

The role of different partners - including universities - in innovation ecosystems

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September 14, 2018

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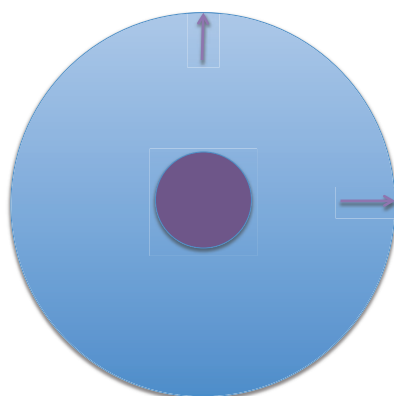
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**EXPLOITATION OF EXISTING
KNOWLEDGE & NEW KNOWLEDGE
GENERATION**

We live in an era with abundant technology

Ratio existing knowledge (surface) vs new knowledge generation (circumference)



$$\pi \cdot r \cdot r / 2 \cdot \pi \cdot r \rightarrow r / 2$$

1. (-) Knowledge IS getting obsolete
2. (+) generic technologies are applicable in many industries (digitalization; biomedical; material sciences)
3. (+) Price new knowledge vs use of existing knowledge

We live in an era with abundant technology Consequences for universities

Scarce knowledge

- Firms: Focus on new technology development in large firms (early stage)
- Discovery driven
- One-on-one research collaboration
- R&D performing firm is decision maker
- Few innovation service firms (internal in R&D firm)
- Technology as competitive driver (product innovation)

Abundant knowledge

- Firms: Focus on exploitation of existing knowledge (late stage)
- Needs driven
- Innovation in ecosystems of partners with specific roles
- Decision maker may be elsewhere in value chain
- Explosive growth of innovation service firms
- BM innovation as competitive driver (strategic levers)

FROM OPEN INNOVATION TO INNOVATION ECOSYSTEMS & PLATFORMS

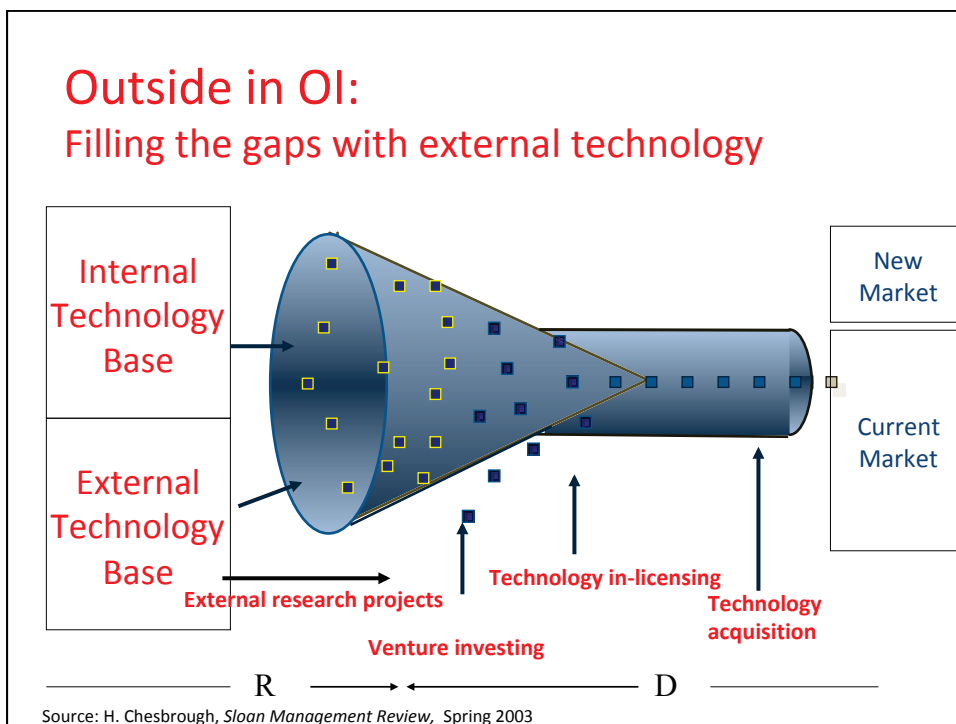
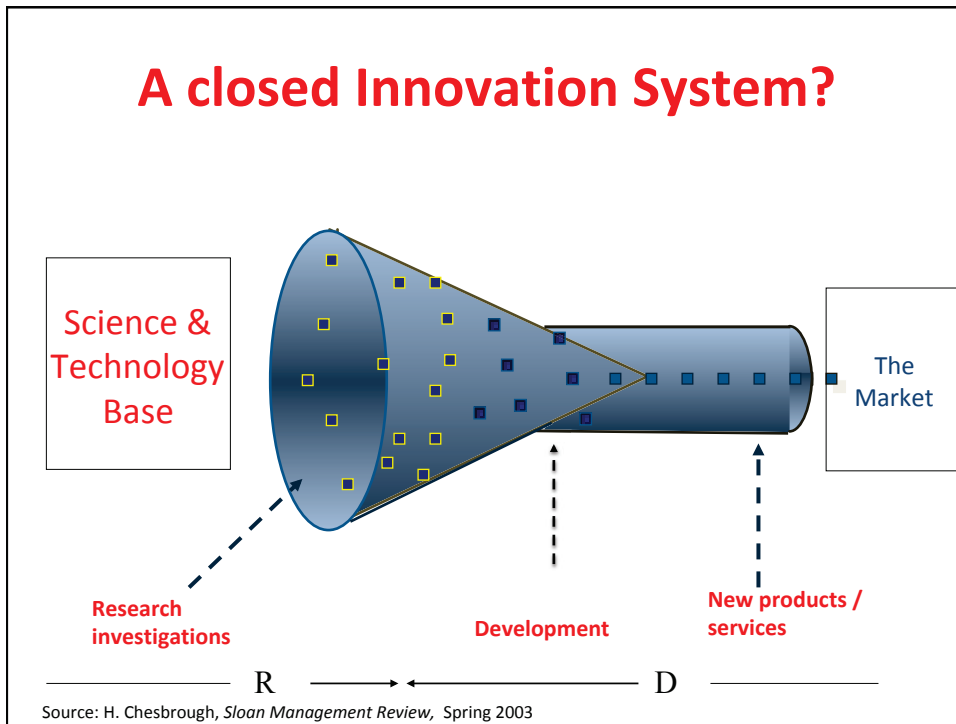
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What is Open Innovation?

