



**UNIVERSITÀ
DEGLI STUDI
DI TRIESTE**

Deams

Dipartimento di

**Scienze Economiche, Aziendali,
Matematiche e Statistiche "Bruno de Finetti"**

**UNIVERSITY OF TRIESTE – DEAMS DEPARTMENT
BACHELOR COURSE IN BUSINESS & MANAGEMENT
A.Y. 2022 – 2023**

BLOCK 6

Management of Innovation

INSTRUCTOR

Guido Bortoluzzi (Ph.D)

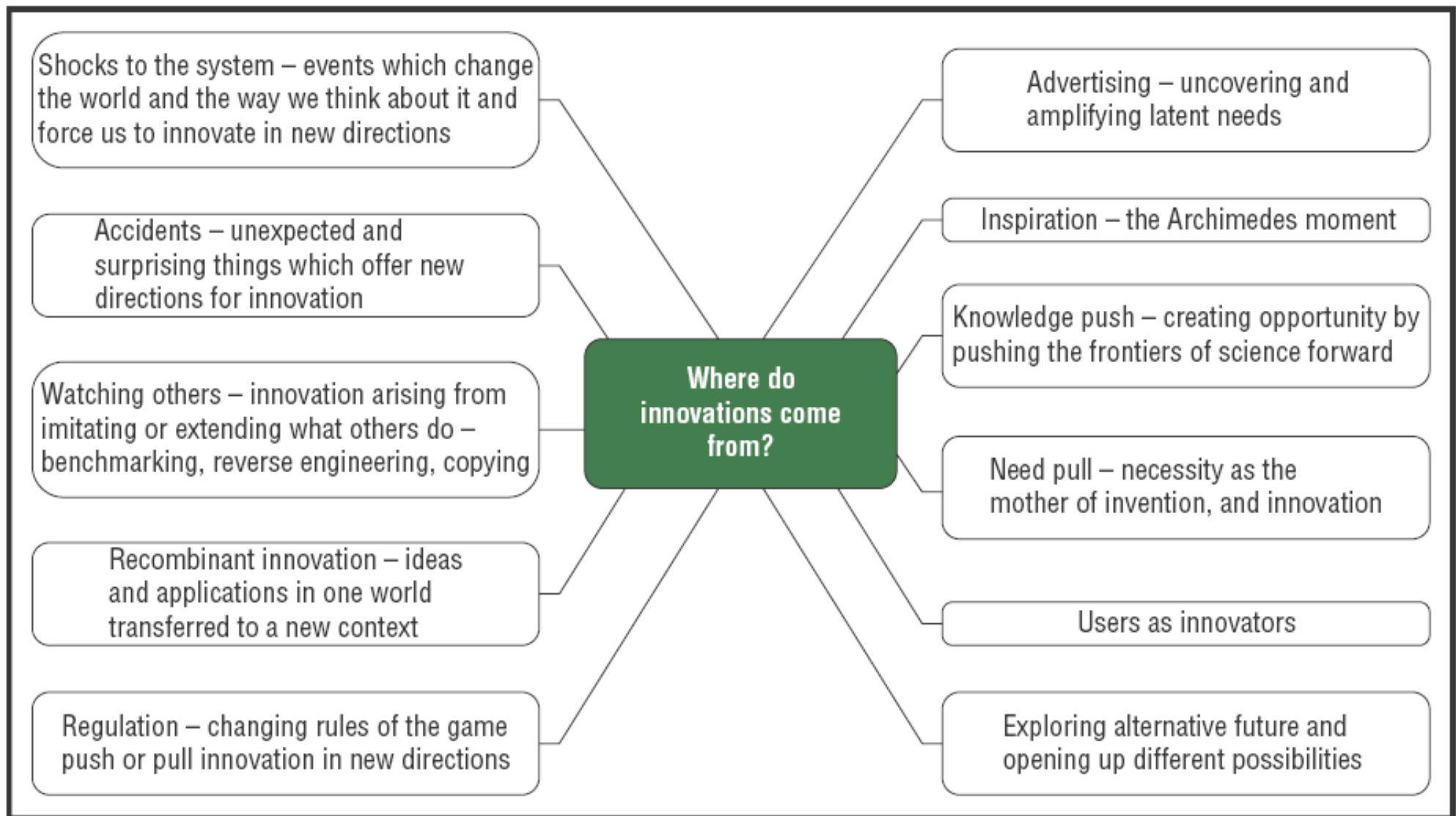


FIGURE 5.1: Where do innovations come from?

