



## Round Table JRC-Universities:

### « How to increase the contribution of Universities to Science and Innovation »

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# UNIVERSITY-INDUSTRY RELATIONS REEXAMINED: CONTEXT (1)

- **BASIC GOALS OF ALL ACADEMIC INSTITUTIONS**

  - Progress of knowledge

  - Teaching and training

- **BASIC GOAL OF ANY INDUSTRIAL COMPANY**

  - Survival (staying ahead ?) in the competitiveness race

  - Creating value for its shareholders

  - ...

  - Contributing to the social and economic progress of the society



# UNIVERSITY-INDUSTRY RELATIONS REEXAMINED: CONTEXT (2)

- **INDUSTRIAL COMPETITIVENESS : INNOVATION IS THE KEY**
  - Fast evolution of technologies
  - Capacity to anticipate product and process evolution
  - Capacity to transfer and integrate
  - Efficient R&D is one of the answers...
  
- **INDUSTRIAL RESEARCH : FUNDAMENTAL SCIENTIFIC QUESTIONS**
  - Capacity to comprehend the scientific progress
  - Limitation of internal R&D resources
  - Externalization of research



**... A NECESSITY OF A PROFICIENT  
AND CONSTRUCTIVE DIALOG ...**

**... BUT THE COMMUNICATION IS OFTEN  
DIFFICULT BY THE PROFOUND DIFFERENCES  
IN THE « SCIENTIFIC » AND « INDUSTRIAL »  
CULTURES ...**



# SCIENCE vs. TECHNOLOGY

- **THERE IS NO TECHNOLOGY WITHOUT SCIENCE...**
- **SCIENCE STIMULATES A TECHNOLOGICAL CREATION WHICH, IN RETURN, STIMULATES THE SCIENCE...**
- **ACCELERATION OF THE *TECHNOLOGY CERCLE***



- **IMPORTANCE OF BASIC TECHNOLOGICAL RESEARCH**

**To transfer fundamental research results : concepts, methods...**

**To create generic technologies and processes...**

**To develop innovative products which create value...**

- **DIFFICULTY TO ENSURE AN EFFICIENT INTERACTION BETWEEN THE THREE LAYERS WHICH CONSTITUTE THE TECHNOLOGY CERCLE**

**Science**

**Basic technological research**

**EVA Innovative products and processes**



**BASIC SCIENTIFIC CULTURE**

**VS.**

**INDUSTRIAL, ENGINEERING TYPE  
CULTURE**



# RESPECTIVE ROLES...

- Industry does not expect to have its direct product/process problems solved by the academic research
- Industry needs a high quality University fundamental research, “UNDERSTANDING” of phenomena oriented...
- Industry does not need a parametric type studies, in which the results apply only to a unique combination of systems and parameters and which difficult or impossible to generalize...





# HOW TO IMPROVE COMMUNICATION AND COLLABORATION EFFICIENCY?

- **Increase the number of “translators” in the two worlds**
- **Increase the mobility University - Industry, both ways**
- **Make the industry needs better perceived**
- **Improve the “marketing” of research achievements**
- **Adopt a multidisciplinary approach to industrial research problems**
- **Favor comprehensive studies rather than parametric observations**



# ***Nanocem*** EUROPEAN NETWORK

- A unique collaboration between 10 industrial and 22 academic partners in 13 European countries, launched in 2004, financed by the industry
- Research: an intensive multidisciplinary research program, related to basic comprehension of properties and phenomena of cementitious materials
- Education: 120 academic researchers in the team who between them manage some 60 PhD and post-doctoral fundamental research projects, support from Marie Curie Fellowships
- A major coordination effort with an excellent reporting



# **Ductal**® RESEARCH PROGRAM

- A unique collaboration between three industrial French companies
- An intensive internal R&D program : about 40 people involved
- More than 10 university laboratories involved in a 3-year *multidisciplinary research program, related to basic properties and phenomena* concerning DUCTAL (several PhD thesis + contracts)
- Project managers with strong scientific and industrial backgrounds

