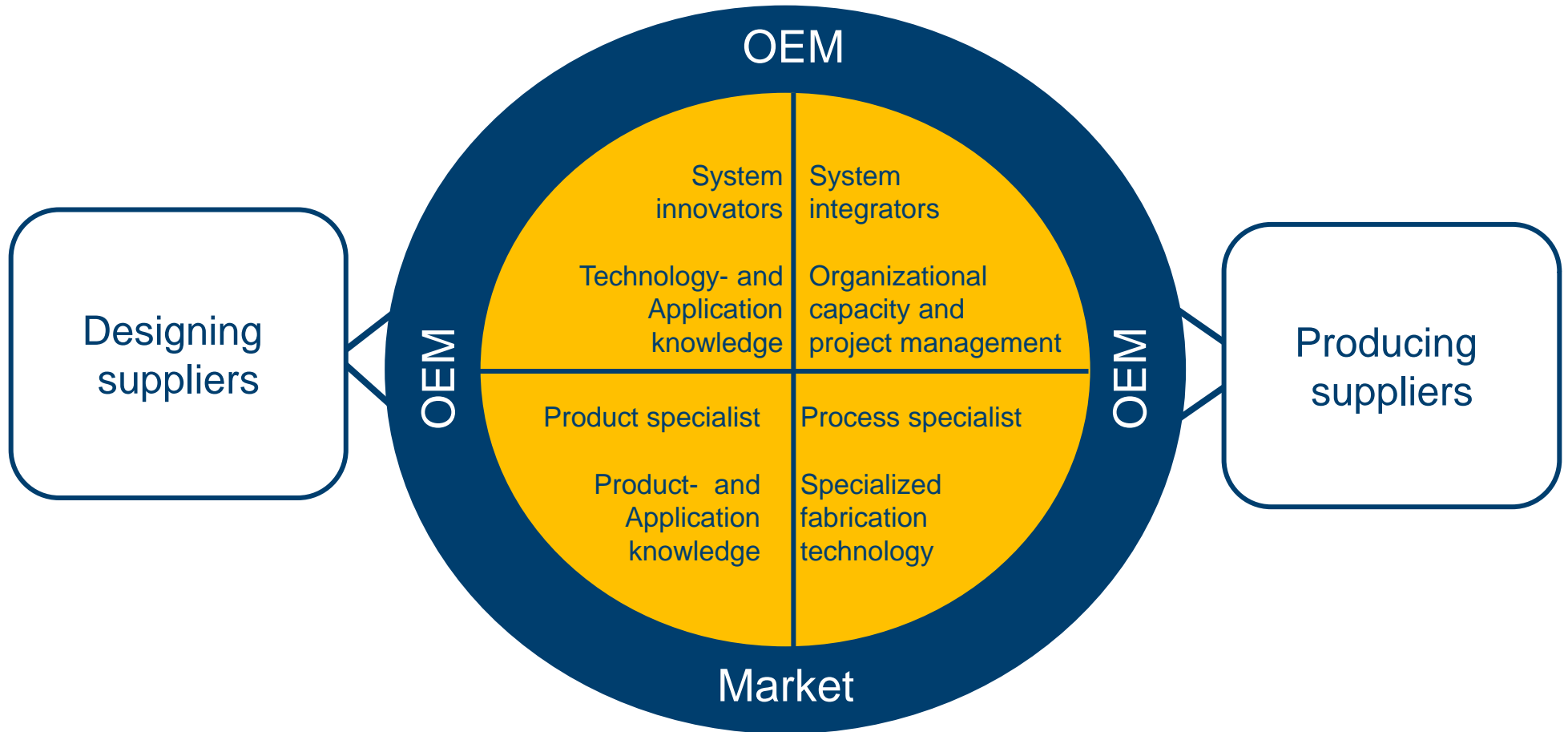




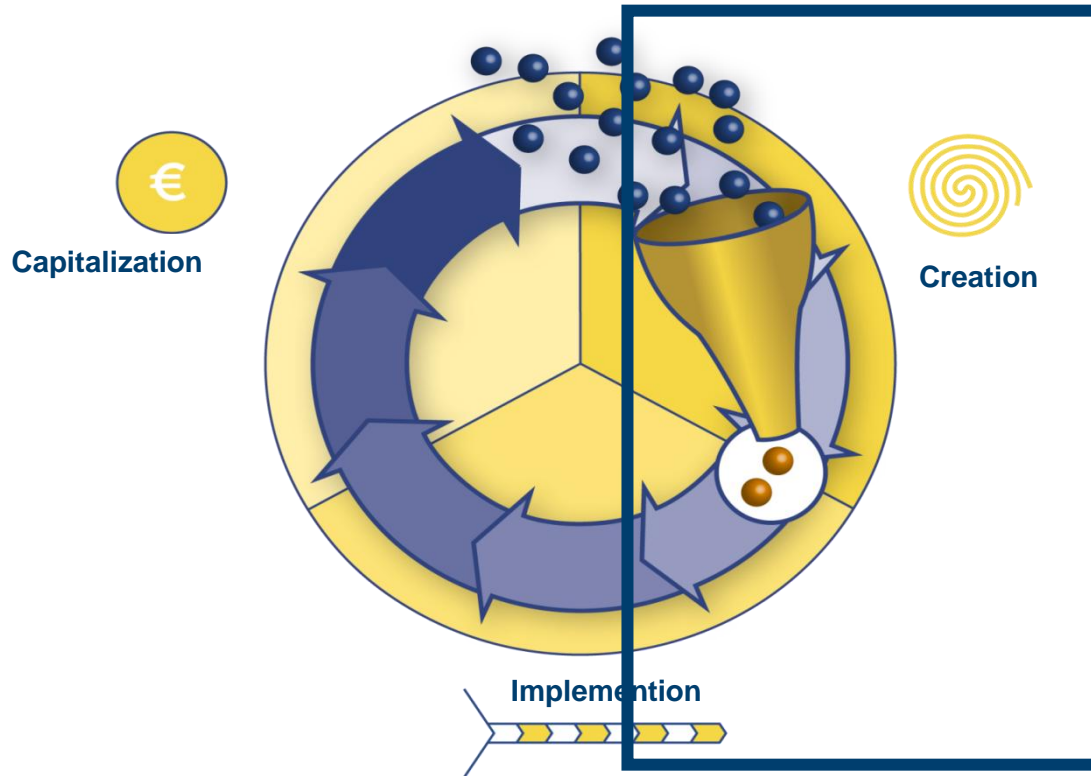
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Management trends

New strategic roles in the Demand Chain



Emphasis on forward innovation

