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## What Makes a University an Attractive Partner for Industry?

Compiled from experience in EIRMA companies

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### What's happening to company innovation processes?

*Increasingly Global, Connected, Service-oriented ("Business Model")*

### What does this mean for business-university collaboration?

*It's all about people:  
Career choices and Research Collaboration...*

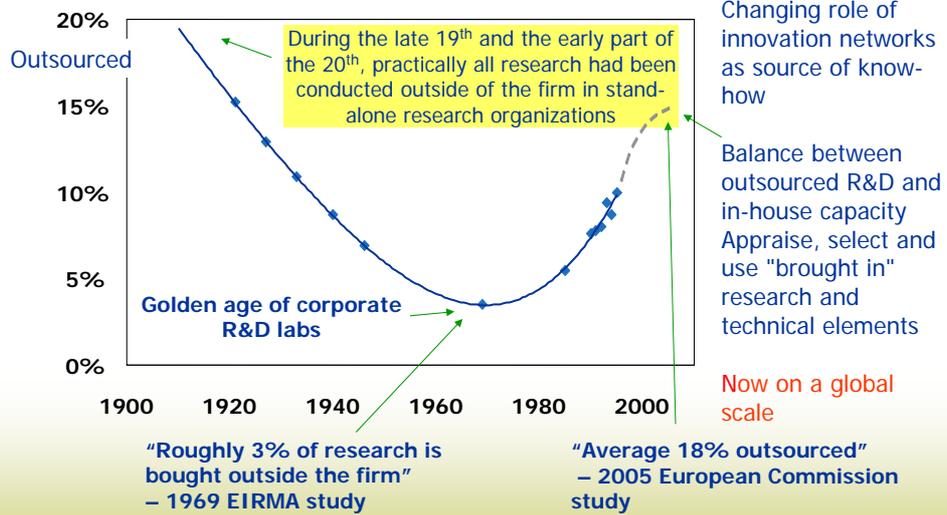
## Then and Now

Basic ⇒ Applied Research ⇒ Development	→	“Innovation is much more than R&D”
In-house processes	→	Partnerships essential
Physical products	→	Growing service content
Proprietary “stuff”	→	Business process design
Technology as a main driver	→	What is the innovation driver?
Western brains	→	Brains are everywhere
Western standards	→	Whose standards?
Start by selling in the West	→	Which are our lead markets?

## From Philips “NatLab” to High Tech Campus Eindhoven



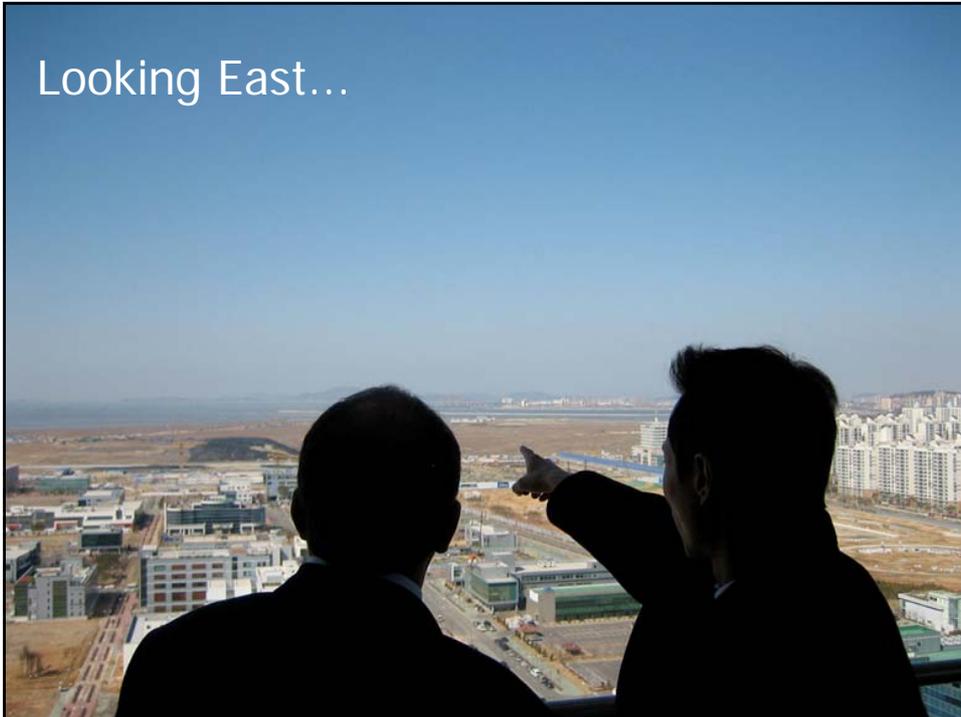
## Trends in R&D Outsourcing



TNO/Roland Berger (2003)