“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
(OUP, 2006)

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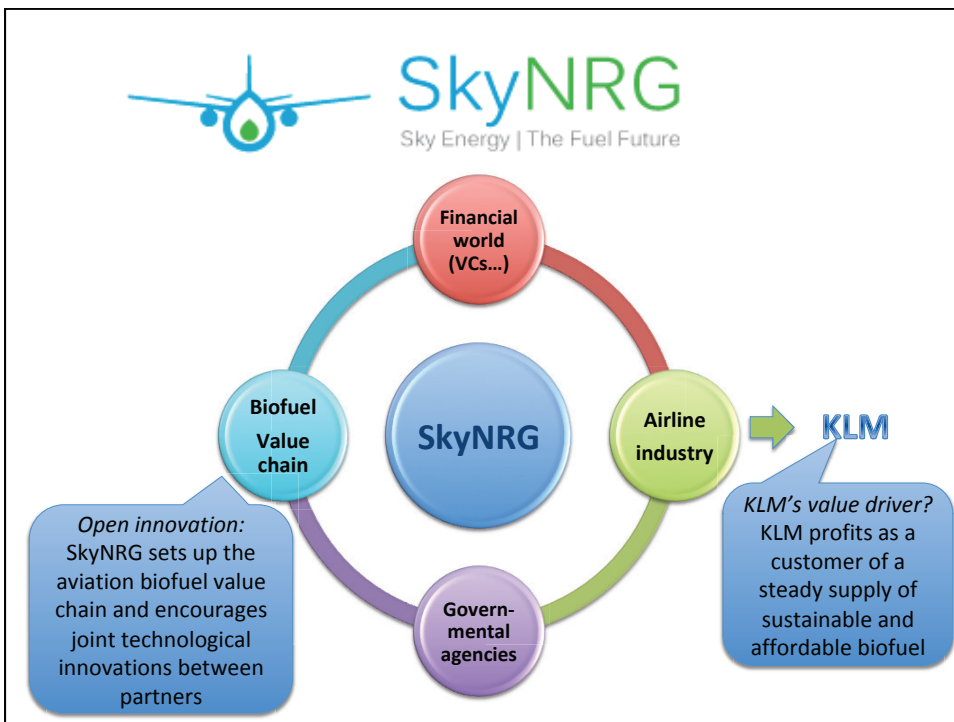
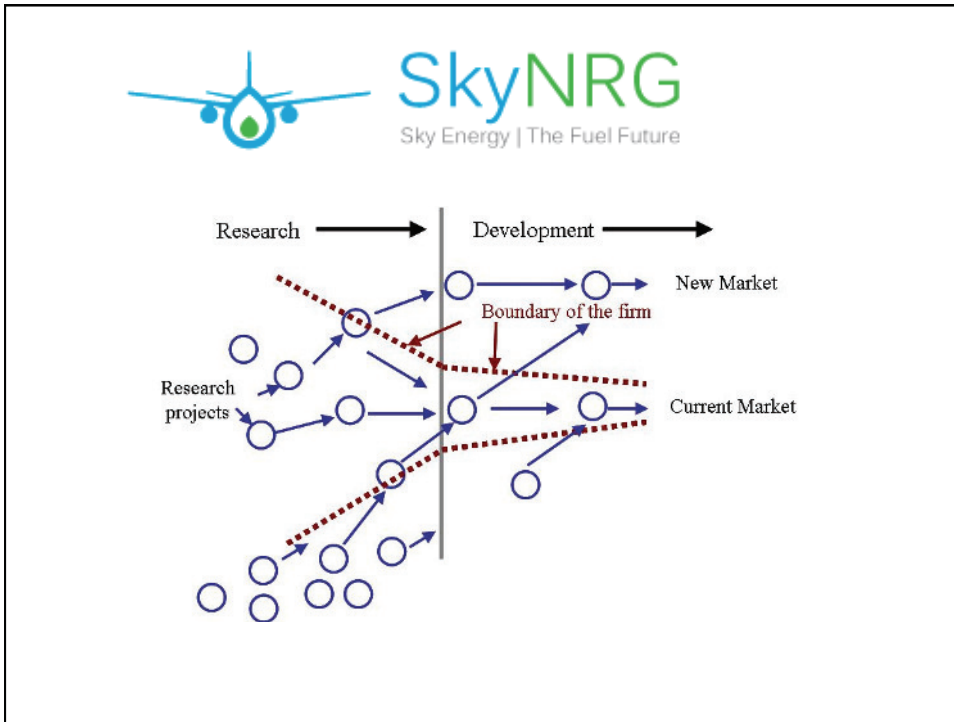