Technology-push

THE FIRM

THE MARKET

Resources are allocated to R&D and to single projects

Research and development activities are carried out in dedicated facilities

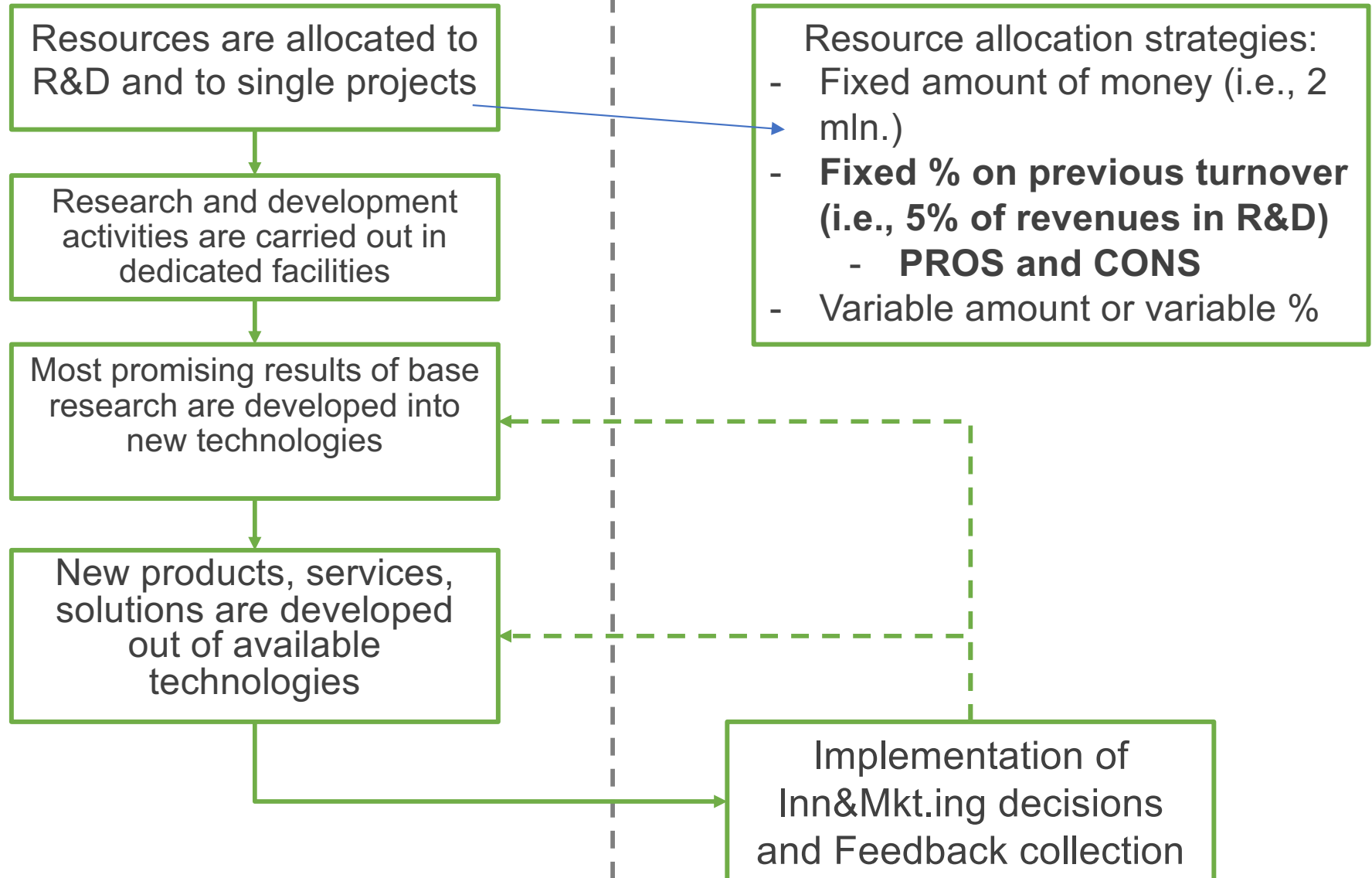
Most promising results of base research are developed into new technologies

New products, services, solutions are developed out of available technologies

Resource allocation strategies:

- Fixed amount of money (i.e., 2 mln.)
- **Fixed % on previous turnover (i.e., 5% of revenues in R&D)**
 - **PROS and CONS**
- Variable amount or variable %

Implementation of Inn&Mkt.ing decisions and Feedback collection



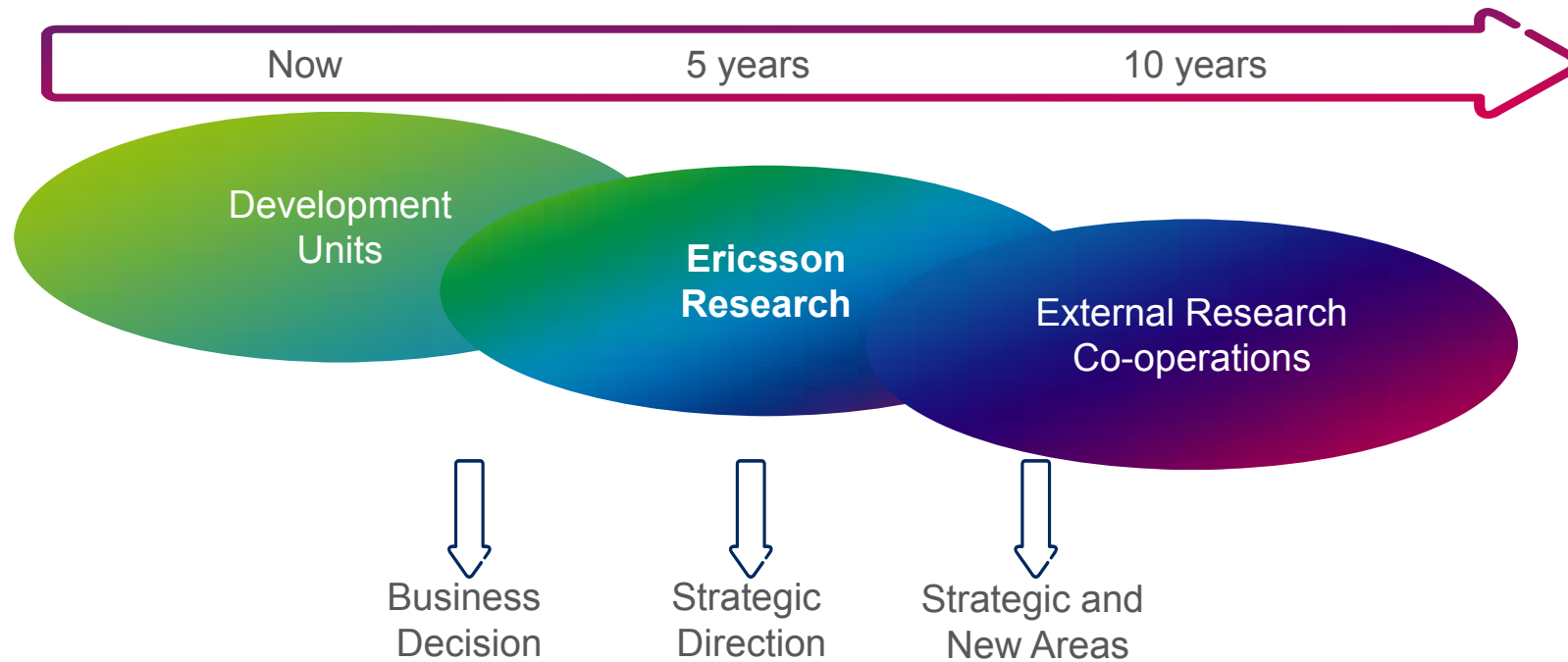
Ideas coming from “inside”: methods

- Internal Idea contests and hackathons
- Patent mining
- Brainstorming activities
- “Lateral thinking” techniques
- Design thinking techniques
- Many others



ERICSSON

LONG- AND SHORT-TERM FOCUS





ERICSSON

ERICSSON RESEARCH





ERICSSON

INNOVATION FROM IDEA TO REALITY



Long term
Horizon



Medium term
Horizon



Short term
Horizon

Ericsson Innovation Day: when technology meets the (potential) market



Click!

