

CONNECTING OPEN INNOVATION AND ABSORPTIVE CAPACITY

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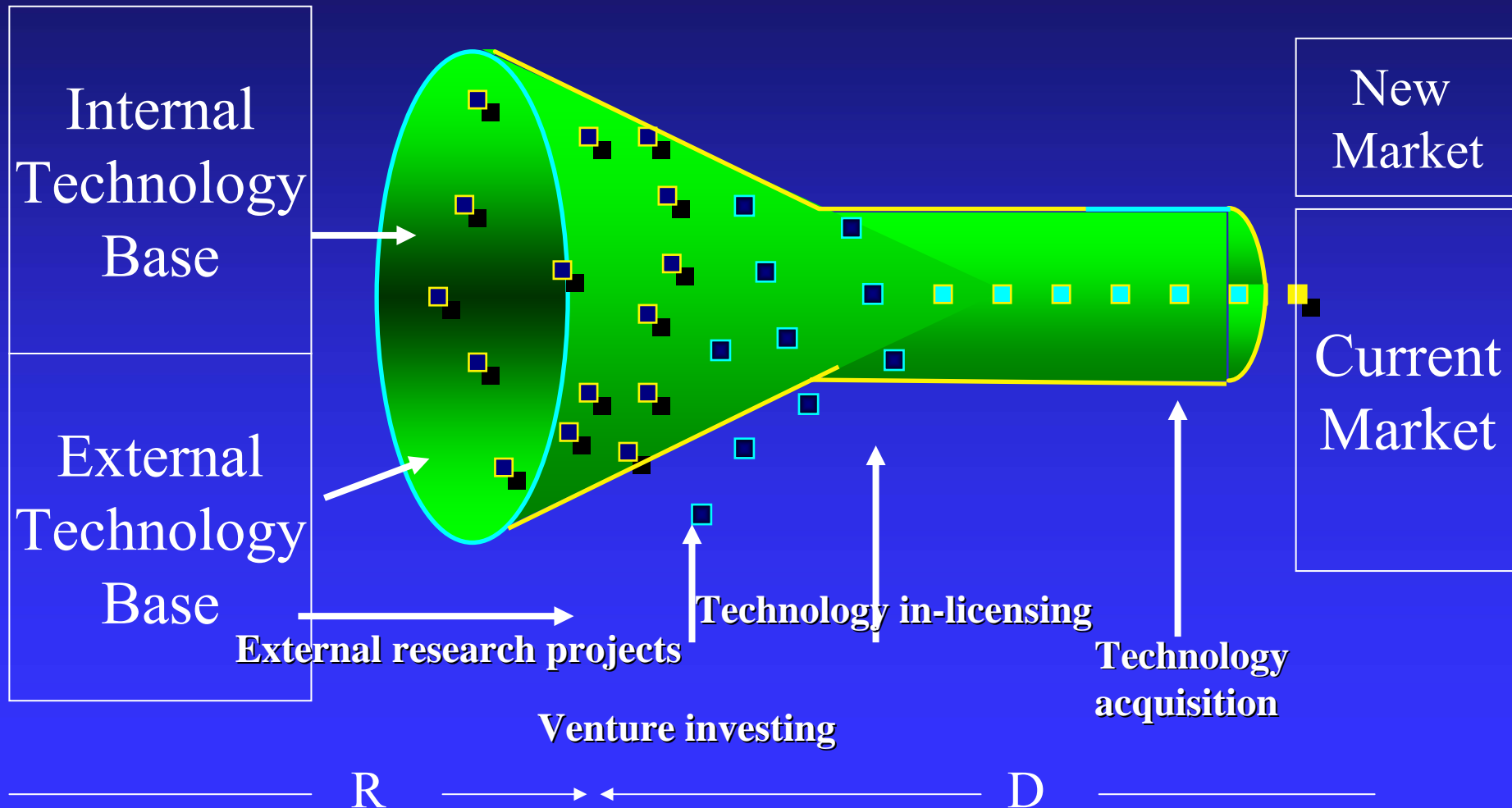
Monday, November 05, 2007

What is Open Innovation?

