

# New Innovation Concepts at Degussa: Project Houses and New Business Development

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## Positioning Degussa AG

Degussa is a multinational corporation consistently aligned to highly profitable specialty chemistry.

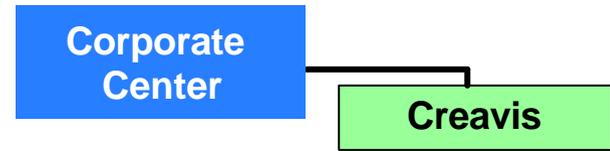
With sales of 11.8 billion Euro and a workforce of some 48.000, it is Germany's third-largest chemical company and the world market leader in specialty chemicals.

In fiscal 2002, the corporation generated operating profits (EBIT) of more than 900 million Euro.

Degussa's core strength lies in highly-effective system solutions that are tailored to the requirements of its customers in over 100 countries throughout the world.

Degussa's activities are led by the vision "Everybody benefits from a Degussa product – every day and everywhere".

# Overview of Degussa



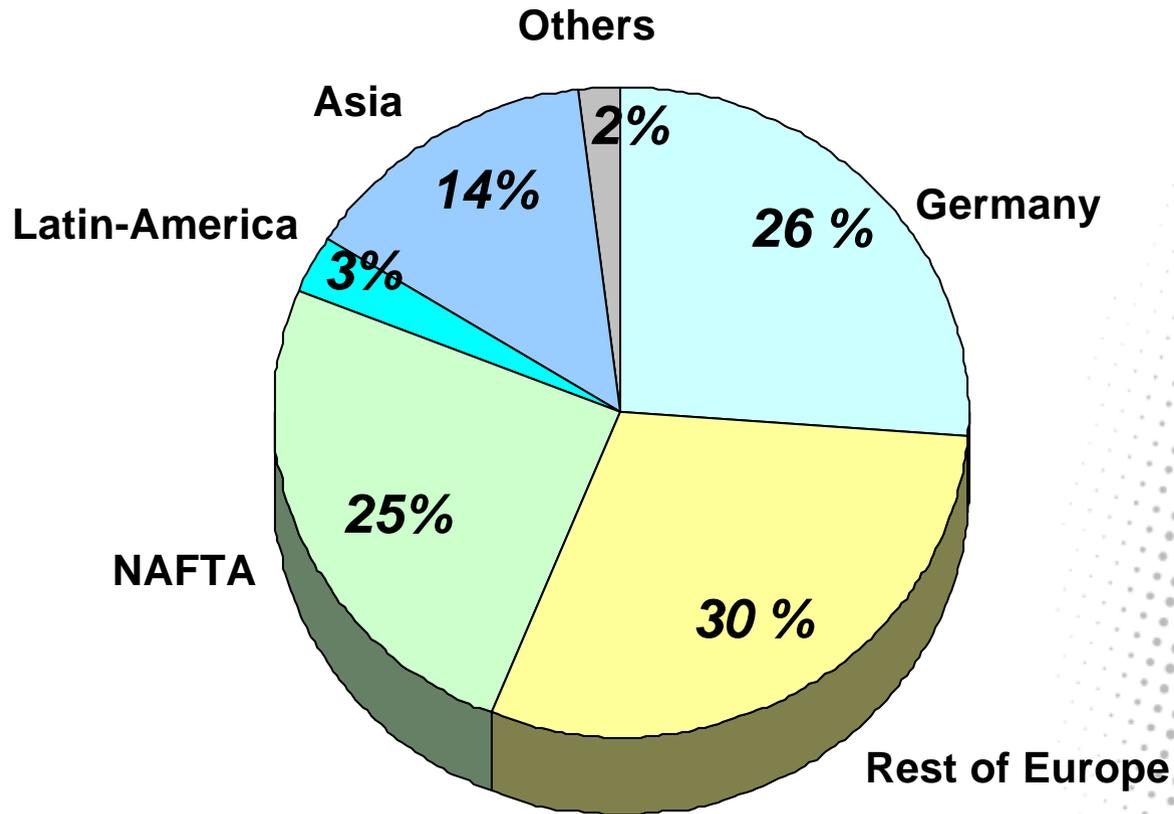
**5 Divisions/21 Business Units**

Construction Chemicals	Fine & Indust. Chemicals	Performance Materials	Coatings & Advan. Fillers	Specialty Polymers	6 Shared Services
Admix. Systems North America	Fine Chemicals	Superabsorbents	Coatings & Colorants	High Performance Polymers	Process Techn. & Engineering
Admix. Systems Europe	Bleaching & Water Chemicals	Care Specialties	Aerosil & Silanes	Specialty Acrylics	Management Services
Admix Systems Asia/Pacific	C <sub>4</sub> -Chemistry	Oligomers & Silicones	Advanced Fillers & Pigments	Methacrylates	IT Services
Constr. Systems Americas	Catalysts & Initiators	Food Ingredients		Plexiglas	HR Services
Constr. Systems Europe	Feed Additives				Procurement Services