NEED PULL

1. OBSERVATION

- users (clients, consumers), competitors

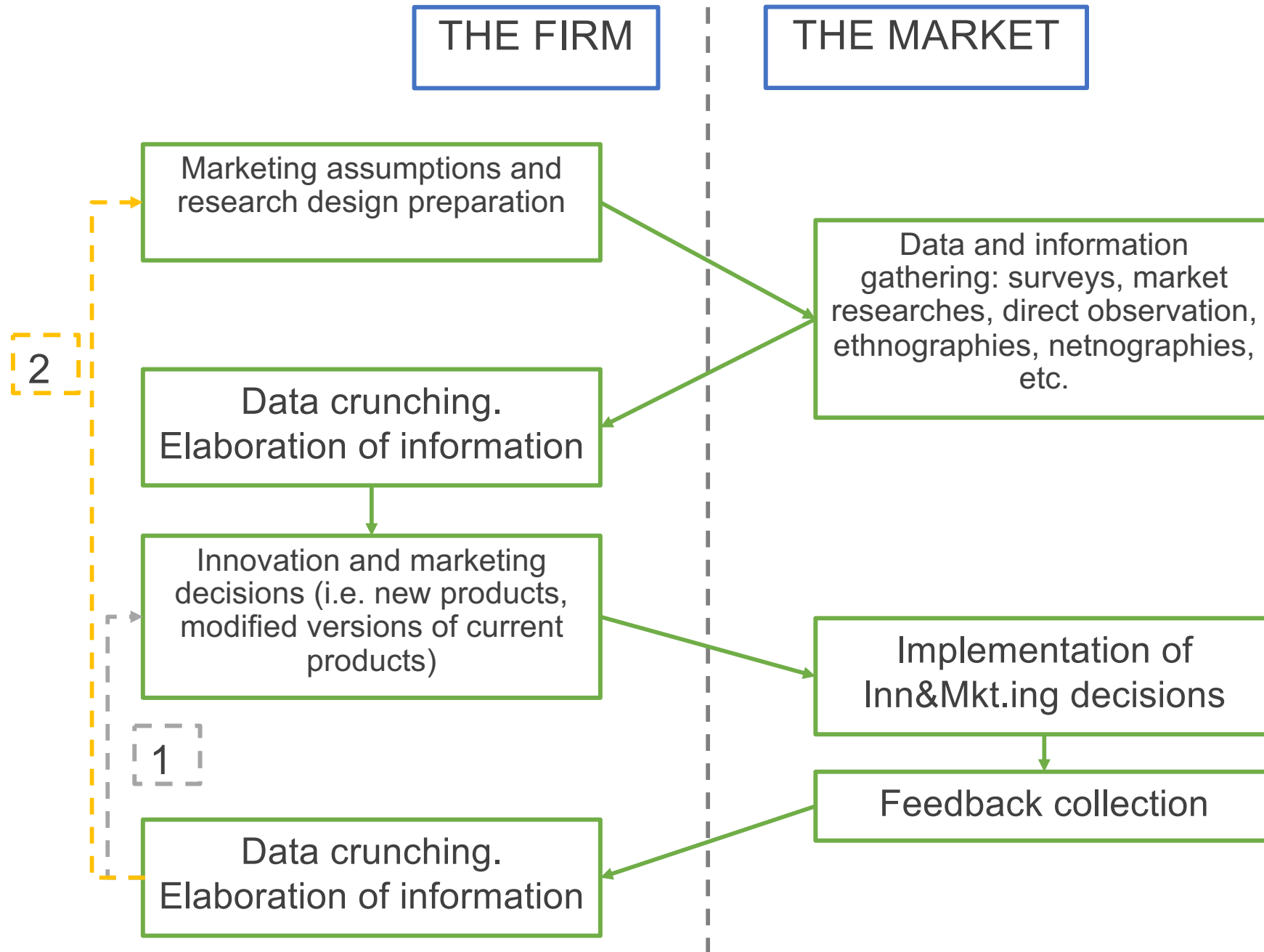
2. ELABORATION

- back to the needs: from consumers' behaviors and successful products to needs

3. DIFFERENTIATION

- typically, new products for existing markets

Market-pull



INTERACT with users and from them



snaidero

INTERACT with users and from them

- Lead and extreme users:
 - ahead the market;
 - users in the toughest environments have needs "at the edge"
 - any solution which meets their needs can have possible applications back into the mass market
- "Everyday" users
 - learn from unmet needs and frustrations

LEARNING FROM USERS

- Communities of users



David Robertson
LEGO Case
2011 – FT, 20-25min

About LEGO

- In March 2004 they select an adult fan team leader, who set up a secure forum where users could share their designs. "In the space of a few short weeks, the level of fan activity was tremendous" said vice-president Søren Lund
- A fan involved the team was in the business of high-tech sensors. LEGO decided, for the first time, to partner with an external vendor and introduce 12 advanced sensors "which greatly expanded its capabilities over prior models"
- After some months, CEO of the firm, Jørgen Vig Knudstorp, declared: "We think innovation will come from a dialogue with the community"
- Adult fans helped Lego identify new product lines, including one new line featuring models of architecturally significant buildings. Chicago architect and Lego enthusiast Adam Reed Tucker was involved with great success (White House, Empire State Building, etc.)
- The architectural kits are now sold around the world in outlets such as museums, souvenir shops and bookstores



The Opicina Tram



(LM) LOCAL MOTORS™

the **SPORTSCAR**
platform

Designed by

Vedran Martinek
Professional Automotive Designer



Combining AI,
3D printing,
IoT and
crowdsourcing



Using and benefiting from crowdsourcing platforms

Innovate with InnoCentive

Your partner in enabling creative minds to solve problems that matter to you.