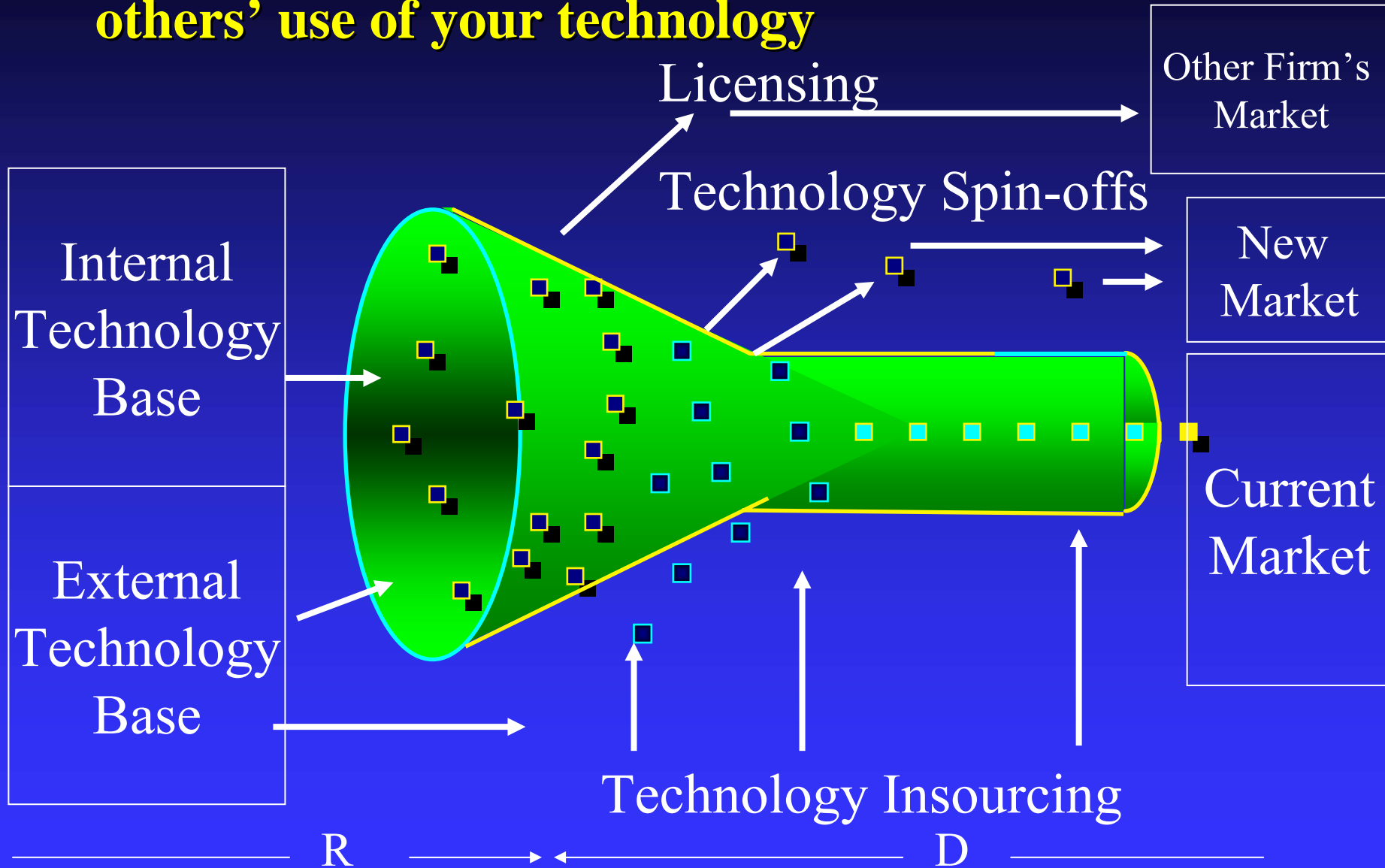
“Open innovation is the use of purposive inflows and outflows of knowledge to **accelerate internal innovation**, and **expand the markets for external use of innovation**, respectively.”

Chesbrough, Vanhaverbeke, West
Open Innovation: Researching a New Paradigm (Oxford,
2006)

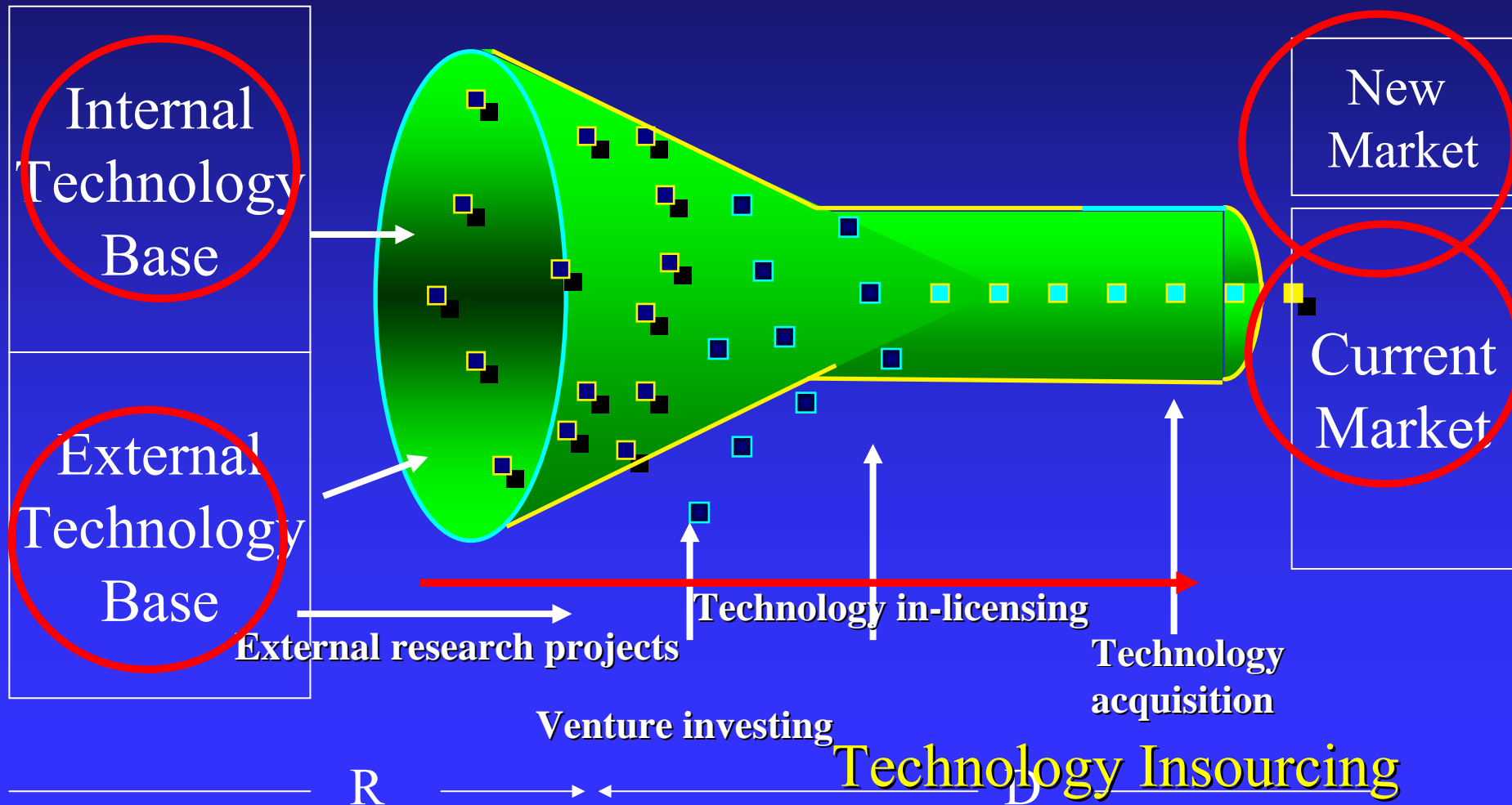
Technology in-sourcing: Filling internal gaps with external technology