Who is innovating? Not only your traditional corporate R&D partners

- OI when it is not related to NPD:
 - Packaging in a large pharma company. Drone technology in utility company. OI is highly relevant.
 - A service company with no technical expertise
 - An SME with insufficient technological expertise
 - Social entrepreneur, NGO or government agency:
 - Nasa: new technologies may help you a lot in your mission as space agency
- *Change OI-funnel into ecosystem approach*
- *Decision maker is not the technology provider*



- KLM Royal Dutch Airlines, the North Sea Group and Spring Associates joined forces and founded **SkyNRG** in Nov 2009.
- Goal: to help create and accelerate development of a market for sustainable jet fuel (safe, sustainable and affordable) & avoid large price swings in petro-based kerosene
- Creating a viable market for sustainable jet fuels for aviation can only be achieved *by combining expertise and experience in the fields of air transport, product knowledge, R & D, regulation and effective sustainability criteria*
- *SkyNRG is the hub firm in the ecosystem*



Ecosystems to change markets
vs innovation ecosystems

DIFFERENT TYPES OF ECOSYSTEMS AND HOW TO MANAGE THEM

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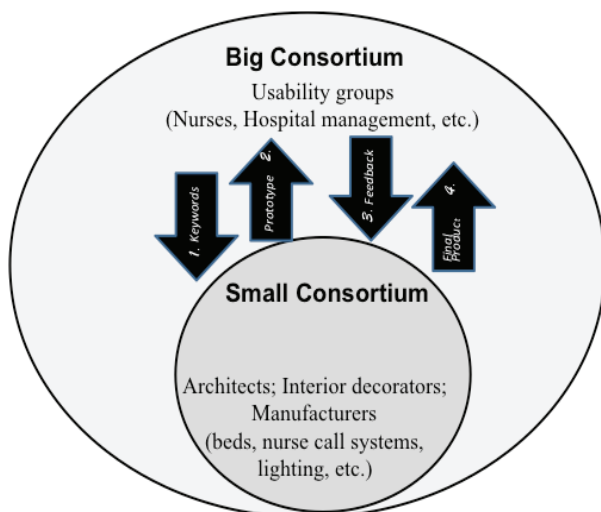
PATIENT ROOM OF THE FUTURE

PRoF

- Frustrated by the legislation and regulation in the healthcare sector
- 9 manufacturers start in 2009 a consortium to foster innovation in the healthcare sector:
 - “All” stakeholders in the consortium including customers (nurses, patients, hospital directors, etc.)
 - Idea to work around yearly themes – own investments
 - Own approach (brainwave) to develop highly successful themes (concepts) in record time
 - Grew very fast: Largest consortium in the world with 30 firms and 300 healthcare related institutions in 5 years
 - Award winner of “Innovationpreis Altenpflege 2014” in Germany
 - Small and big consortium with separate roles