**10 Site Managements**

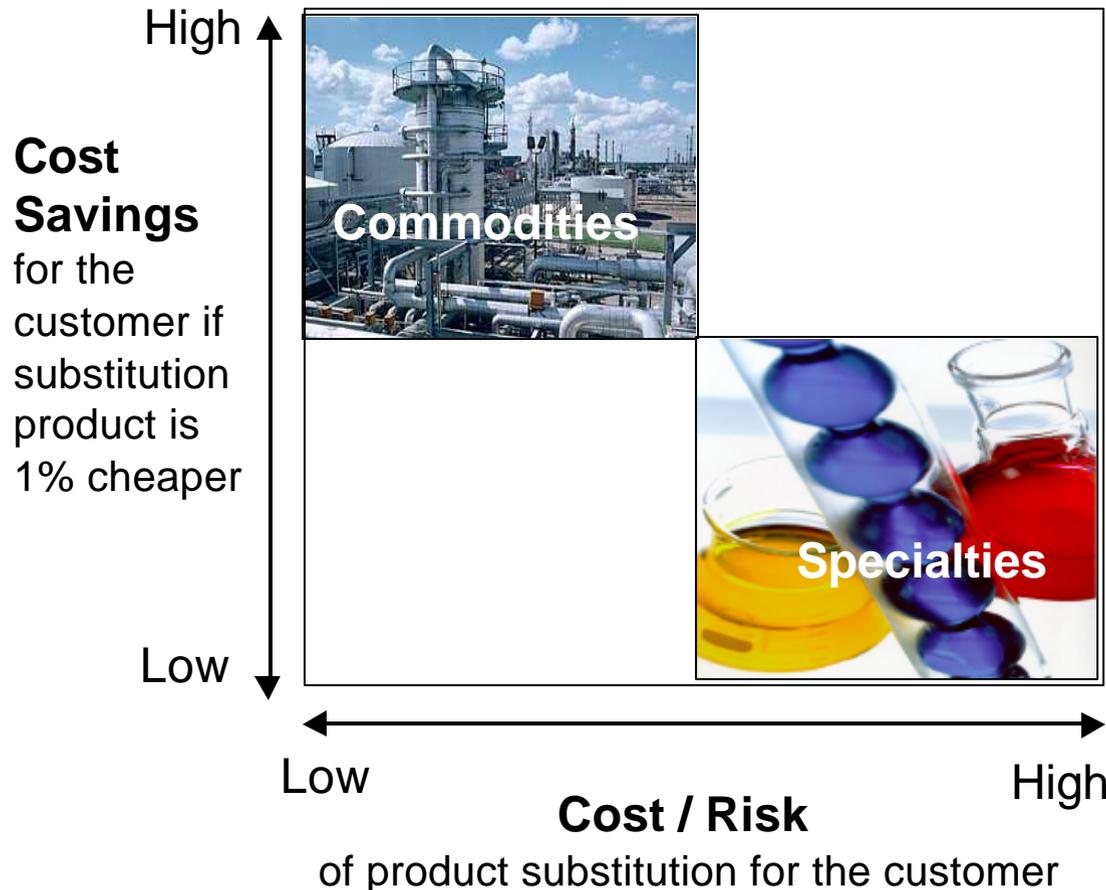
**Antwerpen, Darmstadt, Essen, Frankfurt, Krefeld, Marl, Mobile, Trostberg, Wesseling, Wolfgang**

# Sales by Regions 2002



# What are Specialty Chemicals ?

“Specialities have a low ratio of purchase cost savings to associated substitution costs for the customer” (Source: Boston Consulting)



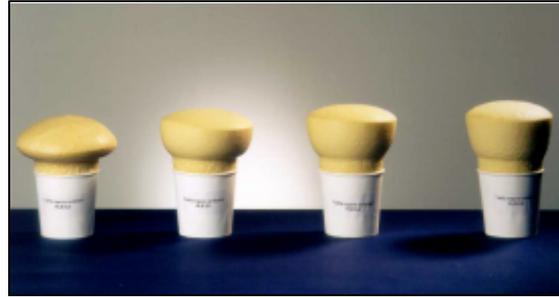
# Examples for our “Magic Ingredients”

Characteristics:

Low content in the final system, but essential for it’s performance



Admixtures for concrete



Foaming stabilizers for polyurethane foams



Carbon black, silica, silanes for tires



Probiotic cultures for yoghurt

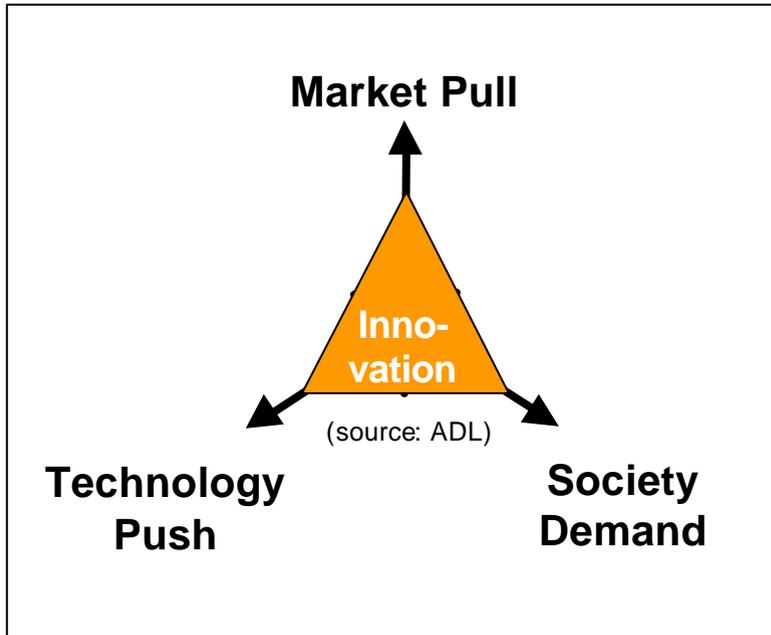


Crosslinkers for powder coatings



Polymethylacrylimide rigid foam

# Importance of R&D



R&D has to pick up the innovation driving trends and to create the fundamentals for sustainable growth of the business:

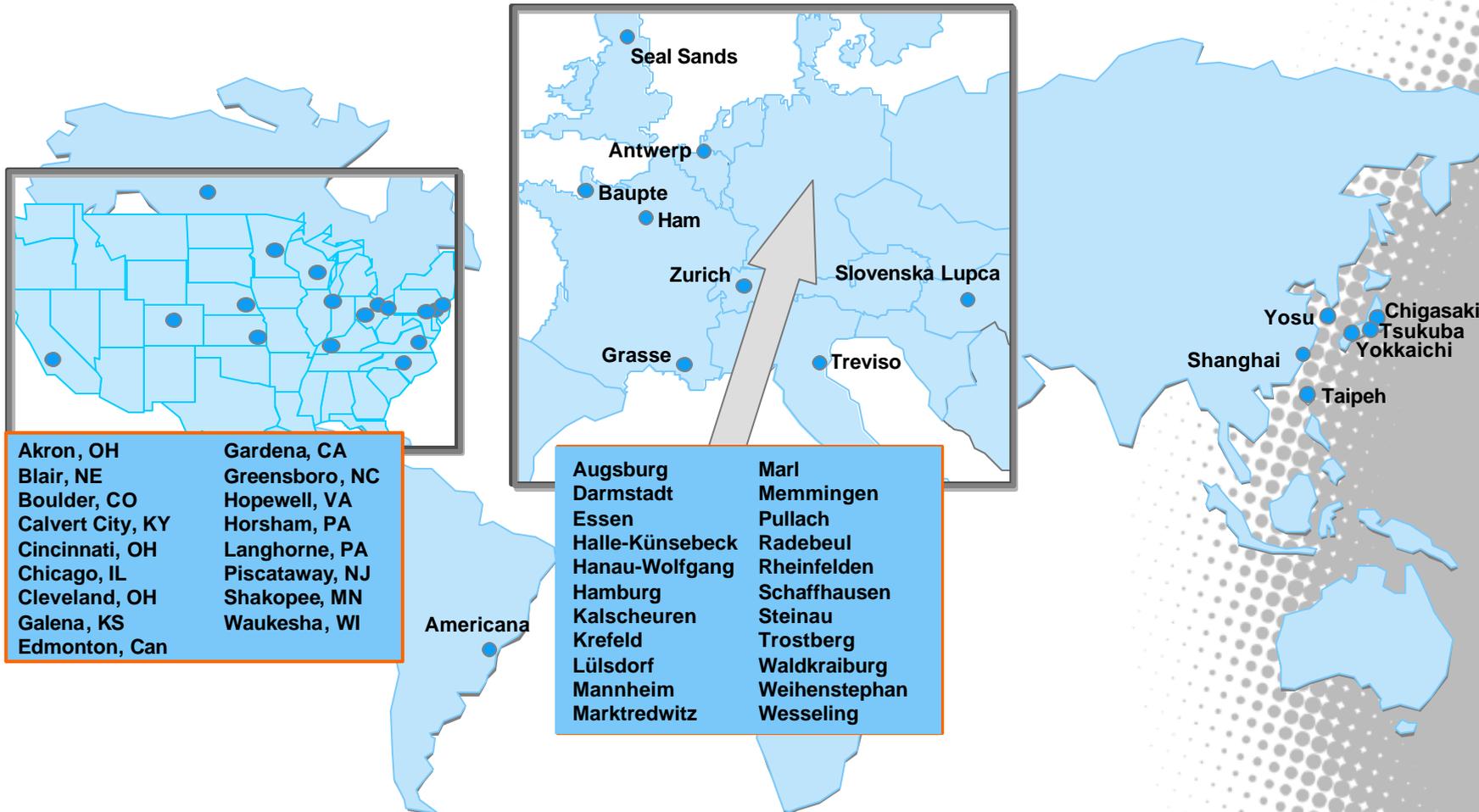
- Taking care of the product portfolio to defend market share
- New technology platforms for growth in existing markets
- New markets / new applications for existing technologies
- New technologies for future markets



Specialty Chemicals are applied problem solutions!  
Technology and application know how are the differentiating assets!  
For Degussa R&D is the key to success!

# Worldwide More Than 50 Degussa-R&D Sites

R&D expenses 343 Mio €, ca. 3300 employees, 47000 patents (counted per country), ca. 500 cooperative activities



# Responsibilities in R&D

## **Business Unit Innovation Management**

- Allocation of BU's R&D budgets according to BU strategy
- R&D portfolio management
- R&D project management

## **Corporate Innovation Management**

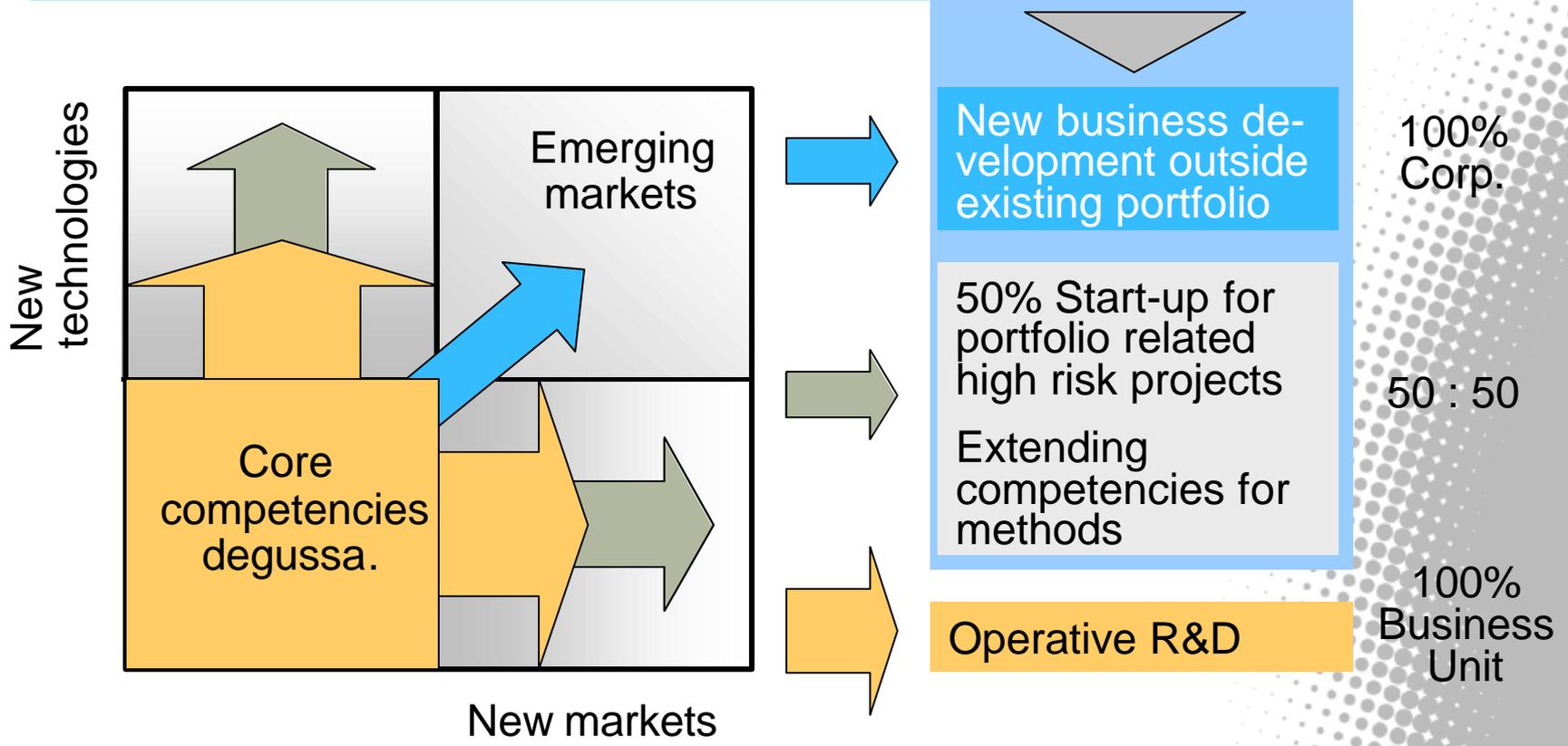
- Corporate guidelines (best practice)
- Allocation of corporate R&D funds according to corporate strategy
- Check and balance of BU's technology positions regarding SMP, investments, M&As
- Support of BU innovation through coordination of internal/external R&D-networks and R&D-information systems