Growing new businesses and profiting from others' use of your technology



Filling internal gaps with external technology



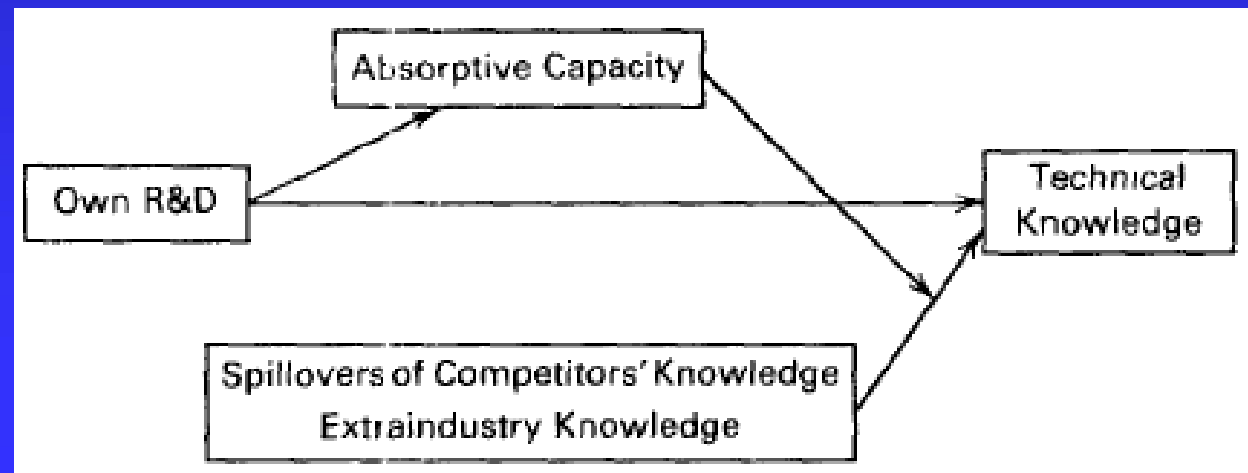
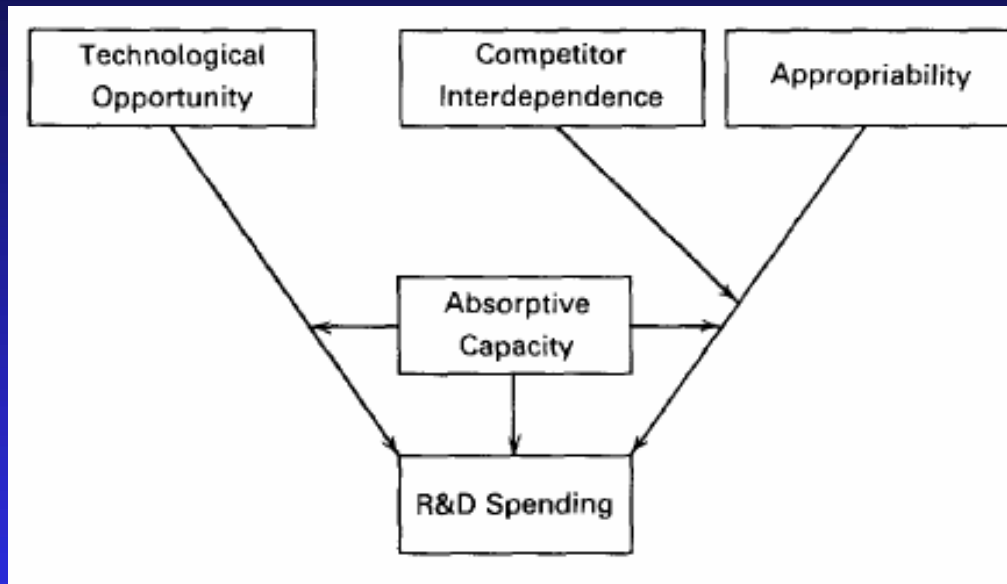
Absorptive capacity