Our Challenge Driven Innovation™ methodology and purpose-built technology result in fresh thinking and cost-effective problem solving. Crowdsolve solutions from our diverse network of highly educated problem solvers or internally within your organization.

Click!

Crowdfunding platform-types

- Equity
- Reward
- Donation
- Lending

The logo for WeFunder, featuring a stylized blue 'W' followed by the word 'EFUNDER' in a blue, sans-serif font.The logo for Kickstarter, with 'KICK' in black and 'STARTER' in green, both in a bold, sans-serif font.The logo for GoFundMe, featuring the word 'go' in grey, 'fund' in green, and 'me' in grey, all in a rounded, lowercase font. Above the 'me' is an orange hand icon with fingers spread.The logo for LendingClub, featuring a red grid icon on the left and the words 'LendingClub' in a blue, sans-serif font.

Closed and open innovation

HENRY CHESBROUGH

OPEN
INNOVATION

The New Imperative
For Creating and Profiting
from Technology

2003



In 2003 Henry Chesbrough (MIT) highlights the co-existence of two different models of innovation:

- One more centred on internal resources and ideas
- Another relying on knowledge flows from and to the company to sustain and accelerate better innovations

OPEN INNOVATION COMMUNITY
THE LATEST NEWS, RESEARCH, DISCUSSIONS & APPLICATIONS OF OPEN INNOVATION

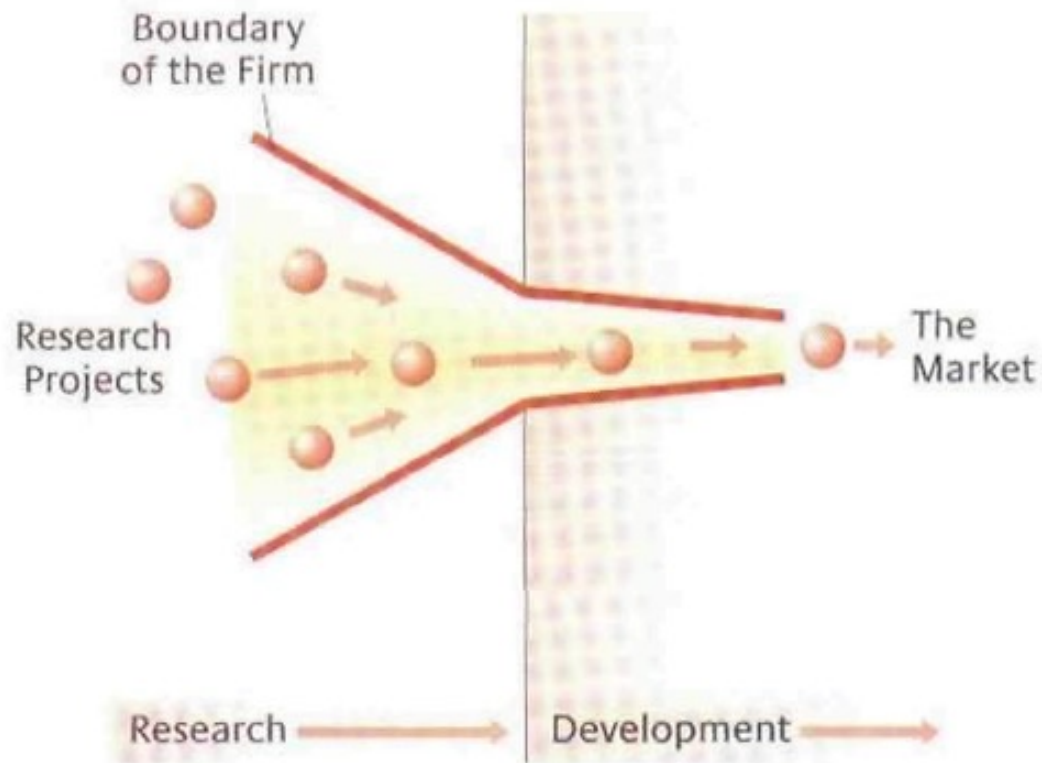
The closed innovation model

Successful innovation requires control

- Companies must generate their own ideas
- Development, manufacturing, market distribution is under the control of the company
- Self-reliance

*“If you want something done right,
you’ve got to do it yourself”*

The Closed Innovation Model



The strategy of successful company in the CIM



Open innovation

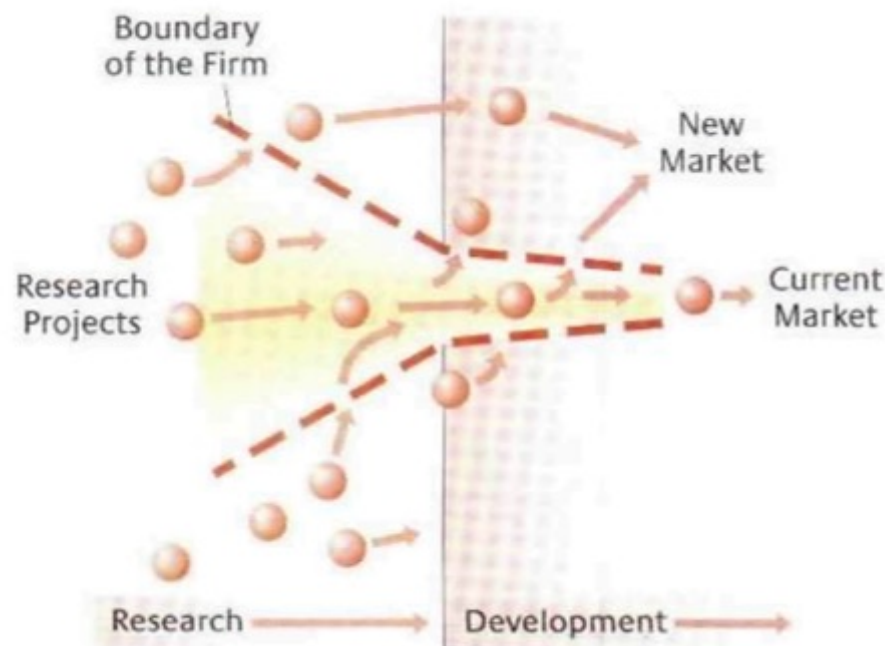
- Firms commercialize **external** (as well as internal) ideas by deploying **outside** (as well as in-house) **pathways** to the market
- Companies can commercialize **internal** ideas through **channels outside** of their current businesses in order to generate value for the organization. Typically:
 - startup companies (which might be financed and staffed with some of the company's own personnel)
 - licensing agreements
- Ideas can also **originate outside** the firm's own labs and be brought inside for commercialization