## **Creavis Technologies and Innovation**

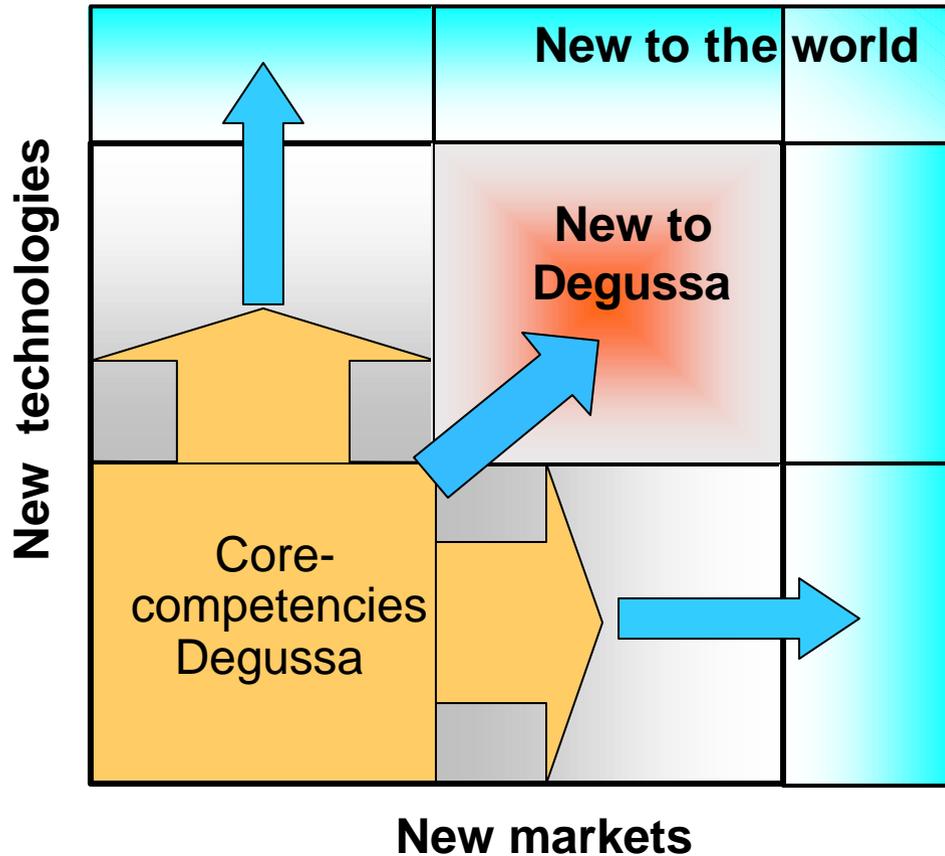
- Strategic radar, technology watch
- Idea management
- New business development (outside existing portfolio)
- Project Houses and corporate funded R&D
- Corporate venture capital

# Corporate R&D Funds

Corporate spends additional ~ 10 % of BU's R&D budgets for



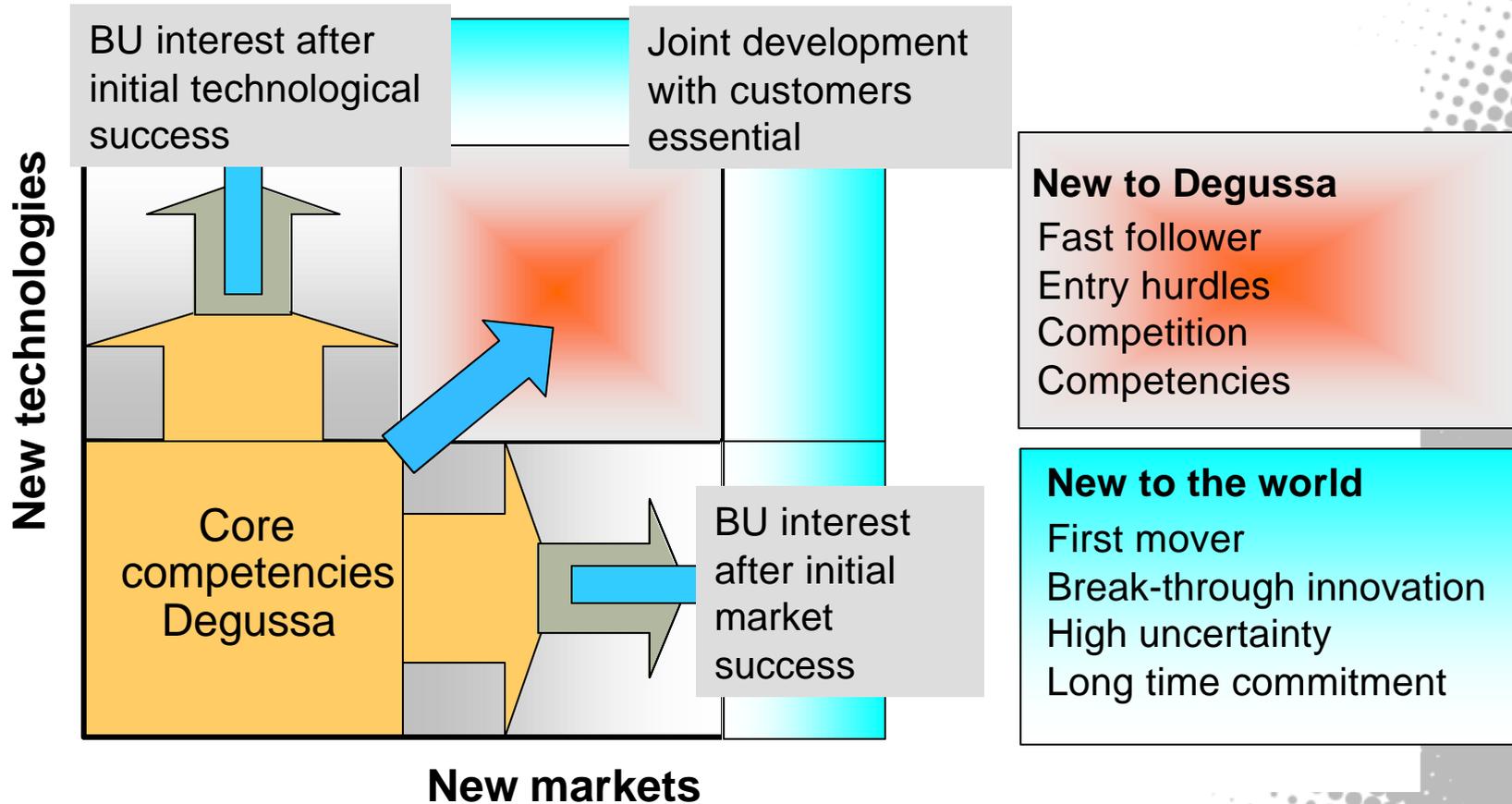
# Portfolio position of the project defines strategy