- Definition:

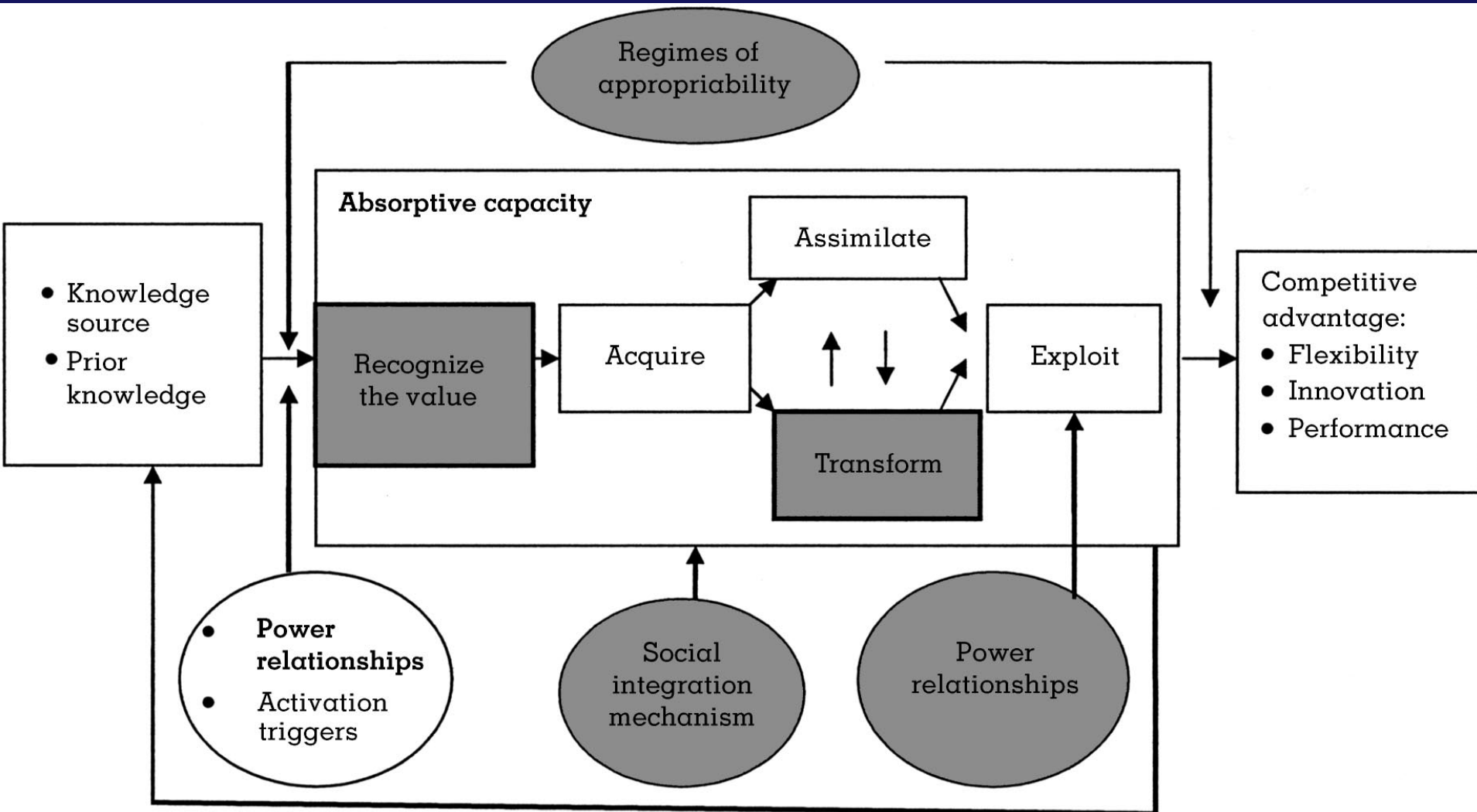
- ◆ "the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends ..."

Cohen and Levinthal (1990)

AC – Cohen and Levinthal (ASQ, 1990)



AC – Todorova & Durisin (AMR, 2007)



Can we enrich AC by connecting to OI?

- Outside-in dimension of OI: how to in-source technology or knowledge from other organizations (universities, research labs, start-ups, users, etc...)
- AC: capability to recognize, assimilate and integrate external knowledge
- They should be related to each other!!!
 - ◆ both are tackling the process of in-sourcing externally developed technology
 - ◆ internal R&D is necessary to absorb external knowledge
 - ◆ But there are *many differences* – how can we enrich the concept of AC by confronting it with OI?