The Open Innovation Model

Licensing
Spin-off

Technology insourcing

- In-licensing
- Acquisition
- Venture investing



The main principles

Closed Innovation Principles	Open Innovation Principles
The smart people in our field work for us .	Not all of the smart people work for us, so we must find and tap into the knowledge and expertise of bright individuals outside our company.
To profit from R&D , we must discover, develop and ship it ourselves .	External R&D can create significant value ; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research in order to profit from it.
If we are the first to commercialize an innovation, we will win .	Building a better business model is better than getting to market first.
If we create the most and best ideas in the industry, we will win .	If we make the best use of internal and external ideas, we will win.
We should control our intellectual property (IP) so that our competitors don't profit from our ideas.	We should profit from others' use of our IP , and we should buy others' IP whenever it advances our own business model.

Two directions of OI

Outside-in (“inbound OI”)

- Companies exploit knowledge and resources acquired outside
 - Technological collaborations
 - User innovations
 - Crowdsourcing

Inside-out (“outbound OI”)

- Companies reveal some ideas or new technologies, often without fully controlling the spillovers
 - Licensing
 - Spin-off
 - Open source

→ Choose between control of spillovers or generating spillover in order to stimulate collaboration and co-creation through more open business models

Open Innovation and Syndromes

- Not Invented Here (NIH) Syndrome:
 - Dismissive attitude toward ideas or improvements suggested or implemented by others because, if they were worthwhile, "we" would have already thought of them (source: businessdictionary.com)
- Not Sold Here (NSH) Syndrome:
 - Dismissive attitude toward selling ideas or to implement them in partnerships with other firms, because if they were profitable, "we" (and we only) should exploit them

Procter&Gamble

- Leading american multinational in consumer goods, mainly cleaning and personal care (until 2012 also food, with Pringles)
- 70bn \$ and 100.000 employees (2019)
- Annual R&D budget around \$3 bn
- About 7000 scientists and engineers working worldwilde in R&D
- Switch from Reasearch&Develop → to Connect&Develop



The need for a change

“By 2000, it was clear to us that our invent-it-ourselves model was not capable of sustaining high levels of top-line growth. [...] We discovered that important innovation was increasingly being done at small and midsize entrepreneurial companies. Even individuals were eager to license and sell their intellectual property. University and government labs had become more interested in forming industry partnerships, and they were hungry for ways to monetize their research. [...] In 2000, realizing that P&G couldn't meet its growth objectives by spending more and more on R&D for less and less payoff, our newly appointed CEO, A.G. Lafley, challenged us to reinvent the company's innovation business model” (Huston&Sakkab, P&G, 2006).

P&G Connect&Develop


- New role: Director of External Innovation
- Objective: sourcing 50% of innovations from outside the business (achieved) (15% in 2000, 35% in 2006, 45% in 2008)
- R&D productivity increased by nearly 60%, innovation success rate doubled, cost of innovation fallen

The graphic features the P&G logo and the 'connect + develop' logo at the top left. The main text 'Partnering for Mutual Value' is centered in two stacked yellow boxes. At the bottom, a paragraph explains the concept of external collaboration.

It's a fact: collaboration accelerates innovation. In an increasingly connected world, the biggest business wins come from working together. When we partner externally, inspiration and innovation—and mutual value creation—are at our fingertips.

Even inside-out direction: any internal idea offered to external firms if not developed within three years → stimulate exploitation of innovation

P&G's Connect + Develop



Open to ideas

P&G's Connect + Develop open innovation strategy has established more than 1,000 active agreements with innovation partners. Connect + Develop enables us to share our R&D, commercialization and brand strength with partners worldwide, bringing great ideas to market—and into the lives of consumers—faster.

[HOW SWIFFER DUSTERS GOT THEIR START](#)

Click!

P&G AND OPEN INNOVATION



Breakthrough Blend of Winning Ingredients

“P&G Skin Care was looking for anti-wrinkling technology. Meanwhile, a small French Company, Sederma, was working with a new peptide to repair wounds and burns, that also showed great promise with wrinkles.

A partnership quickly developed. Both companies worked hand-in-hand testing Sederma’s peptide and blending it with our own proven ingredients, resulting in the creation of the blockbuster product, Olay Regenerist. It quickly became a global market leader, beating \$350 boutique creams”.



SOURCE:

<http://www.pgconnectdevelop.com/home/stories/other-case-studies/20130102-olay-regenerist.html>

Which VESPA Piaggio is REAL?



WATCHING OTHERS



- Imitating, but what?
 - Products
 - Processes
 - Strategies/Business models
- The role of firms' absorptive capacity (Cohen and Levinthal):
“the ability of a firm to recognize the value of new, external information, assimilate it, and apply to commercial ends”

Imitation through reverse engineering

- Reverse engineering consists in extracting knowledge from a product (often disassembling it) with the aim of improving the product itself or to produce a more efficient or effective version of it
- Managerial preconditions for reverse engineering are:
 - Knowledge is explicit in its form (not tacit) and can be easily codified
 - The firm has enough absorptive capacity to turn such knowledge into commercial ends

Not all knowledge can be easily copied...