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PRoF 1.0 – 4.0



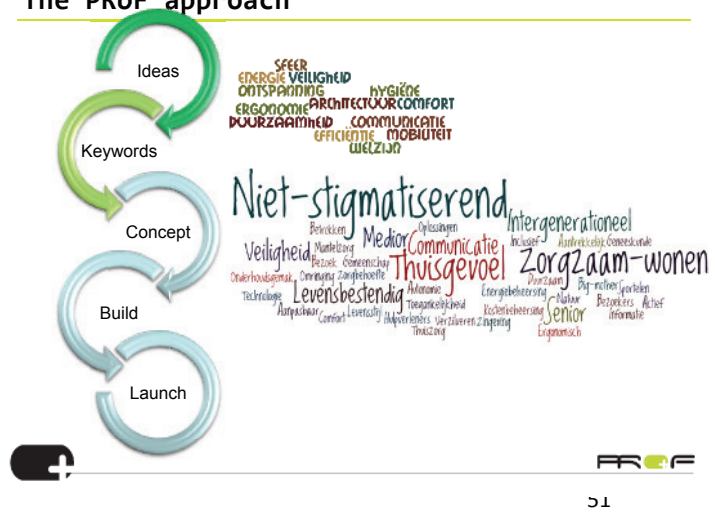
How to bring together profit seeking companies, with non-profit driven nurses and other healthcare actors?

- 30 manufacturers
- 300 healthcare partners
- 1 man driving it as a 2nd job

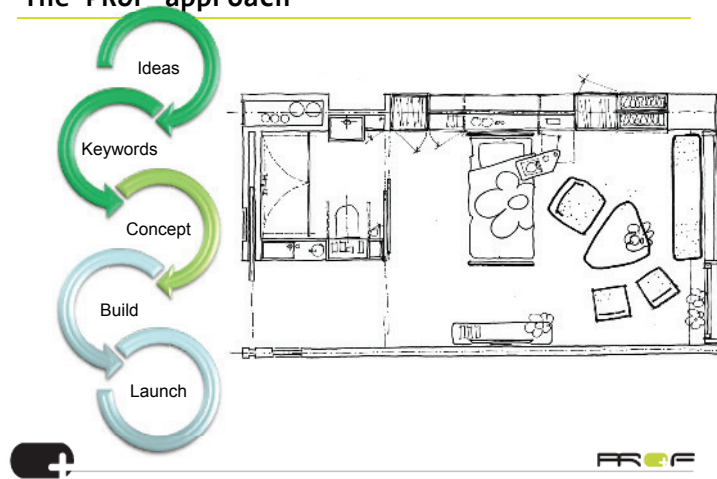
The PRoF approach



The PRoF approach



The PRoF approach



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PRoF 1.0 (Patient Room of the Future)



PROF 2.0 (Personalized Residence of the Future)

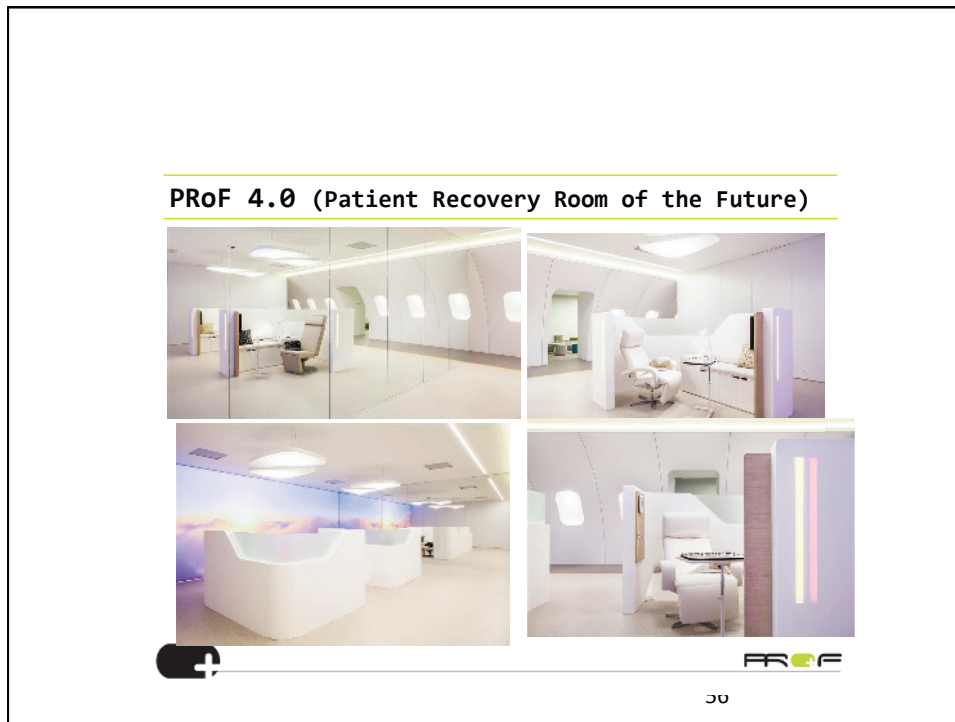


PROF 3.0 (Private caRe of the Future)



www.prof-projects.com
www.facebook.com/profprojects
www.linkedin.com : PRoF group





How can one man run the consortium?