Improving our understanding of AC

OI combines

1. Value creation and value capturing (VC2) – **BM, business and corporate strategy**
2. Transaction costs - **TCE**
3. Networking with innovation partners – **relational view (\approx VC2)**
4. Access to resources – building capabilities – **RBV , RDT**
5. Dealing with uncertainty – **real options reasoning**

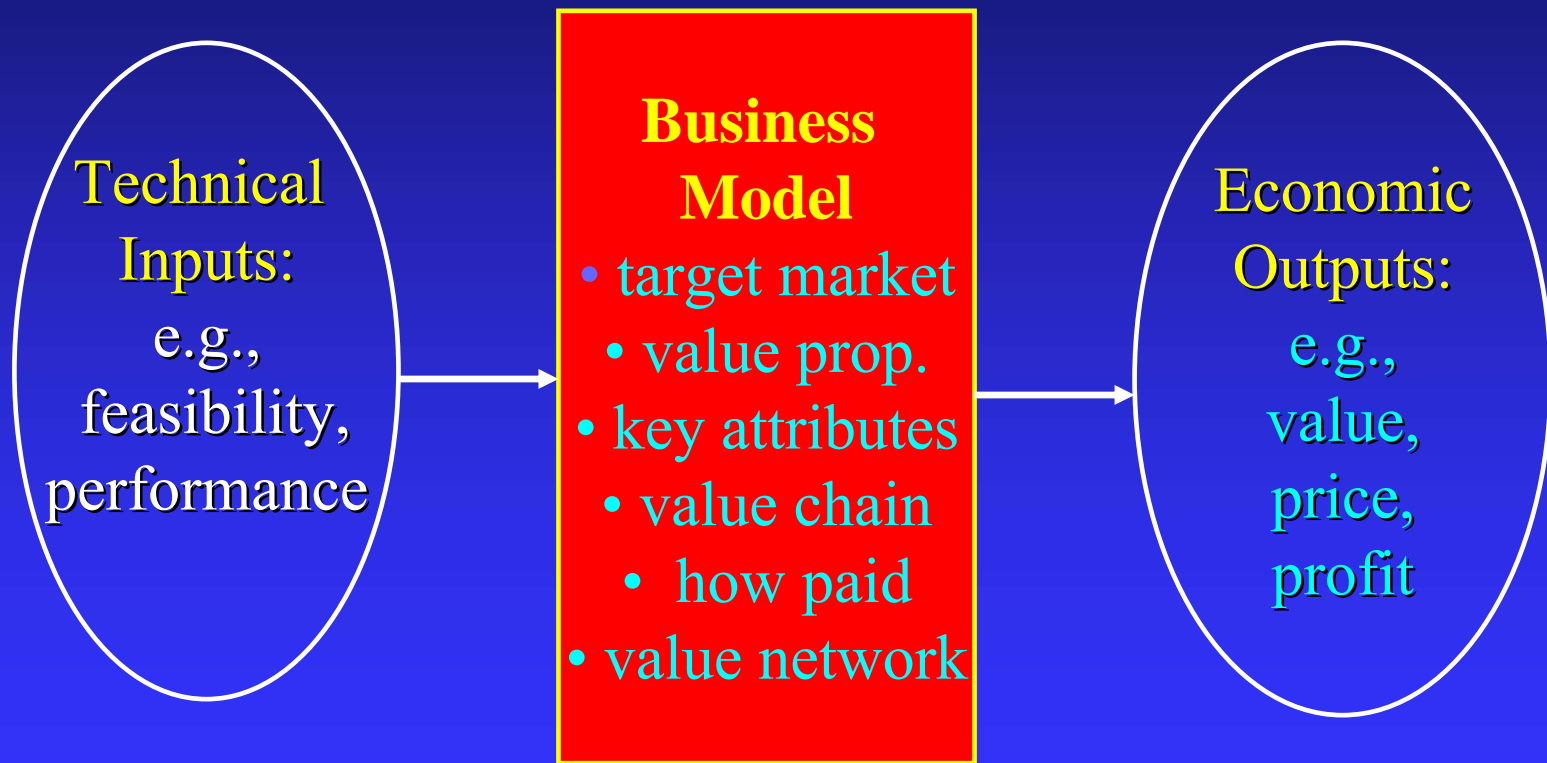
Value creation and capturing (VC2)