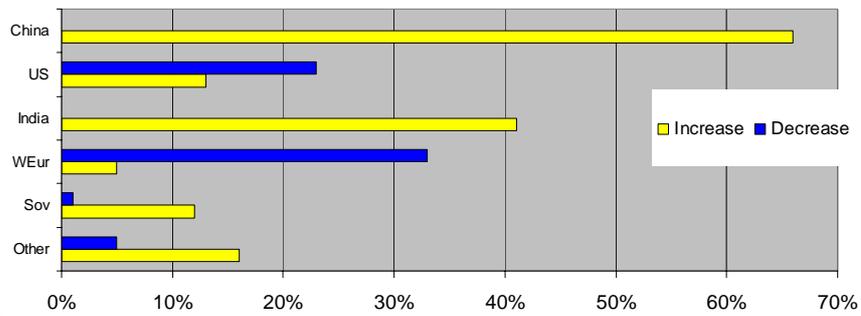
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## Looking East...



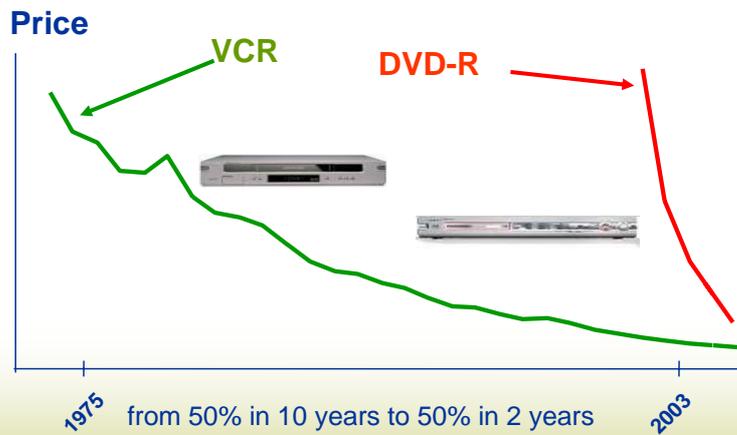
## Global Technology Management

When companies anticipate increase (decrease) in technical employment, what locations are mentioned?



Thursby & Thursby (2005/06)

## Globalization : Managing Product Life-Cycle





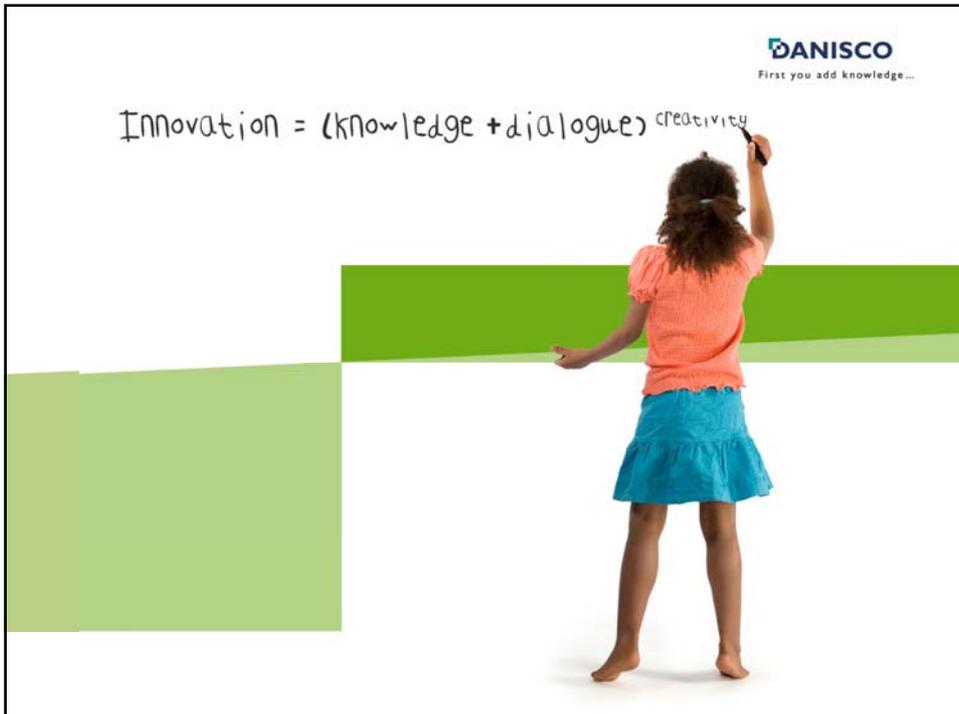
## What does this mean for business-university collaboration?