- (Hidden) rules in the consortium:
 - NDA
 - High complementarity between producers (no competition) – selection based on personality
 - Requirement to innovate every year – loss of membership
 - 90/10 rule
 - Requirement to bring innovations into the market
 - Separate commercial activities from theme development!

How do universities fit in?

- The consortium becomes more international and more professional
- Need to access top research in healthcare, elderly care, etc.
 - PRoF organizes a specific challenge
 - Universities and scientific institutes can send proposals
 - Best proposal is awarded with a prize to do research on topics that are of interest for PRoF
 - PRoF integrates results in new concept rooms

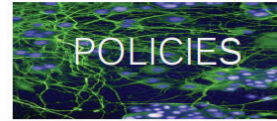
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An example of J&J in Beerse - Belgium

A LARGE COMPANY BUILDING A REGIONAL INNOVATION ECOSYSTEM

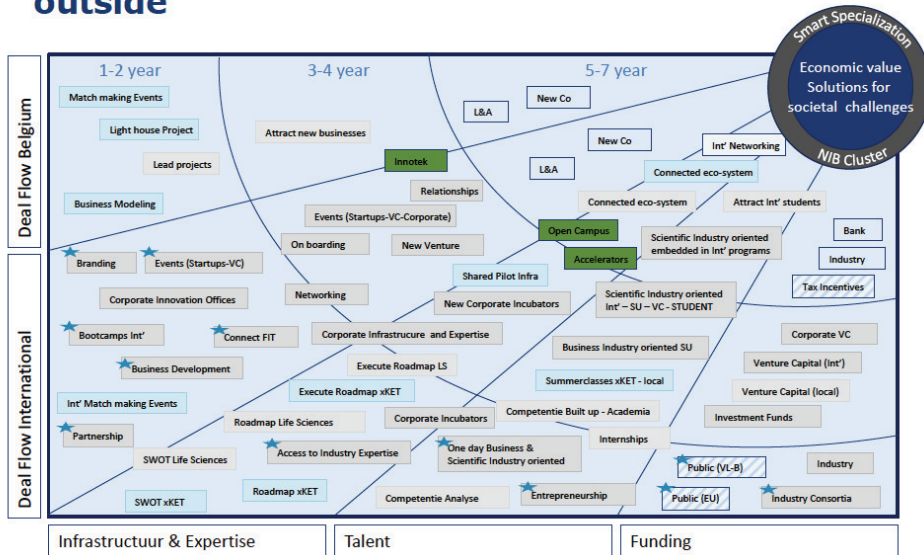


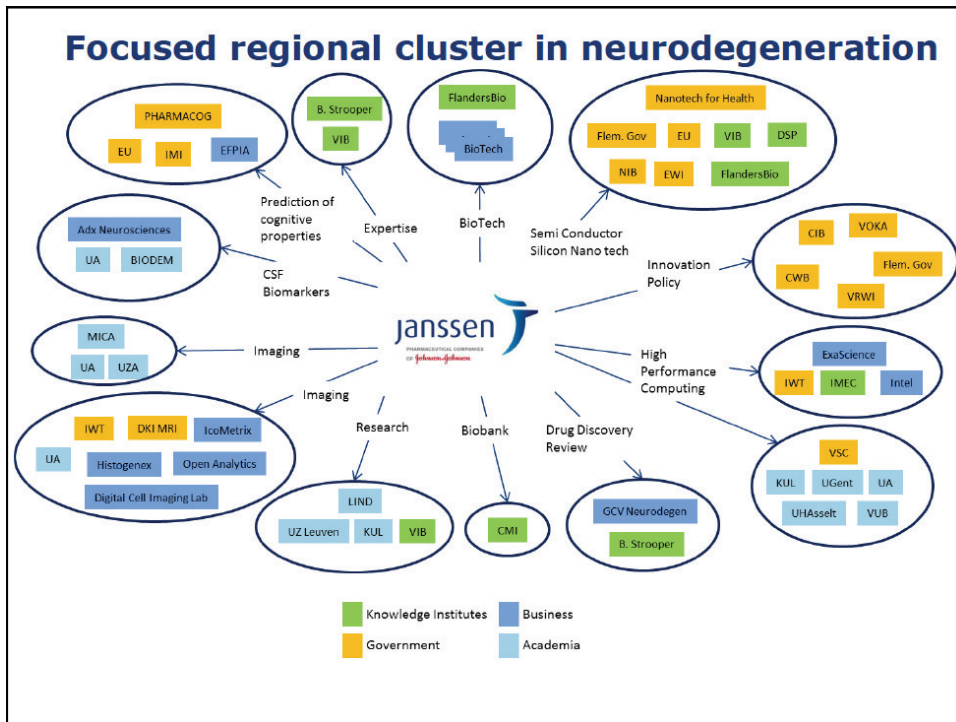
On the outside: Embed knowledge growth in a region



Focused regional cluster of connected expertise, infrastructure and funding throughout the entire value chain supported by governmental policies