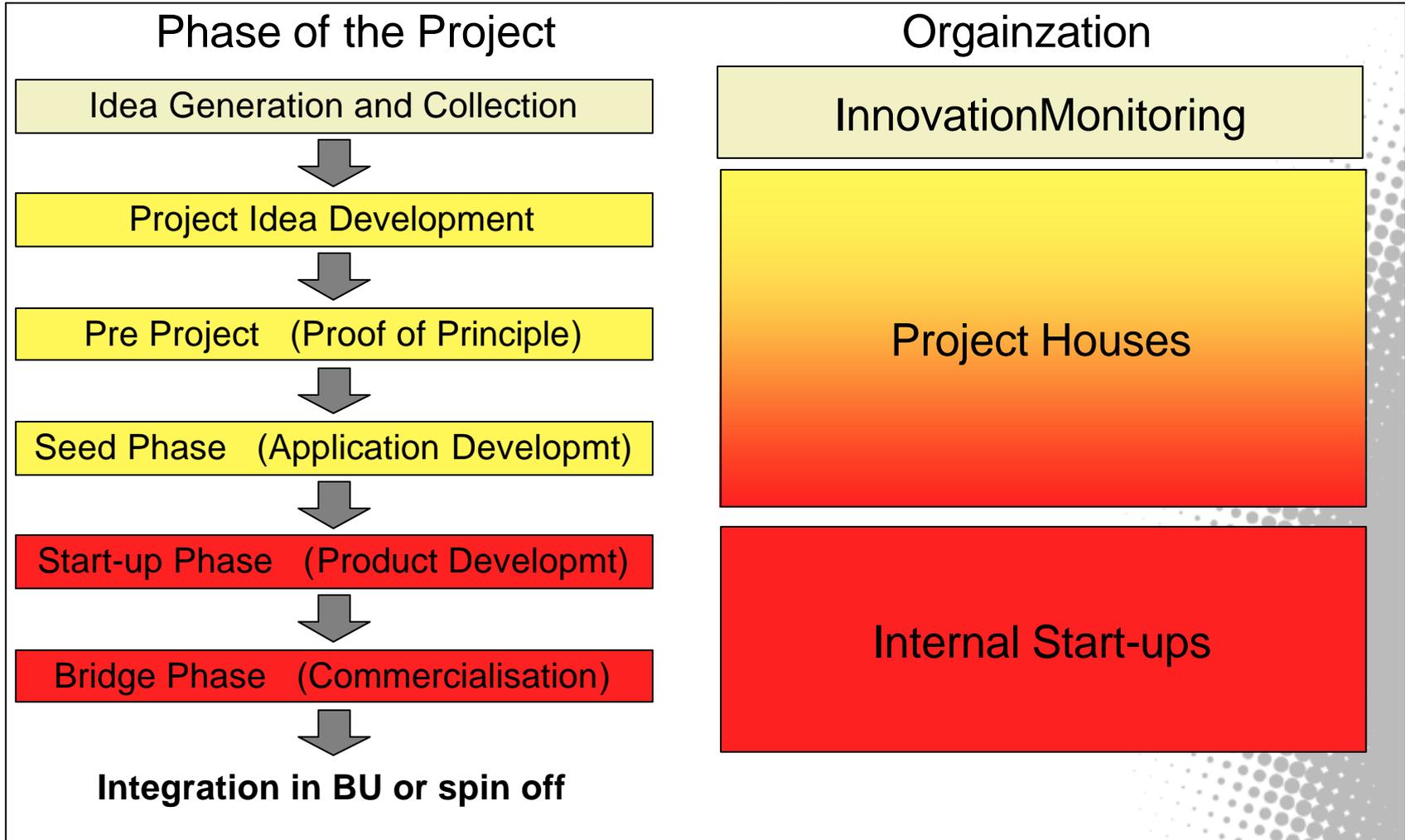
**New to Degussa**  
 Fast follower  
 Entry hurdles  
 Competition  
 Competencies