Business level

Corporate level

Linking VC2 and networking with
innovation partners

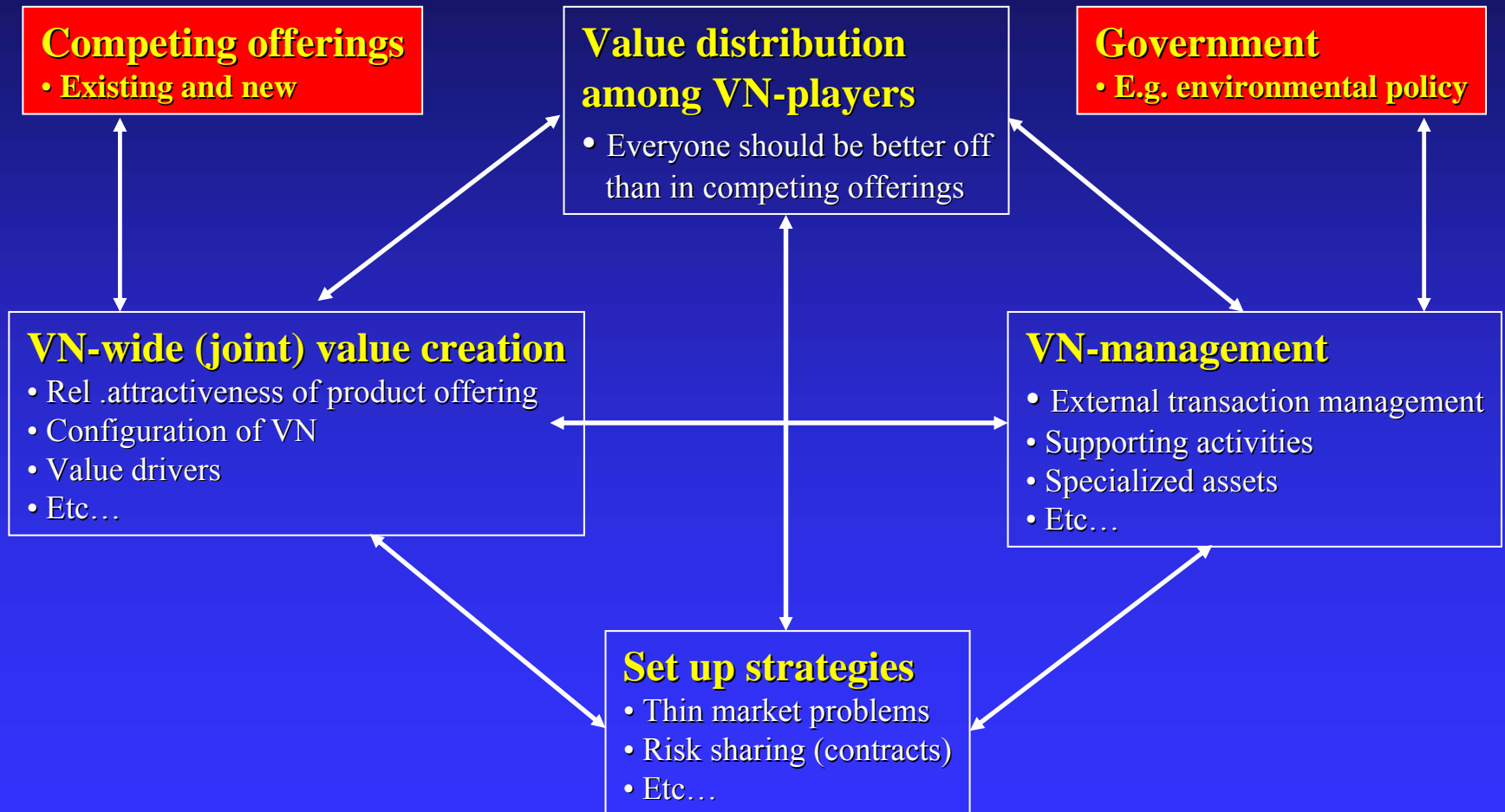
Why business models are hard to manage: Mapping across domains



Measured in technical domain

Measured in social domain

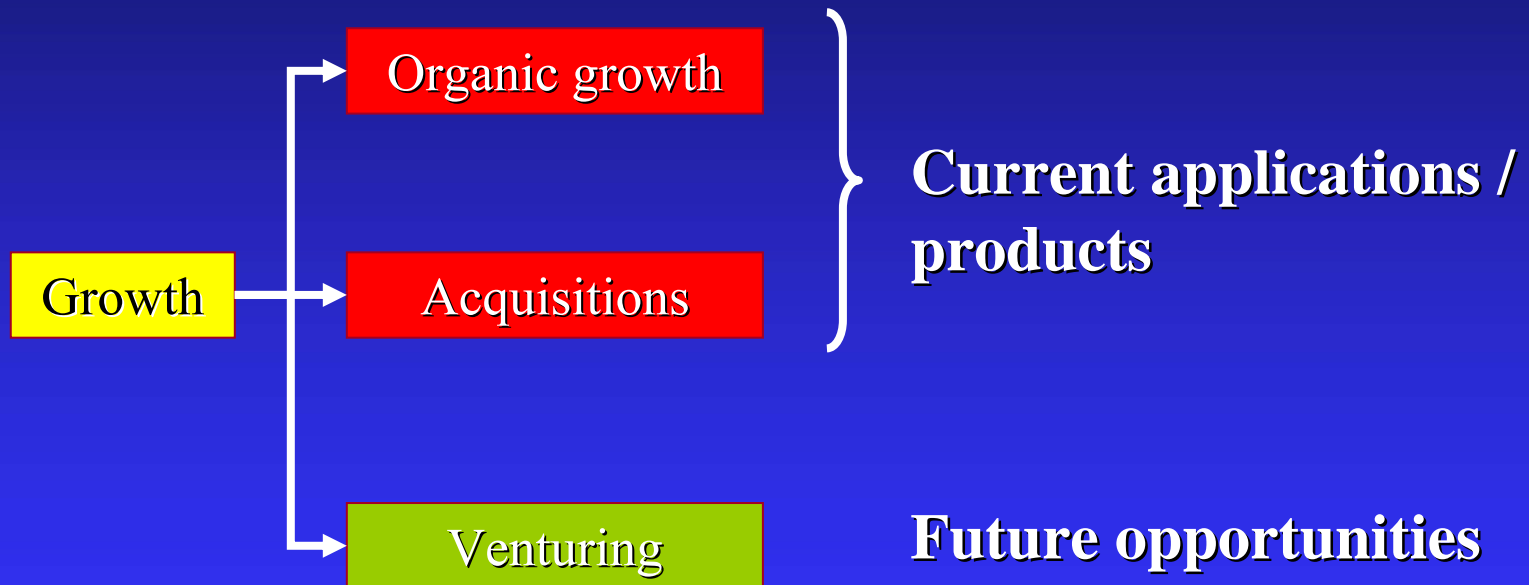
Value networks from a management point of view