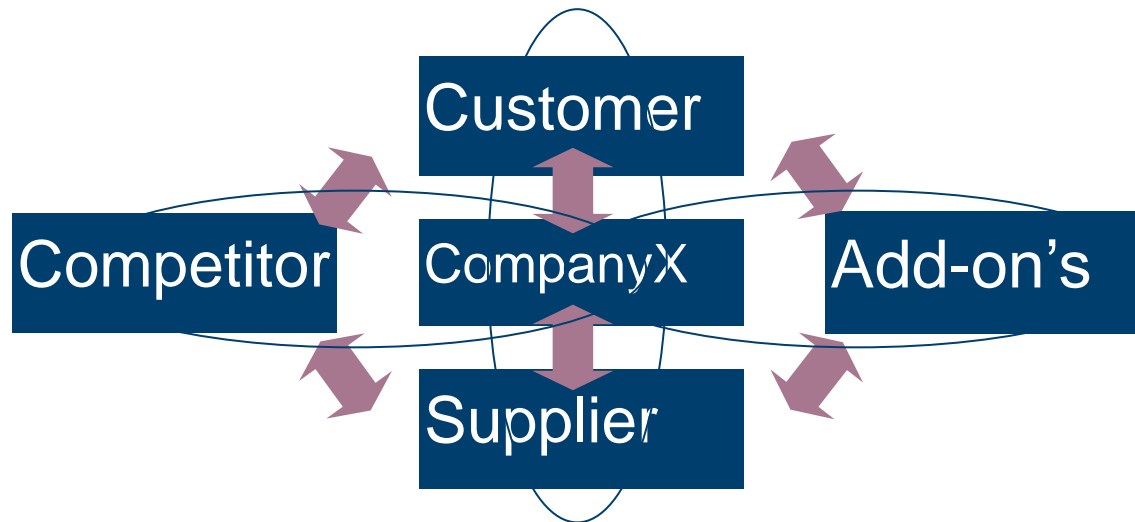


Professionalization on R&D processes by roadmapping techniques creating new functions and subfunctions

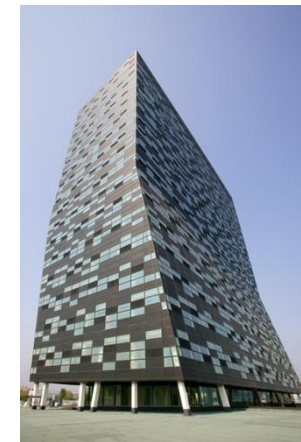
Backward innovation ends up in China!