*It's all about people:*

*Career choices and Research Collaboration...*



Innovation = (knowledge + dialogue) creativity





## Creative People [1969]

"Holst's Rules"

1. Engage competent scientists, if possible young, with academic experience.
2. Do not pay too much attention to the details of previous experience.
3. Give them a good deal of freedom and leeway to their idiosyncrasies.
4. Let them publish and take part in international scientific activities.
5. Steer a middle course between individualism and strict regimentation; base authority on real competence; in case of doubt prefer anarchy.
6. Do not divide according to disciplines: create multidisciplinary teams.
7. Give independence but ensure that leaders and staff are thoroughly aware of their responsibility for the future of the company.
8. Do not try to run research laboratories on a detailed budget system.
9. Encourage transfer of competent senior people from the research laboratories to the development laboratories of product divisions.
10. In choosing research projects, be guided not only by market possibilities, but also by the state of development of academic science.

## Creative People [2007]

"7 Building Blocks of the Creative Climate"

1. Hire the best people - "the best of the best"
2. Maintain many direct contacts with customers
3. Ensure researchers feel that their initiatives and creative ideas are appreciated
4. Use contacts across the boundaries of discipline as a source of the most creative ideas
5. Ensure sound balance between structure and "anarchy"
6. Provide a good infrastructure
7. Cooperate with the best research players in the world

*Hendrik Casimir's interpretation of Gilles Holst's principles of research management. He was Head of Philips Research Lab and founder of EIRMA. Holst worked in industrial research between 1914 and 1946.*

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## Desired Qualities in New Recruits

(Technical careers)

- ✓ High score on a solid curriculum [also numerate, literate, multilingual]
- Proven capabilities to work in-depth
- Communicative
- ? Affinity to other disciplines/capability to combine
- Original and creative
- Entrepreneurial mind-set and customer-oriented
- ✗ Team player, without compromising individual integrity
- Social skills and experiences ("networker")
- Overall impression of personality

How strongly are these influenced at the level of tertiary education?

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## Employment tendencies at Doctoral Level

- Significant portion of good students tending to enroll into business- rather than science-based careers
  - Main reason is perspective of better professional development and salary opportunities
- Typical (mis-)perceptions of research careers:
  - Exclusive-isolated environment: university and research centers
  - Limitations in professional development: time/possibility of reaching stability (grant dependent); employability in private sector
- Growing importance of international mobility, yet significant barriers exist

Sources: European University Association "Doctoral Project"; European Commission; OECD