The roadmap to connect the inside with the outside





NEW INSTITUTIONAL INNOVATIONS IF YOU WANT TO TAP INTO FINANCIAL RESOURCES

BP'S ENTRANCE IN THE ENERGY BIOSCIENCE

BP's challenge in February 2006

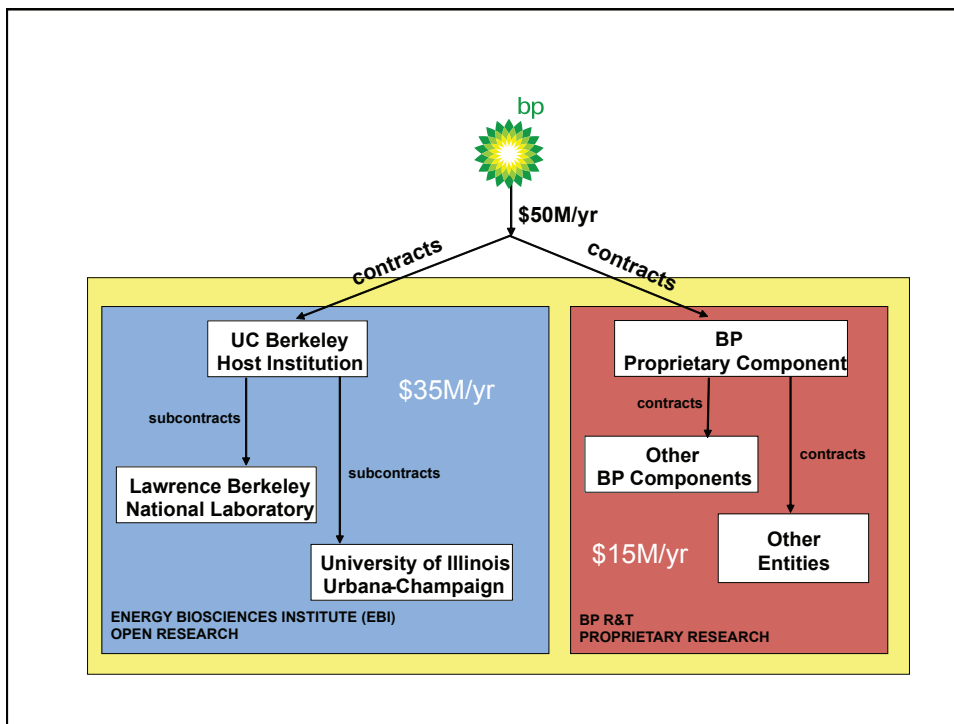
- **Energy Bioscience looked promising** (Senior Executive buy-in)
- **How do we meld commercial/technology strength with biology/biotech?**
 - The company had no bio-expertise (*3 biologists* in company of 100.000 employees) – need for a big push for biofuel research
- **How to reach out to biology/biotech communities...**
 - **Not a corporate lab!**
 - Corporate labs too insular – can't tap broader expertise in a rapidly moving field
 - Where was the Energy/Bio talent pool anyway?
 - **Not the usual university research programme**
 - BP does many of these and knows strengths/weaknesses
 - Need to facilitate the development, demonstration, and commercialization of research results

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BP's organizational choices

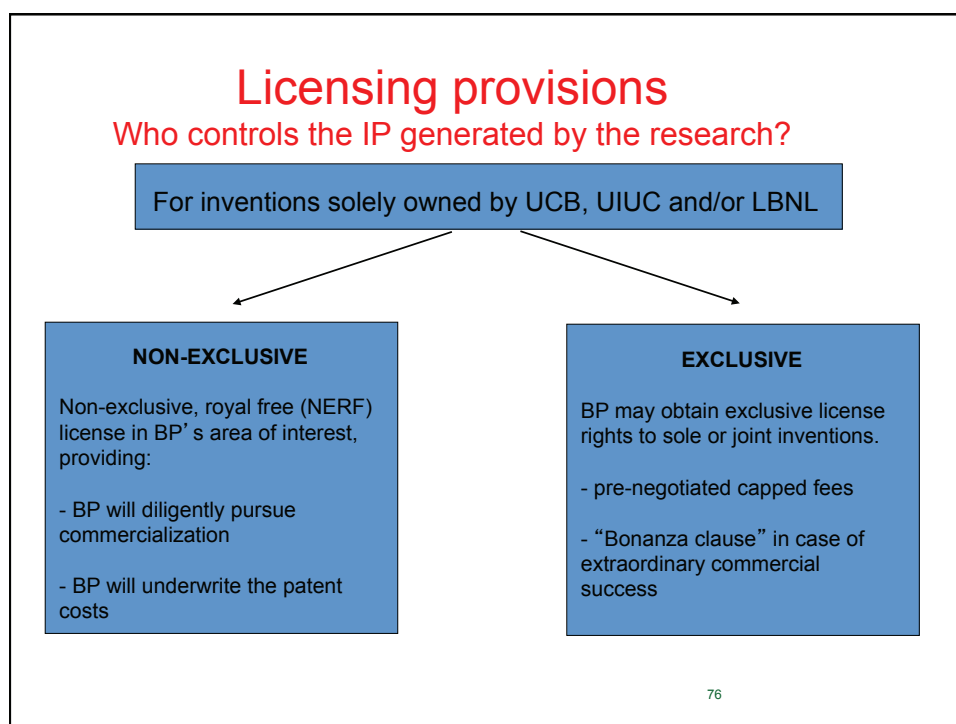
- **A substantial and long-term commitment to engage quality researchers (\$500m over 10 years)** – RFP to 52 institutes – 5 finalists
- **Host at a world-class institution to maximize academic presence and interdisciplinary interaction.**
- **Single organization *doing both open and proprietary work***
 - **Open work in Fundamental Energy Biosciences**
 - In best academic tradition
 - Need faculty help in inventing the field
 - A window for BP on worldwide Energy Biosciences
 - **Co-locate some BP researchers**
 - Live in and understand the open research community, but knowledgeable about BP's needs, goals
 - Enhance industry connection to help motivate/guide open research
 - Potential to demonstrate at scale