The art of co-opetion

- Making of alliances, consortia and mergers
- Pre-competitative R&D
- Campuses: focus and mass



High Tech Campus Eindhoven



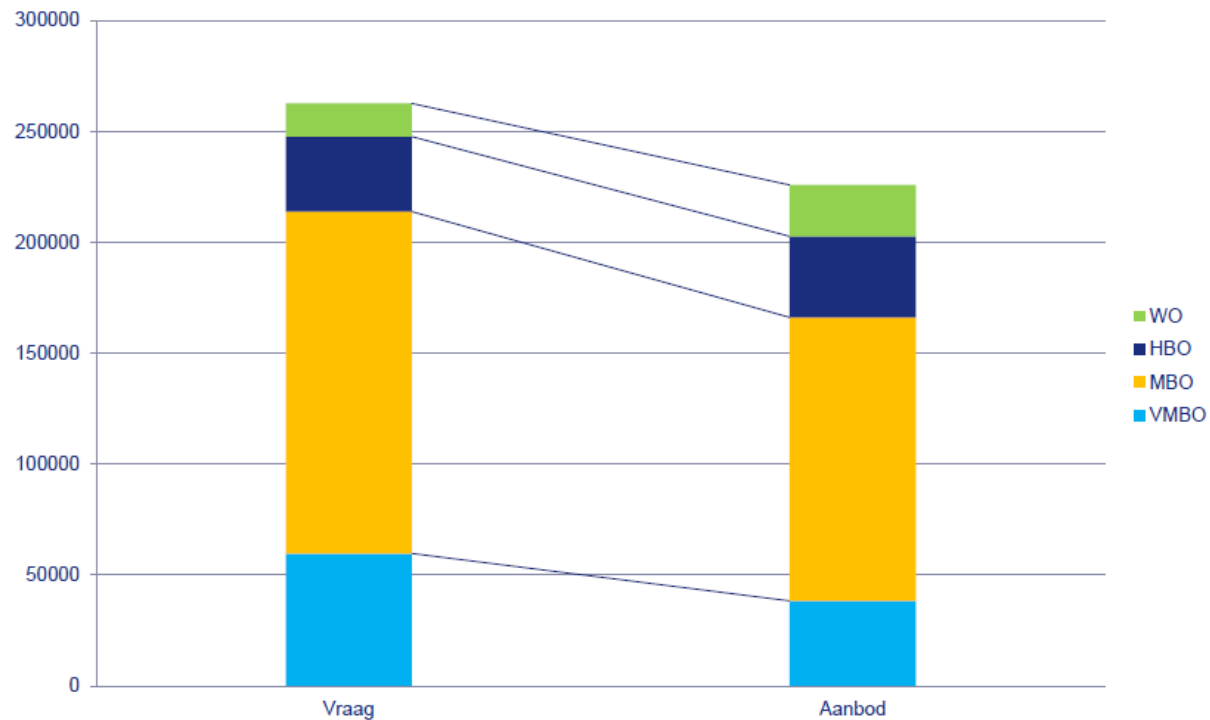
MESA+

Institute for Nanotechnology

Battle on technical talent

Vraag en aanbod van bètatechnici metaalelektro

Verwachte vraag aan aanbod van bètatechnici in de periode 2009-2014



Berenschot

Bron: ROA 2010

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4

Sustainability trends

Strategic aspects of sustainability

Services

New applications & USP's

Distribution

Use

Producer

LCA thinking

Retrieve

Supplier

Disassembly

Base material

Upcycling

From chains to circles

Low CO2 footprint

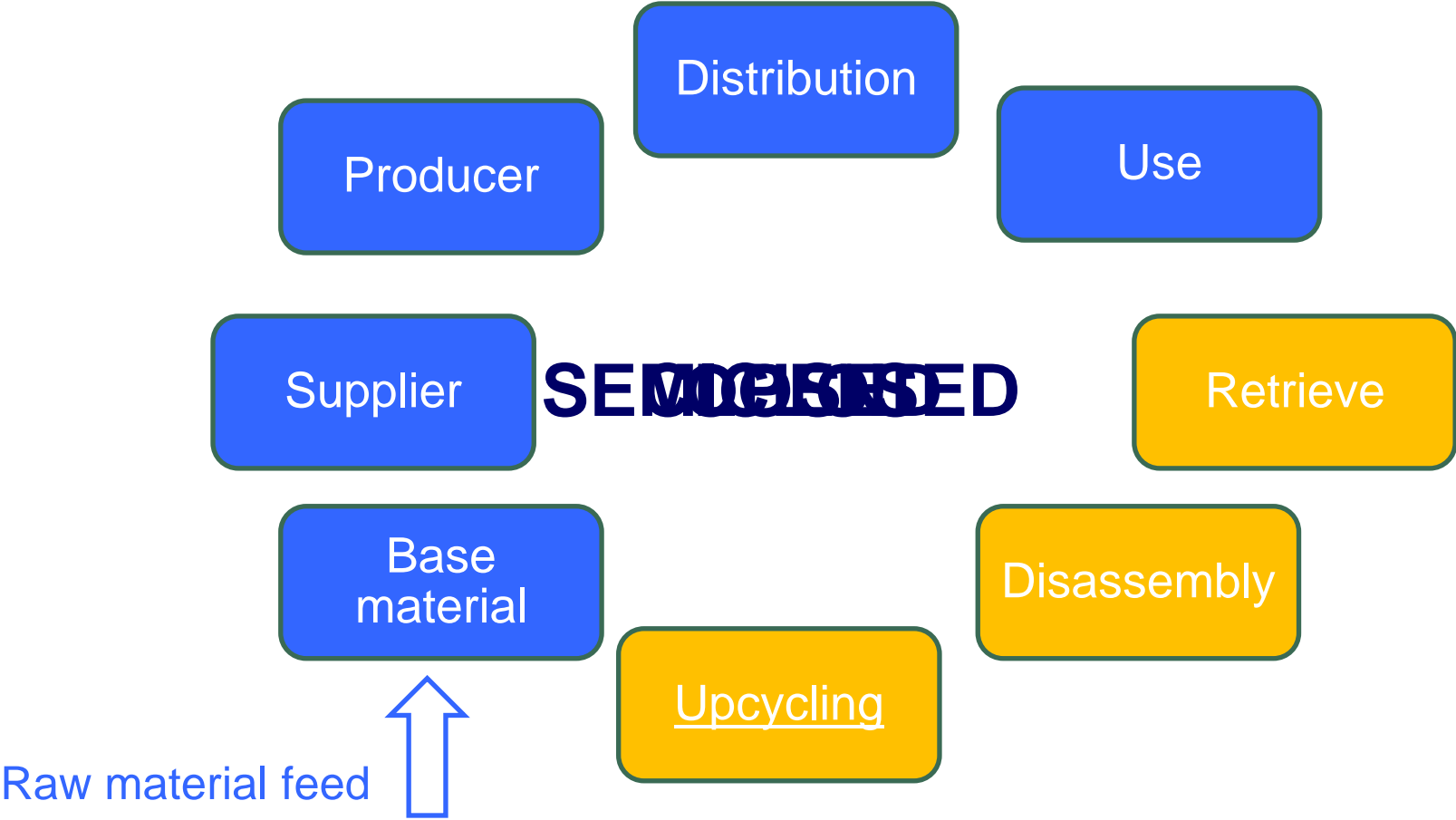
Low H2O footprint

Rare materials

Raw material feed

New technologies needed

Asset recovery is business



New market application and USP's



Reduced energy use, reduced toxicity and CO2 emission, renewable, C2C, less embodied energy, optimized esthetical and technical durability, reduced scarce material use