VC2 in value networks

- All players in the VN should be better off than in competing offering
 - ◆ Distribution of the total value created depends on bargaining power (Brandenburger and Stuart 1996)
 - ◆ ... but, in VNs capturing value has to be *considered jointly* with value creating strategies because *cooperation* among players determines the total value created
 - ◆ *Managing tensions* between joint value creation and firm level profitability

Corporate growth strategy



Transaction costs,
transaction value
development of technology markets

Transactions cost and technology markets

■ OI:

- ◆ *Maximizing the transaction value* between innovation partners rather than *minimizing transaction costs*
- ◆ They choose cooperative modes with higher transaction costs as long as the *expected joint gains outweigh transaction cost considerations* (Zajac and Olson, 1993; Dyer 1997)
- ◆ Transactions become *more effective* as *technology intermediaries* develop and shape the technology market

Transactions cost and technology markets

■ Implications for AC:

- ◆ Change focus:
 - ◆ from technology spillovers to purposively built technology transactions
 - ◆ from transaction costs to transaction value
- ◆ Consider AC as a *dynamic capability* (Zahra & George 2002; Todorova and Durisin, 2007) that has to *co-evolve* with the changing markets for technology (Arora et al. 2001)

Inter-organizational combination of
resources and knowledge

RBV KBV

OI and inter-organizational resource combinations

■ OI

- ◆ External sources of knowledge become more important vis-à-vis internal resources
- ◆ Reasons:
 1. Monitor latest technological developments
 2. External technology as supplements to internal technology developments (more complex products)
 3. Value nets: companies cannot commercialize products on their own

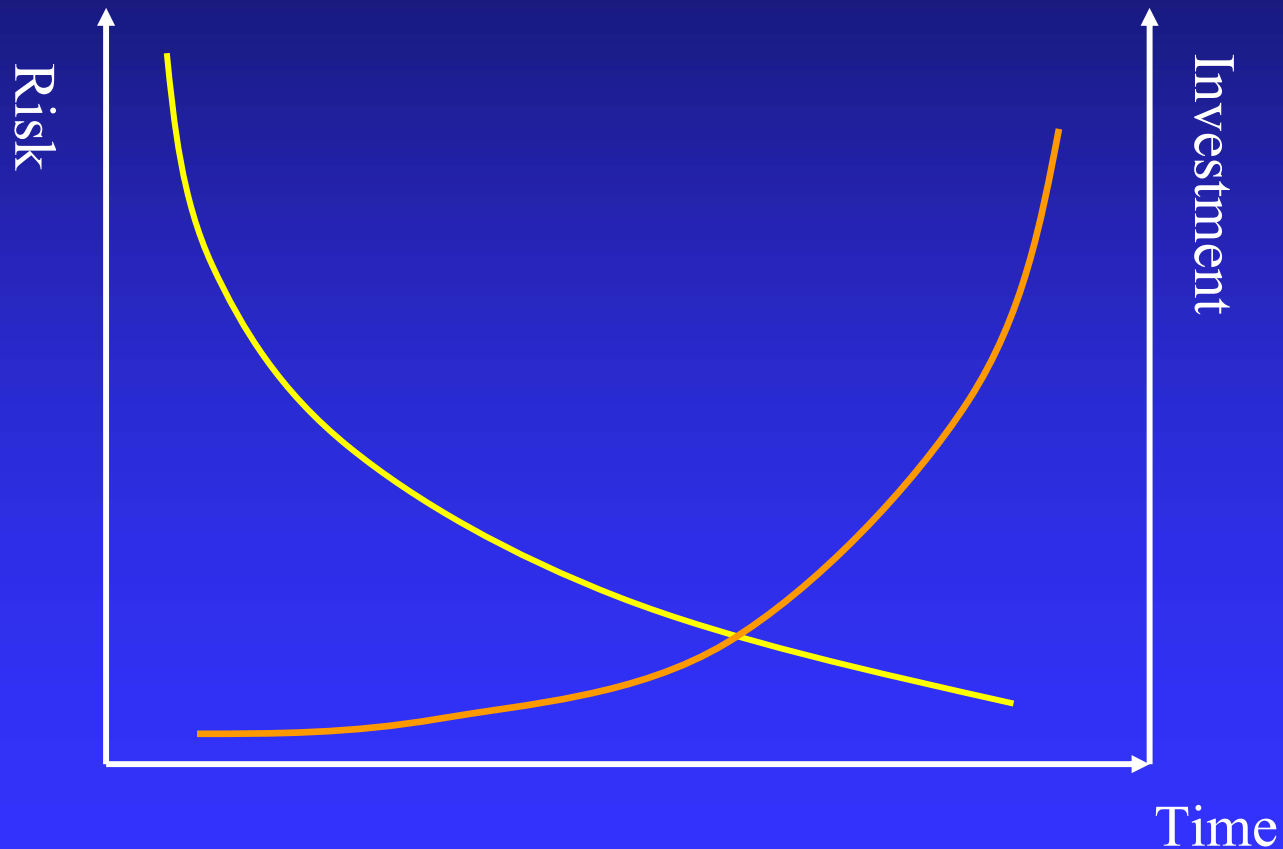
OI and inter-organizational resource combinations