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BP's call for proposals challenged academic applicants to propose a research model with two research components working side by side

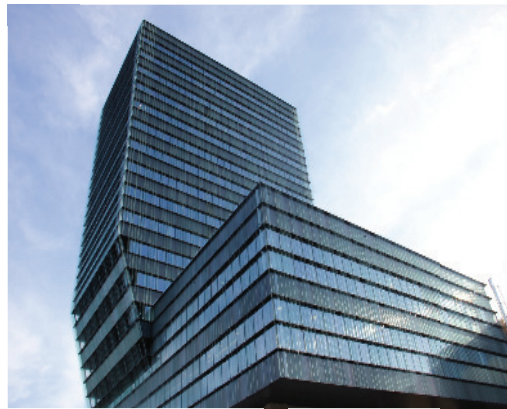
OPEN	PROPRIETARY
Basic, academic research	Commercial applications lab (in rented space)
Research performed by UCB, LBNL, UIUC employees	Research performed by BP employees
Results all published	Confidential
Results belong to UCB, LBNL and / or UIUC	Results belong to BP



THE NEED TO CHANGE YOUR BUSINESS MODEL AS A RESEARCH INSTITUTE

UNIVERSITIES IN THE LEAD – IMEC IAP AS AN EXAMPLE

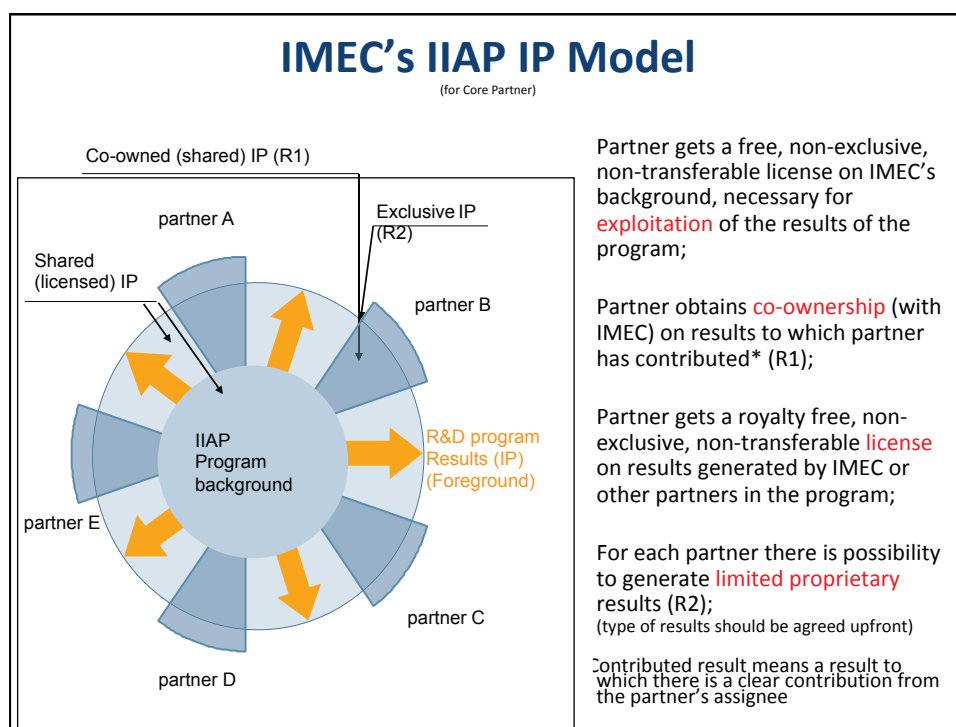
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IP policy: IMEC Industrial Affiliation Program