New business models: Lease model



EAZY

Airline Catering Made EAZY

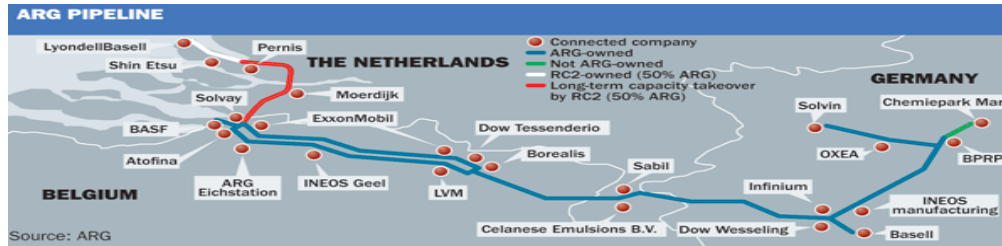
Less CO2: the rise of biobased materials

Revival used materials



- The chemical industry will be 25% biobased in 2030
- Many start-ups are expected in this industry

C-switch



PE
PVC
11 million
tonnes/yr CO2

New materials



More design complexity, new choices

Berenschot MVO-model

Design = product, process & value chain

		TOTALE KETEN				
		Materiaal tl	Product fabrikant		Klant	Recycling
		Grondstoffase	Productiefase	Distributiefase	Gebruikfase	Hergebruiksfase
PEOPLE	Sociaal					
	Veiligheid					
PLANET	Materiaal					
	Energie					
	Toxiciteit					
PROFIT	Emissie					
	1e orde					
	2e orde					

ONTWERPEN

- Energy use, material security; CO2 footprint, childlabor, how to get back?; how to disassemble?; contact at end of the product life cycle; preservation of customer relations



Thank you for your attention

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