- **Implications for AC**
 - RBV and KBV: shift from introspective approach to resource dependence & inter-organization learning
 - AC becomes crucial in RBV and KBV
 - Three reasons to collaborate in OI have different requirements for AC:
 - // recognition, assimilation and exploitation dimensions of AC
 - but is it the same AC concept?
 - Distance between own and partners' technology portfolios (Inversed U –shape relation; Nooteboom et al 2007)
 - Companies with better AC can absorb more distant knowledge

Dealing with uncertainty
Real options reasoning

OI risk signature:

A set of options to cope with uncertainty



Real options

- Real option = the right, not the obligation to take action in the future. It typically consists of option creation and option exercising
- **Real options and OI**
 1. OI-firms *benefit from early involvement* (sense developments in new technologies through CVC)
 2. *Delayed entry or delayed financial commitment* (compounded real options)

Real options

3. *Advantage of an early exit* (potential downward losses are much smaller)
4. *Benefiting from delayed exit*
(compounded real options)

Real options

- ROR and AC:
 - AC is not automatic process + investments depend on the technology stage
 - Small investments → tap into different technologies in early stages
 - AC is not the same for exploration and exploitation; NBD or improving existing business; radical / incremental; ambidexterity
 - Hence, a dynamic view on absorptive capacity is required

Absorptive capacity, the outcome of
experience in managing external
relations?

AC as a managerial capability:

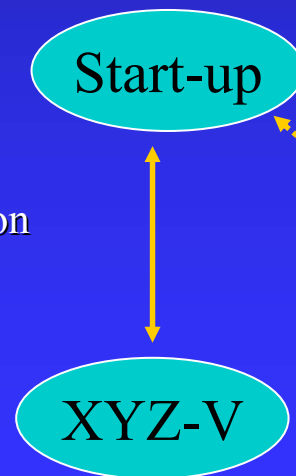
- How to source external technology?
Insights from OI
 - ◆ BM but not organization structure, culture, dynamics of corporate strategy, routines, internal technology transfers
 - ◆ *External Venturing @ DSM*
- **Conclusion:** AC of a firm is ultimately determined by the managerial capabilities (routines) to manage external relations

How to organize for OI?

External Venturing at XYZ

- **Pitfall** : It is not acceptable to use the financial participation as a power tool to enforce cooperation on terms of the investing company

Is it an interesting investment?
Yes? Then a minority participation



Once there is a financial participation there is no deal how to handle the transfer of technology!

How to organize for OI?

External Venturing at DSM

- **Rationale:**
 - Strategic return, not a financial return
 - One of the BU should benefit from it
- Therefore: Negotiation is a *three way negotiation*
There are *two deals* packaged into *one overall deal*

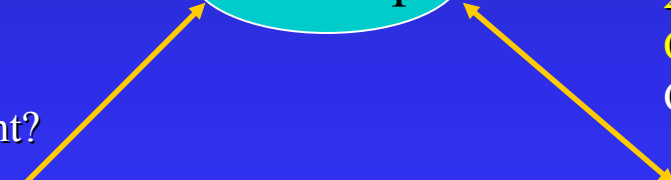
1.
Option creation:
Is it an interesting investment?

DSM-V

Start-up

2.
Option exercising:
Can the new technology create
a new business in the future?

DSM-BU



How to organize for OI?

External Venturing at DSM

- Result: negotiate to get a maximal win-win situation
 - Both firms can offer each other a lot
- **The large firm:**
 - business and market intelligence
 - application technology
 - marketing know-how
 - large scale manufacturing
 - credibility among large potential clients
 - patent writing skills
 - ...
- **Start-up:**
 - new technology, business model, etc..
 - entrepreneurial risk taking and decision making
 - ...

How to organize for OI?

External Venturing at DSM

Six reasons not to start a power play with external ventures:

1. *Bad reputation:* when the large, investing firm is looking for interesting start-ups as a recurrent practice
2. Pushing *too hard for a particular application* (based on the business model and proposed application of the large, investing firm)
 - ◆ Market potential of start-up technologies is still very uncertain because of the early stage technology. *Keep options open* for unintended but interesting applications.
 - ◆ limits business potential of start-up (and thereby shareholders value)

....

How to organize for OI?

External Venturing at DSM

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How to organize for OI?

External Venturing at DSM

Six reasons not to start a power play with external ventures:

3. Might *kill the spirit of good cooperation*.
4. *Kill entrepreneurial spirit by creating another "corporate puppet on a string"*
5. Could *limit exit possibilities and exit value* for other shareholders (by lock-in to/dependency on corporate)
6. *Could result in litigation* if perceived as abuse of economic power

Practicing Open Innovation

■ Websites

- ◆ <http://www.openinnovation.net>
- ◆ <http://www.openinnovation.eu>
- ◆ <http://www.openinnovatie.nl>
- ◆ On-line open innovation scan

■ Seminars

- ◆ Customized management courses about OI
- ◆ Cases and management tool development

■ European Center for OI

■ Wintercourse CE and OI at High Tech Campus (8-14 November 2007)