- What
 - R&D cooperation in generic technologies
 - **Strategic program develop by IMEC and executed in IMEC**
 - IIAP partners **send guest researcher(s) to IMEC**
- Advantages
 - Sharing costs, risks, research infrastructure, IP
 - IIAP partners get access to:
 - IMEC's background knowledge
 - selected results of other partners in IIAP
 - **bilateral contracts** within the framework of IIAP (flexibility)
- Leverages
 - resources
 - knowledge
 - cross-fertilization of research of different partners
 - shortening time to market

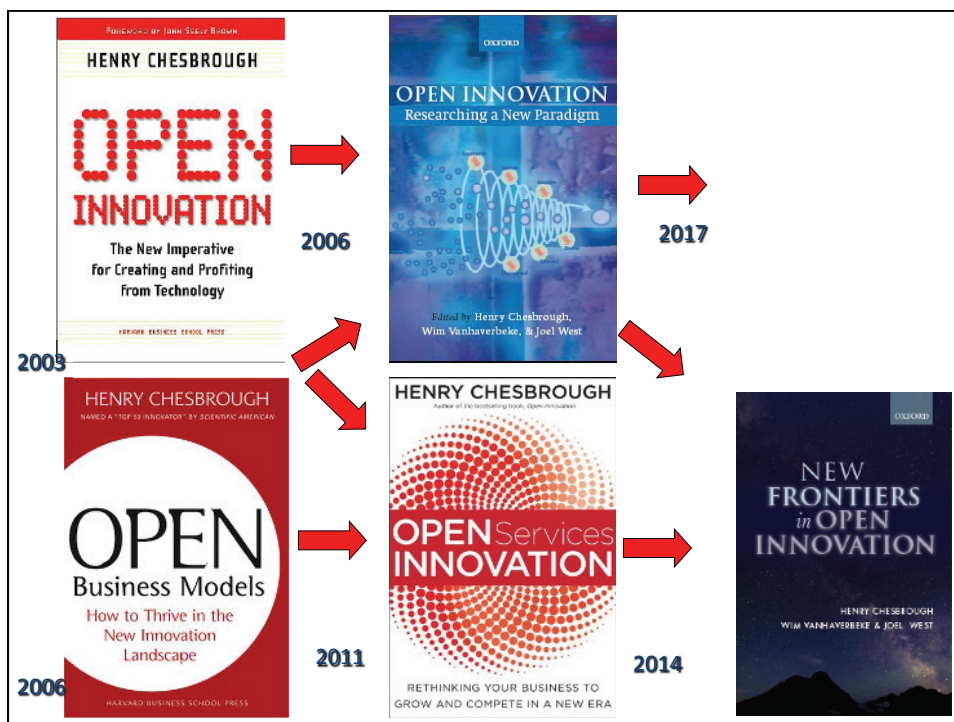


Conclusions

- Large firms focus now more on the backside of the funnel: research is internalized as late as possible
- Tendency to source technologies with high TRLs – sourcing from other providers rather than universities
- Many sources of technology (and modi), universities are only one source (forget the academic-industry dichotomy in triple helix)
- Most OI projects use existing technologies and apply them in new application fields
- Universities should develop flexible tools to share / use / develop / scale technology (start-ups; licensing; accelerators)
- Ecosystems force universities to collaborate in a complex network of partners (and you are not in the driving seat)

Conclusions

- SMEs are difficult to reach. They need ready to use technology. Most universities have no track record in translational research – collaboration with other partners (CTMM; IMI)
- Develop top technology and strengthen it by being involved in many ecosystems (projects)
- Be the best globally : define your expertise / research areas carefully
- Learn ecosystem management: you may win from other universities and technology providers by understanding your role and relationships with other partners in the network.
- Top-universities may lead ecosystems in joint pre-competitive research (infrastructure / cost or expertise driven)
- Top expertise in universities – by combining fields of expertise



What's next?

- www.exnovate.org
- **Book Project**
 - Managing transformative / innovation ecosystems
 - Digital technologies have disruptive power
 - How to develop and manage an innovation ecosystem as a large company
 - What are the implications for universities and policy makers
 - Industries and case studies:
 - Digital farming : Bayer CS
 - Banking : BBVA and DBS
 - Insurance: Allianz
 - Car manufacturing: Nissan, Toyota, BMW (?)
 - Electricity / utility : Enel
 - Chemistry : Akzo-Nobel (waste management)

European Innovation Forum

<http://www.sciencebusiness.net/eif/>



EUROPEAN
INNOVATION
FORUM

LEGO BBVA J&J ASML ESADE Shell
Bayer Evonik Goodyear Unilever Yara
Renault Telefonica Heineken Firmenich
Standard Bank