- In 1966 Michael Polany (a former chemistry that became an appreciated philosopher) introduced a distinction between **explicit** and **tacit** knowledge starting from the assumption that “*we can know more than we can tell*” (p. 6).
- In the early Nineties, Nonaka (1991 and 1994) and Nonaka and Takeuchi (1995) based their theory of knowledge management in organizations in this distinction and pointed out that: “tacit knowledge is personal, context-specific, and therefore hard to formalize and communicate. Explicit or codified knowledge, on the other hand, refers to knowledge that is transmittable in formal, systematic language” (p. 59).
- “Tacit” and “explicit” do not refer to different kind of knowledge in absolute. They refer to different status of - maybe the same - knowledge. Ergo, tacit knowledge can become explicit and vice-versa
- Hence, tacit knowledge is difficult to transfer, because its explicitation requires face-to-face contacts, a certain level of cultural similarity, the sharing of codes that make knowledge sharing possible (and effective)
- Nonaka I., 1991, “The Knowledge-Creating Company”, Harvard Business Review, november-december.
- Nonaka I., 1994, “A Dynamic Theory of Organizational Knowledge Creation”, Organization Science, n. 1
- Nonaka I., Takeuchi H., 1995, The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation, Oxford University Press, New York (trad. it. Guerini e Associati, Milano, 1997).
- Polanyi M., 1966, The Tacit Dimension, Routledge & Kegan Paul, London.

Recombinant innovation

- Recombinant innovation means applying knowledge that has been developed in other industries and for other aims
- Managerial preconditions for recombinant innovation are:
 - Knowledge can be both tacit or explicit
 - If tacit, the firm needs absorptive capacity to understand the value of it (and how to recombine it)

Colors, materials, shapes. Everything can be recombined





Warm and Cozy



2 heat setting options



323 sq ft



Fan-forced heater



Easy Operation



Luxottica Group overview

1

Group

11

Plants

>7 mn

OneSight
patients

130

Countries

45

Brands

>55 mn

Manufactured
frames

62,000

People

>6,300

Stores

>60 mn

Customers

The best brand portfolio in the industry

House brands	 GENUINE SINCE 1937		<i>arnette</i>		LUXOTTICA [®]
	<i>Persol</i>		<i>Sferoflex</i>	VOGUE [®] EYEWEAR	OLIVER PEOPLES
	MOSLEY TRIBES	<i>ESS</i>			
License brands	ANNE KLEIN NEW YORK	BVLGARI	BURBERRY ESTABLISHED 1856	 <i>Brooks Brothers</i>	CHANEL
	DOLCE & GABBANA	D&G	DONNA KARAN EYEWEAR	DKNY DONNA KARAN NEW YORK	 CYCWEAR
	Miu Miu	<i>Paul Smith</i> SPECTACLES	POLO CLASSIC EYEWEAR	PRADA	RALPH LAUREN <i>Optics</i>
	RALPH RALPH LAUREN EYEWEAR	<i>Salvatore Ferragamo</i> EYEWEAR	STEFANO BERRI NEW	TIFFANY & CO.	
	VERSACE	COACH (1)			

(1) Starting from 2012

THE INSPIRATION

Mysterious and ingenious, Gabrielle Chanel loved being surrounded by mirrors.

She decided to cover of mirrors the famous staircase of her flagship Boutique in Paris 31, rue Cambon.

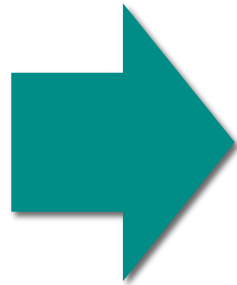
During press shows, she could appreciate all facets of the silhouettes and evaluate customers' and journalists' reactions without being seen.



How did Luxottica managed the challenge

- Knowledge to extract was partly CODIFIABLE (colors; shape; brightness; etc.) and partly TACIT (beauty; sensations; emotions)
- Extracted CODIFIABLE knowledge was transferred to creatives (designers) who have ABSORPTIVE CAPACITY (understand the market)
- The DESIGN department turned back CODIFIED knowledge into a PRODUCT (glasses) embedding similar knowledge (colors, shape, brightness) and, hopefully, same TACIT knowledge (beauty; sensations; emotions)

The result

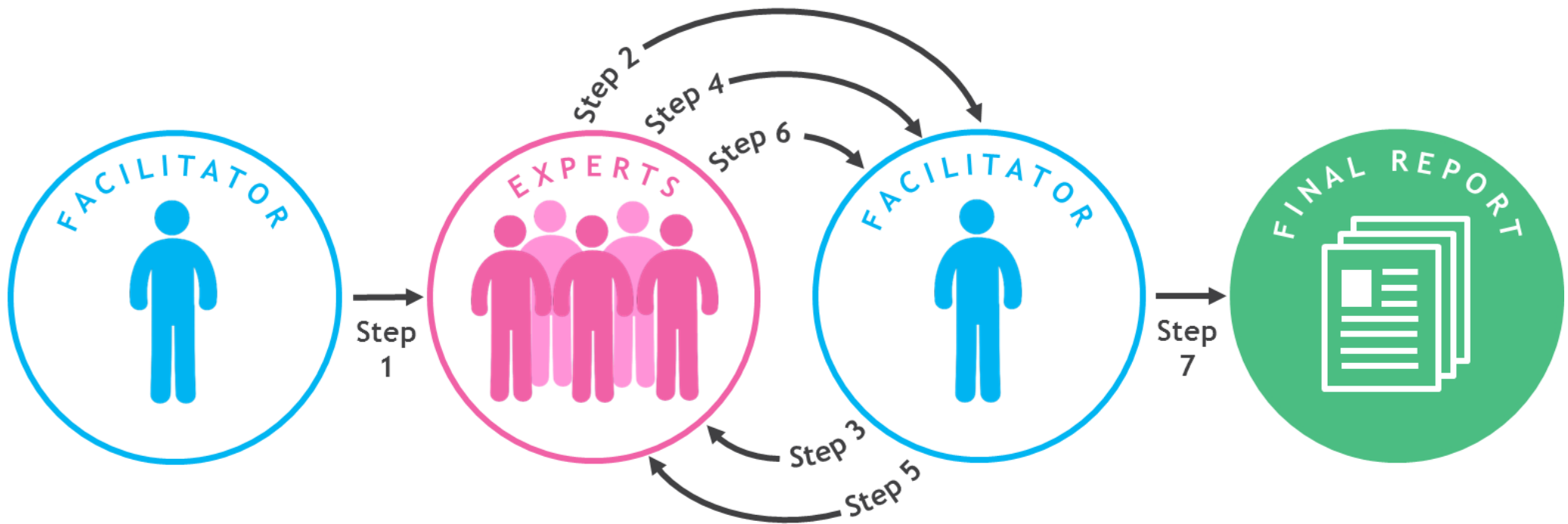


(Technological) Forecasting

Different techniques can be used:

- DELPHI approach
- Scenario analysis
- Technology experts and Futurologists

DELPHI approach



Facilitator seeks individual assessments from a pool of experts.