**New to the world**  
 First mover  
 Break-through innovation  
 High uncertainty  
 Long time commitment

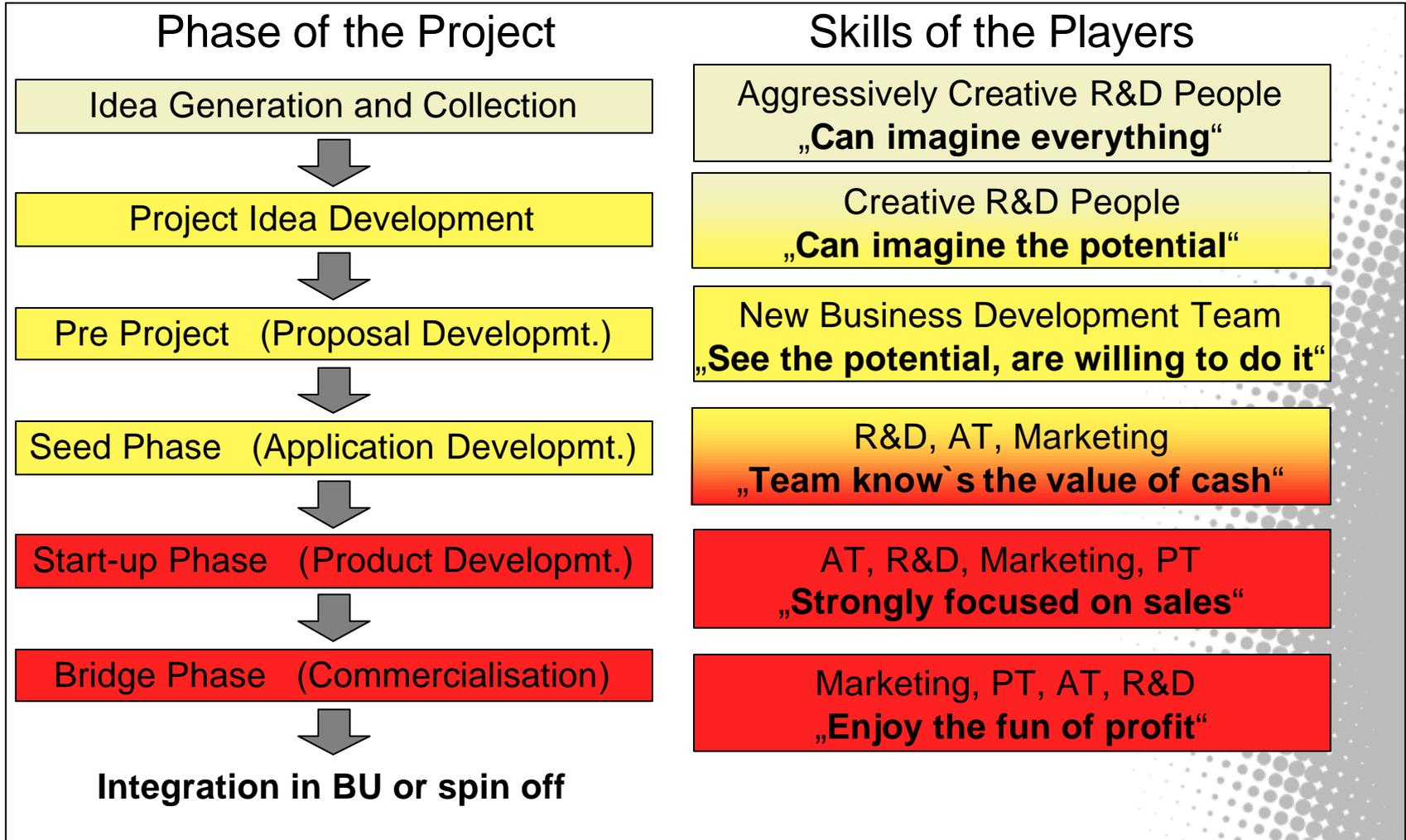
# Portfolio position of the project defines strategy



# Innovation: Process and Organization



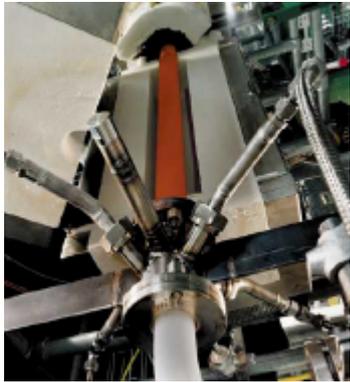
# Innovation: Whom it Needs When



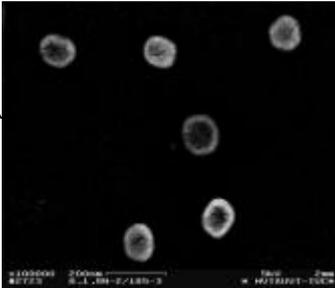
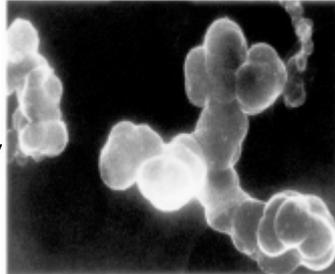
## Project Houses

- Explore technology platforms in high-risk areas
  - Joint effort of several Business Units with Creavis
  - 50% co-funding from Corporate
  - Project team members are delegated from Business Units into central locations (“Campus”)
  - Company wide sharing of knowledge and infrastructure
  - Cooperation with academia and research institutions
- and
- Run only for a limited period of three years
  - Activities are reintegrated into the Business Units or new business started

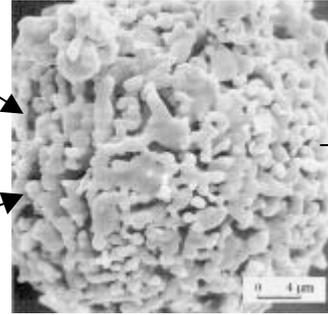
# Project House Nanomaterials (2000-2002) Effective Integration of Academia in Business



New processes



New physical and  
chemical properties



New handling  
properties

- Pigments
- Coatings
- Catalysis
- Electronic
- Fillers

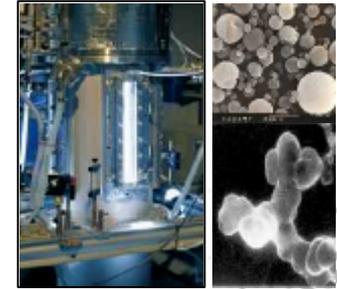
New  
applications

Cooperation with universities

Cooperation with customers

# Project House Nanomaterials (2000-2002): Fundamental Research Meets New Business Development

## Nanomaterials PH



Plasma reactor with  
tailor-made nanoparticles

## Project House Nanomaterials

### Science of Particle Formation

- Precise analysis of particle size, morphology and chemistry
- Detailed analysis of mechanisms of particle synthesis / growth
- New synthesis routes



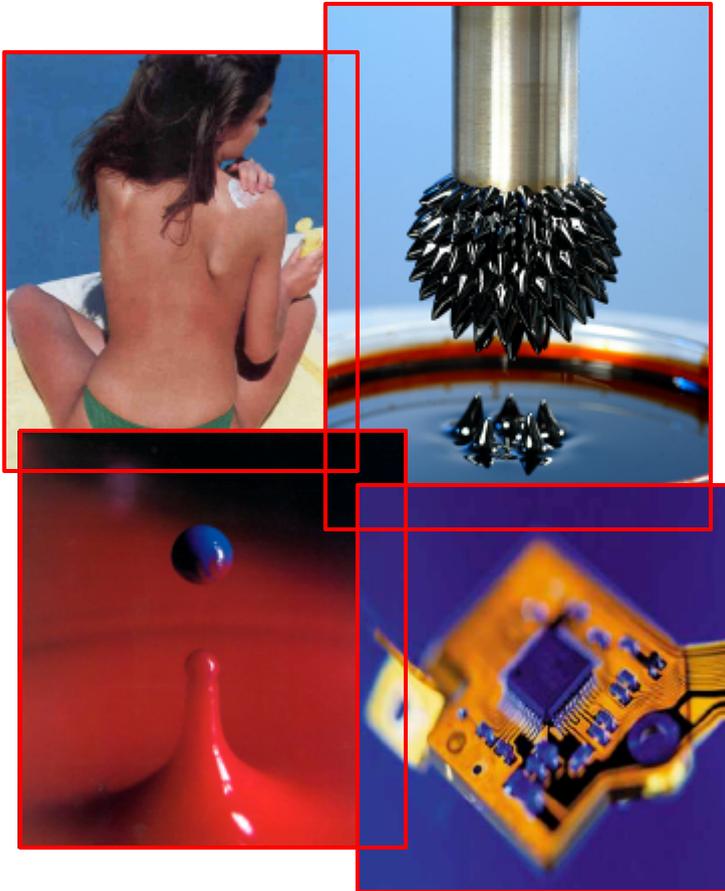
### Commercial Development

- Identification of promising applications
- Correlation of particle characteristics relevant to application
- Development of new technologies for particles with specific functionality