## Better Use of Public Knowledge

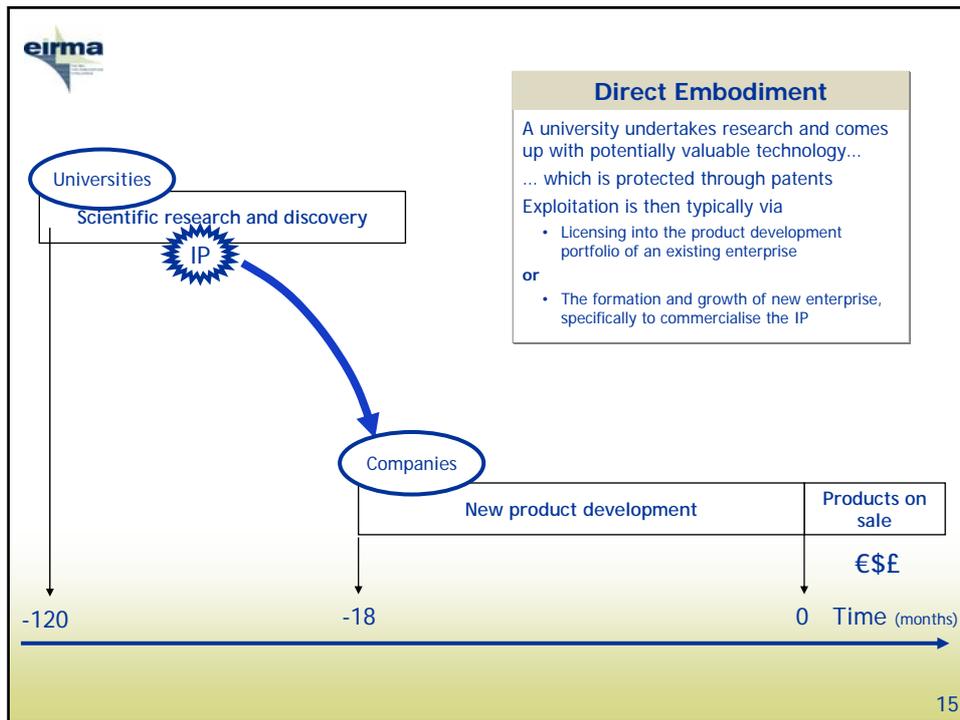
Dealing with all of the iceberg



*Intellectual Property available for licensing*

*Spinouts*

*Collaborative Research Opportunities*



**eirma**

## Direct technology embodiment is not an effective approach

- Technology-driven innovations fit into complex webs of products, services, commercial relationships and markets  
Cannot easily be pursued as discrete propositions
- Development is a complex, expensive process  
The "Valley of Death" for a typical breakthrough technology is at least 10 years wide and €20m deep
- Most research output is too 'raw' to be used directly  
Cannot be adequately captured as formal IP  
Results usually emerge in very different applications to those originally envisaged, with unexpected costs and timing
- Process of company formation and growth is fraught with many difficulties and risks not related to the potential of the IP

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## Business-University Collaboration: Common Problems

- Failure to recognise that, most often, we exchange knowledge, not specific technology
- Lack of professionalism (on both sides)
- Diverging interests and culture
- Ownership of results, exclusivity
- Project management and performance of PROs
- Compensation of indirect PRO costs (O/H)
- Volatility of relationship
- "Fair" share of returns in case of success



*Requires change of mindset by both parties to align interests  
Responsible Partnering as 'Grass Roots' initiative  
Supporting efforts also at national/European levels*

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## All's not well across the pond

### Industrial support to US universities

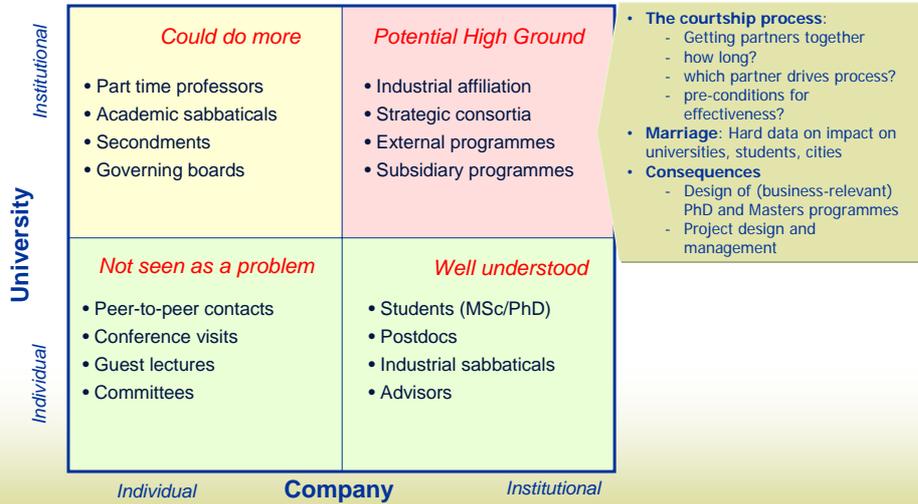
- Between 1972 and 2001, industrial support to US universities and colleges grew more rapidly than any other source of support for academic research and development.
- Between 2002 and 2006, the absolute value of industrial R&D dollars to academic institutions declined and the percentage of industry funding in total academic R&D dipped from a high of 7.9% to 4.9%.

### IPRs

- Negotiation of intellectual property rights in sponsored research agreements has become a barrier to industry-university research collaboration in the United States.
  - more contentious
  - takes longer
  - increases transactional costs
  - little/no benefit results

From NSF InfoBrief  
Published September 2006

## Managing the Iceberg A Matrix of Company/University Interactions





## Globalisation: Key Factors Influencing Decisions about Location of R&D

Potential for market growth

Availability of environments that foster the  
development of a high-quality work force

Opportunities for productive collaboration between  
corporations and universities

Sources:  
Thursby and Thursby (2006)  
European Commission (2006)

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## Business-University Collaboration Questions of Current Interest

- Principles and "good practices" of effective Business-University collaboration are well-documented, yet we continue to face problems
  - Which principles are most relevant for each institutional actor?
  - Which are relevant to the PhD student, as researcher and as future employee?
- Need to better understand:
  - The courtship process: Getting partners together, how long, which partner drives process, pre-conditions for effectiveness?
  - Marriage: Hard data on impact on universities, students, cities
  - Consequences: Design of (business-relevant) PhD and Masters programmes; Project design and management

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