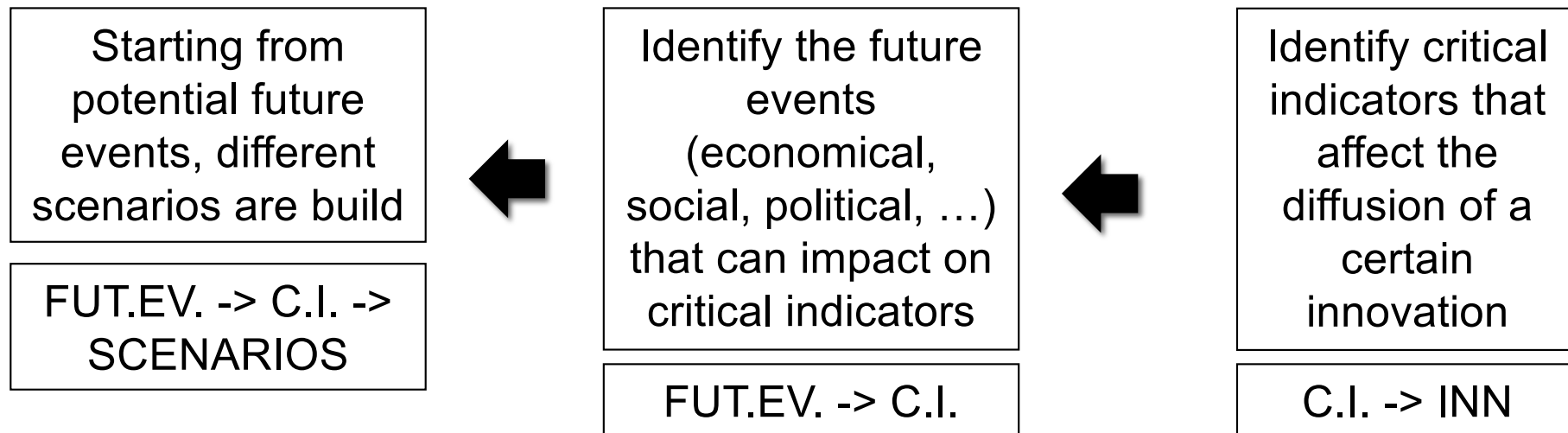
Experts respond to the request, receive feedback and revise their responses.

Facilitator compiles the responses and sends a revised set of questions to each expert. Several cycles of feedback may be needed.

Facilitator produces report on experts' responses, noting key outliers.

Scenario analysis

Scenarios are internally consistent descriptions of alternative possible futures, based upon different assumptions and interpretations of the driving forces of change



An example of SCENARIO Analysis

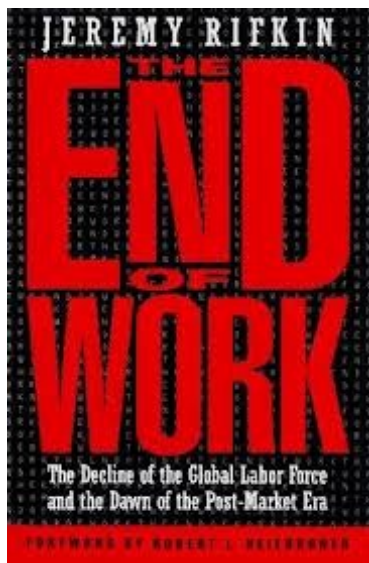
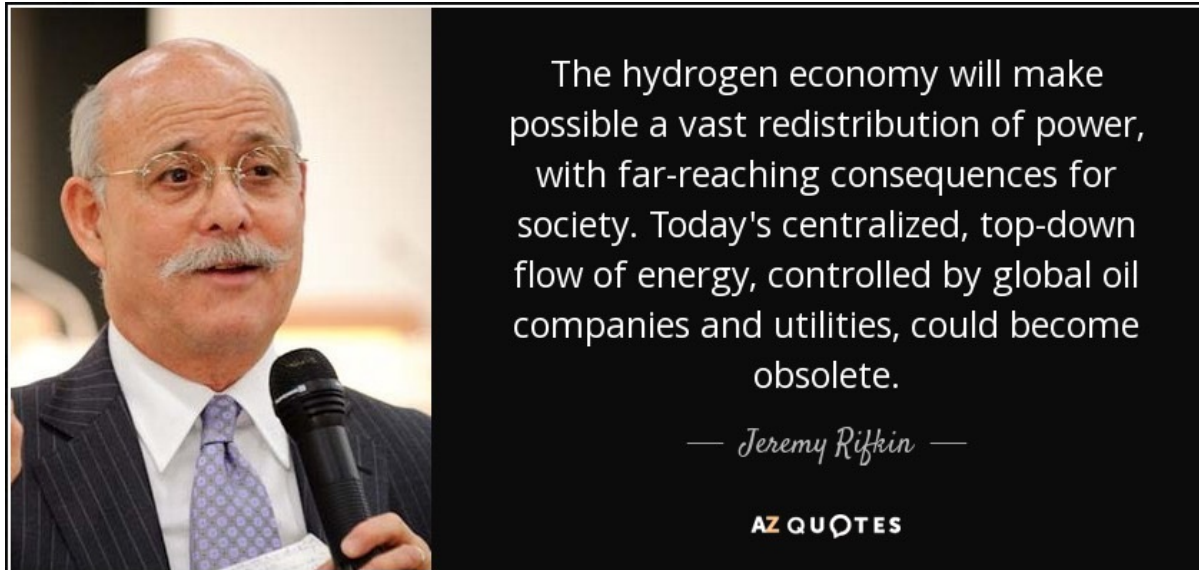
Click me