## Co-operational Research - Benefits for Degussa

<b>Standard Project</b>	<b>Project House</b>
<b>R&amp;D Projects related to one Business Unit</b>	<b>R&amp;D Projects together with several Business Units</b>
<b>Little Interdisziplinarität</b>	<b>Interdisziplinarität as Success Factor</b>
<b>"Daily Work" has Priority</b>	<b>Only Strategic R&amp;D Projects</b>
<b>Little Know-How-Transfer from University</b>	<b>Fast and Directed Know-How-Transfer from University</b>
<b>Little Time for Fundamental Research</b>	<b>Fundamental Research is a Chance for Visionary Potential Identification</b>
<b>Low Cross-Linkage with costumers</b>	<b>High Cross-Linkage with Customers "Joint Research Projects"</b>

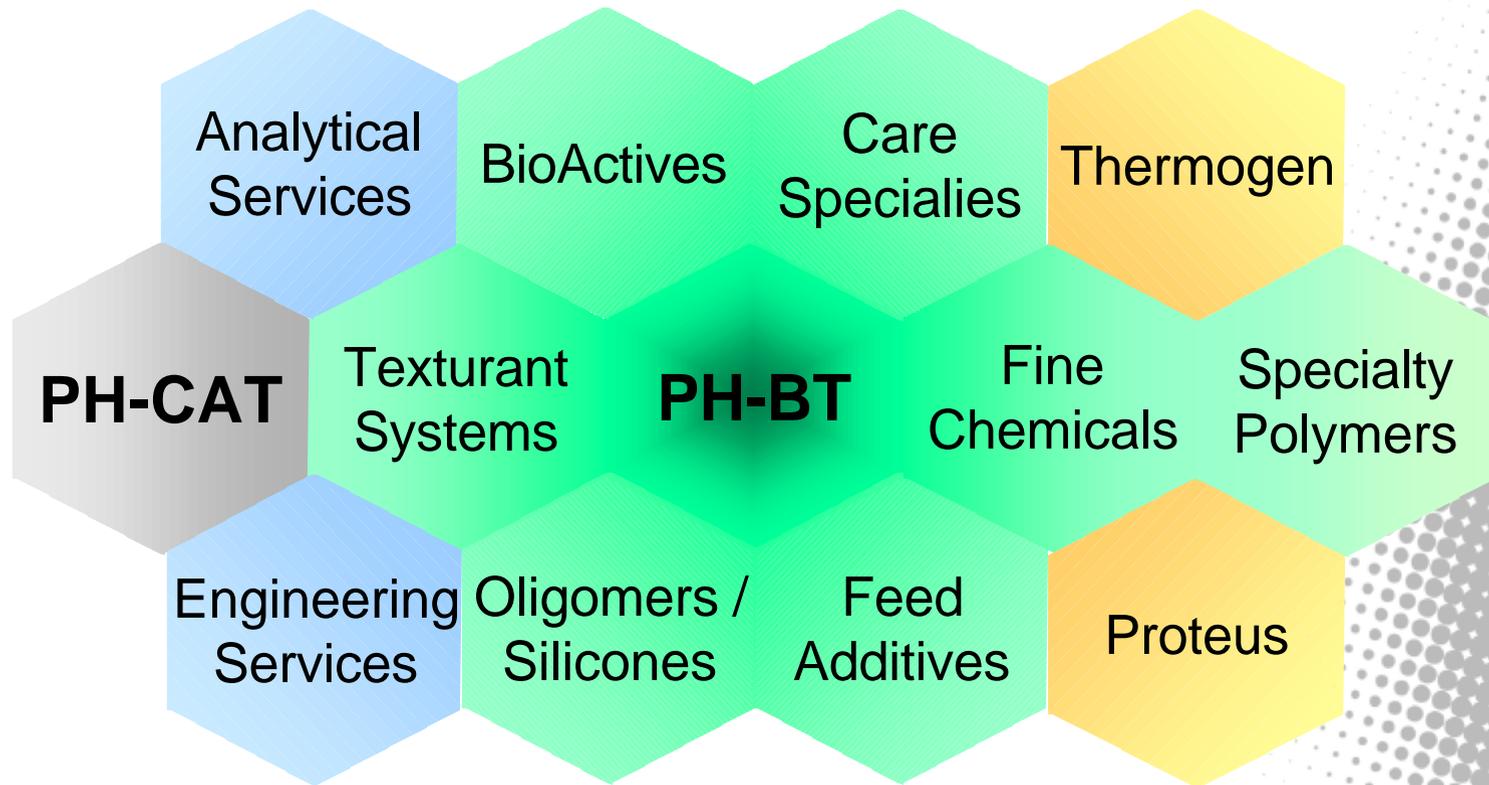
## New Business Development from our First Project House: Degussa Advanced Nanomaterials



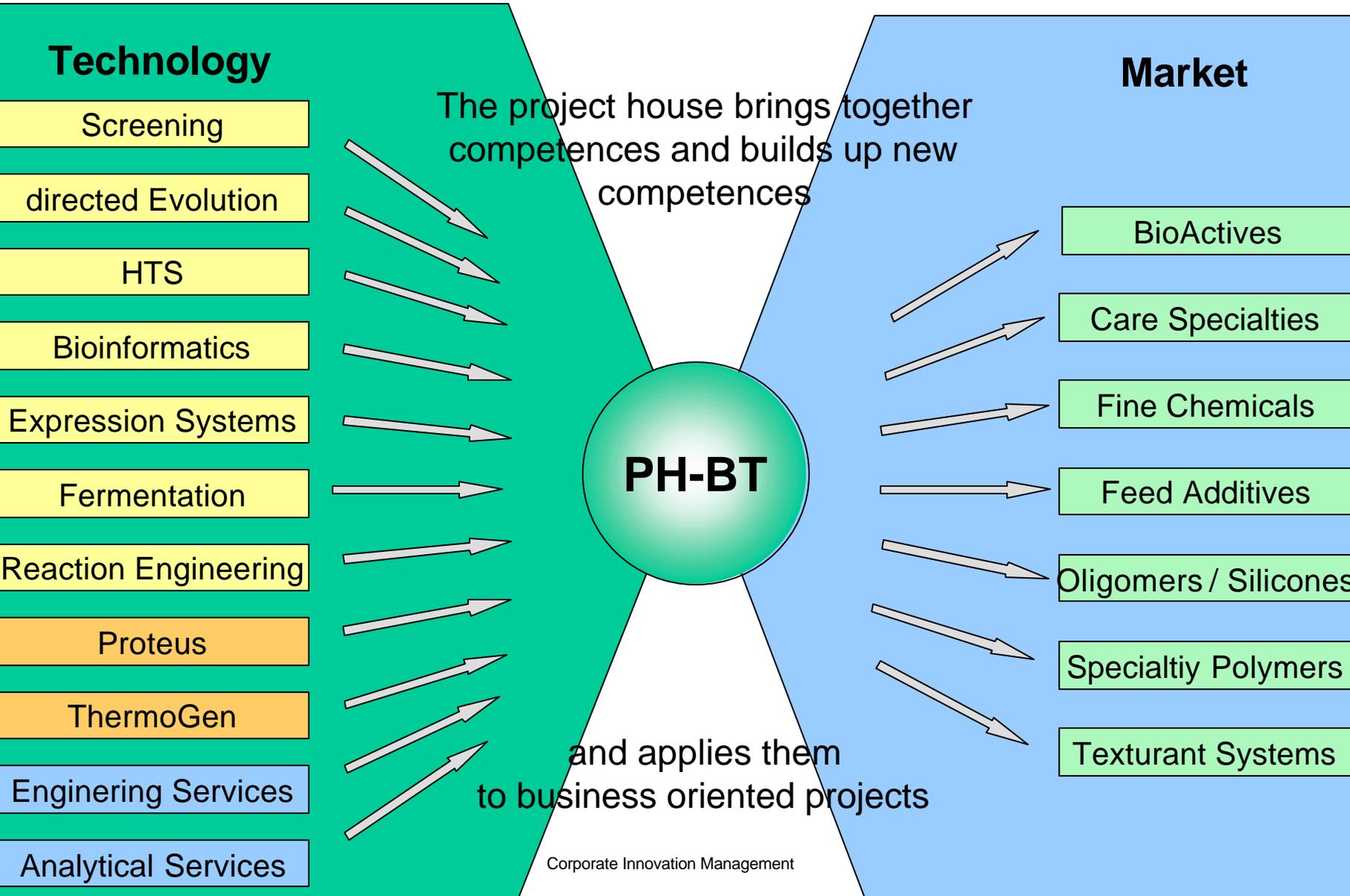
- ZnO
- $\text{In}_2\text{O}_3/\text{SnO}_2$  (ITO)
- $\text{CeO}_2$
- $\text{Fe}_2\text{O}_3@ \text{SiO}_2$
- Komposite

# Project House Biotechnology

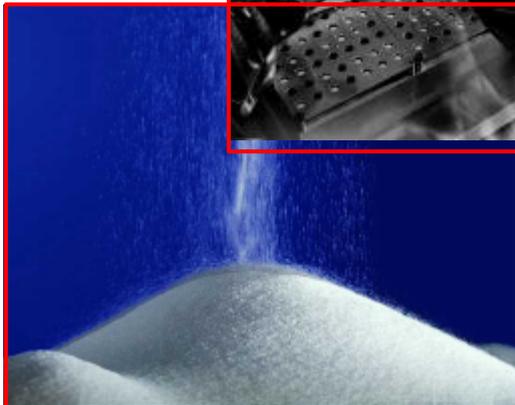
## Participating Business Units, Service Units and Strategic Alliances



# Project House as a Competence Center



## Project Houses – Status 2003



### Biotechnology

- Started January 2001
- 8 Business Units participating

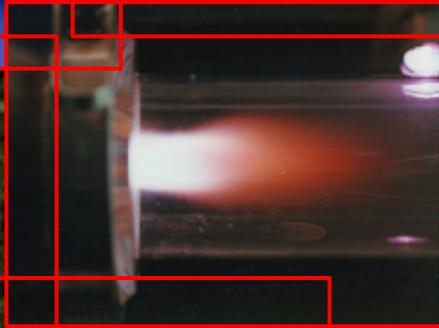
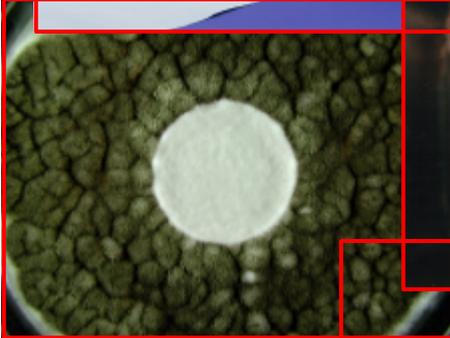
### ■ Catalysis

- Started June 2001
- 7 Business Units participating

### ■ Functional Polymers

- To start in September 2003

## Internal Start-ups



- Continuous Ceramic Coating
- Lotus-Effect
- SAM-Polymers
- Advanced Nanomaterials
- Creasorb

## Corporate Venture

Corporate Venture Capital is a strategic element to establish leadership in emerging technologies

Invest in start-ups and technology funds to

- have a window on technology and emerging markets
- provide access to emerging markets
- accelerate the time to market for Creavis projects

Degussa is partner of the Burrill Nutraceutical Fund which invests in Biotechnology Start-ups

Fund volume > 50 Mio USD, Degussa one of six partners

# Corporate Venture Skills and Competencies

Creavis Corporate Venture supports start-ups

- validation of business-models
- support to generate business plans
- search of strategic partners
- validation of strategic partnerships
- search of strategic acquisitions
- realize exit strategies

# Summary



R&D has the task to kiss **100** frogs  
in order to get **1** prince!

Therefore...

- ◆ go for the ponds where the high potential frogs are  
→ have a strategy to do the right things
- ◆ let enough people kiss a limited number of frogs  
→ keep focus, balance resources
- ◆ kiss the frogs skillfully and creatively  
→ apply most modern techniques,  
interdisciplinary teams
- ◆ avoid double kissing  
→ use available information
- ◆ kill the unsuccessful frogs as early as possible  
→ manage projects with go/exit-milestones