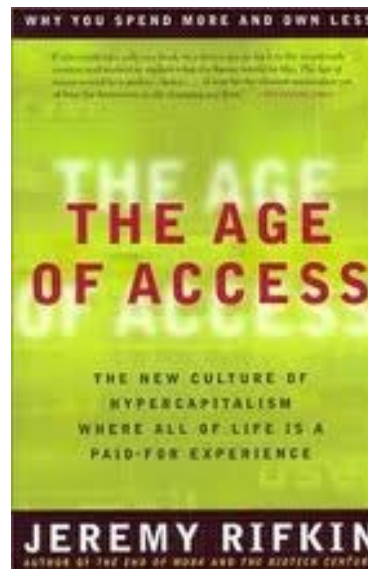
GLOBAL SCENARIOS OF
SHIPPING IN 2030



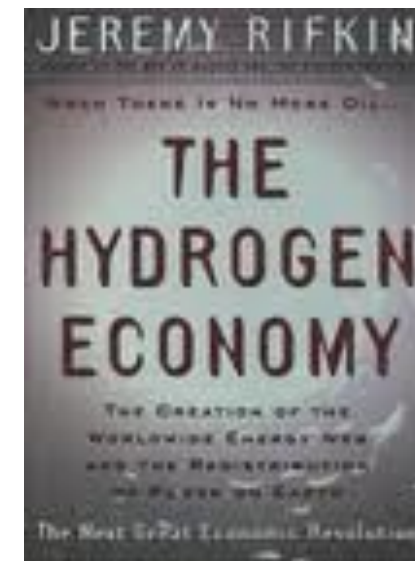
Technology experts and futurologists



1995



2000



2002

Learning from mistakes

→ Accidental circumstances always happen

→ What firms should do:

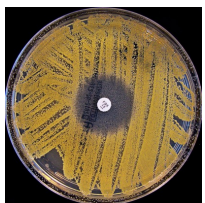
- Activate routines for learning from mistakes;
- Analyzing "false negatives"



in 3M a chemist produced by accident a "not very sticky" adhesive



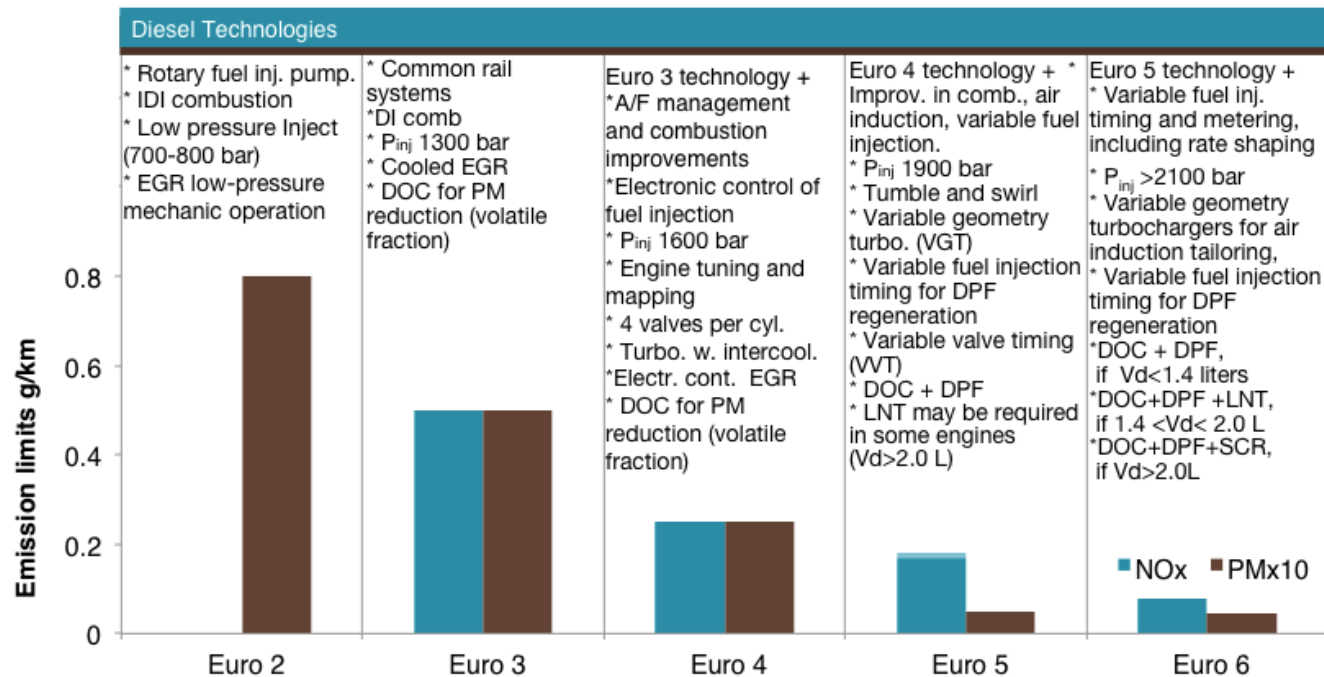
in Pfizer a researcher was looking for a treatment for angina. He produced a new compound that had an unexpected side effect...



Penicillin, Corn flakes, Pacemaker and many others...

Norms and regulations

→ Norms and regulations restrict (and close off) certain innovation streams but can open up new ones and force innovation to proceed along certain technological streams



Various EC directives on Conventional pollutant emission limits of vehicles

Approach	How extensively used (% of sample)	Rank	How effective (1-10)	Rank
Ethnography	12,9	13	6,8	1
Customer visit team	30,6	4	6,6	2
Customer focus groups for problem detection	25,5	5	6,4	3
Lead user method	24,0	6	6,4	4
User design	17,4	11	6,0	5
Customer brainstorming	17,4	11	5,9	6
Peripheral vision tools	33,1	2	5,9	7
Customer advisory board	17,6	10	5,8	8
Community of enthusiasts	8,0	15	5,7	9
Disruptive technologies	22,0	8	5,7	10
Internal idea capture	38,0	1	5,5	11
Partners and vendors	22,1	7	5,5	12
Patent mining	33,0	3	5,5	13
Accessing external technical community	19,5	9	4,9	14
Scanning small businesses and start-ups	13,0	13	4,9	15
External product design/crowdsourcing	2,0	18	4,8	16
External submitted ideas	7,9	16	4,5	17
External idea contest	4,1	17	4,3	18