Open Innovation: Definition, Implementation, Cases, Challenges and Benefits

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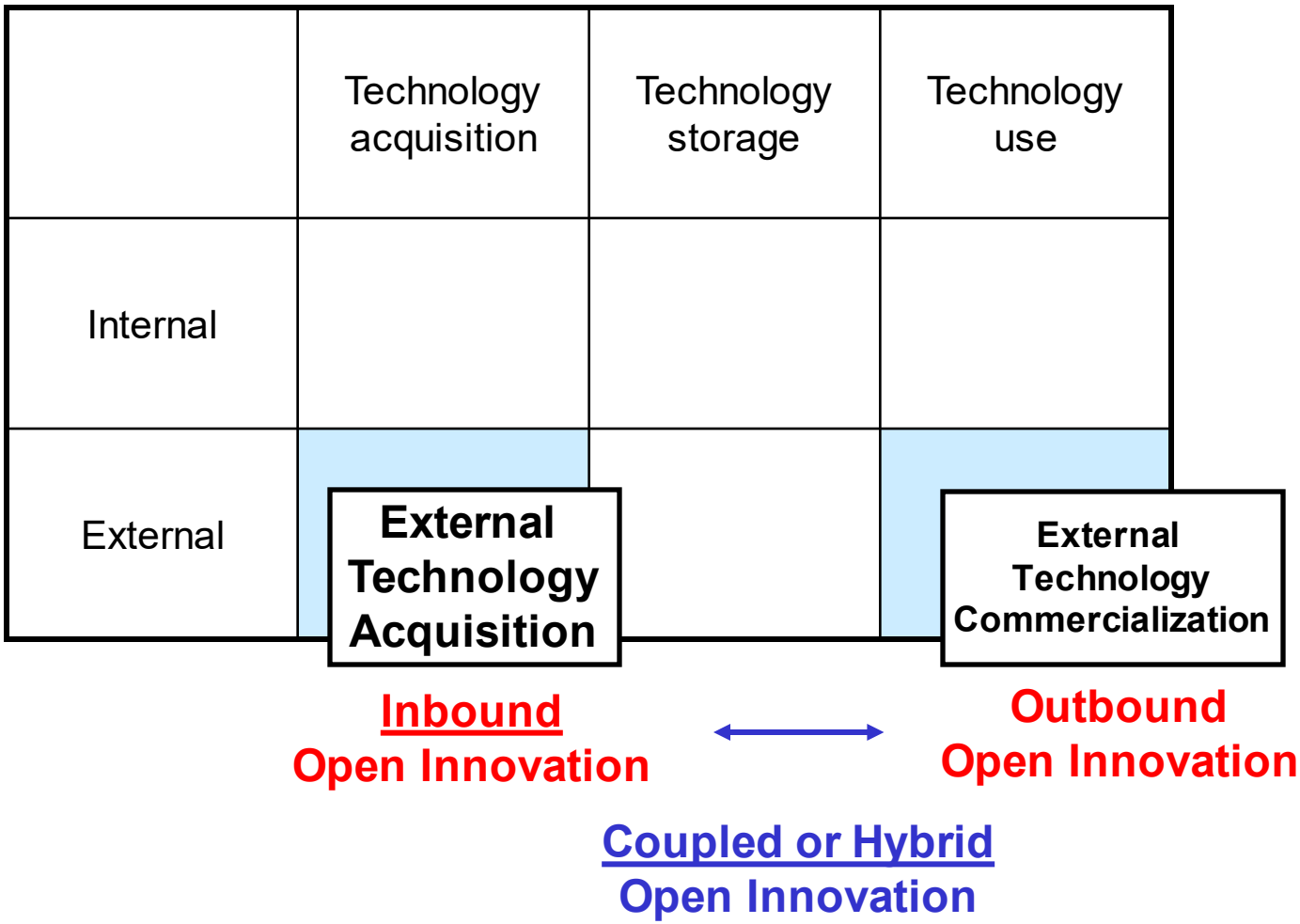
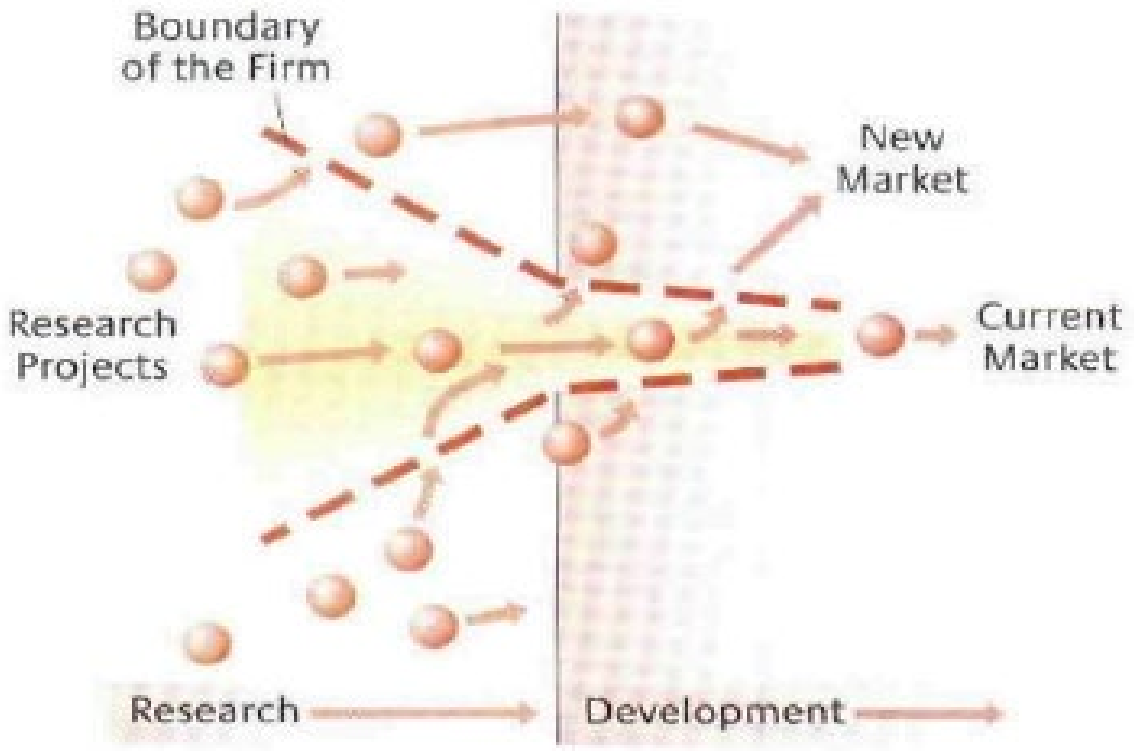
Agenda

1. **Open Innovation – What is it?**
2. A prominent Open Innovation Case Example
3. Some Facts and Data about Open Innovation Use Across Industries and Regions
4. Managerial Challenges and Success Factors of Open Innovation

Inbound, Outbound and Coupled/Hybrid Open Innovation as Part of Strategic Technology Management



The Open Innovation Model



Source: Chesbrough, H. W. (2003)

Benefits of Inbound Open Innovation

1. Access to new technological knowledge
2. Exploitation of technological synergies between partners
3. Better understanding of technologies and market needs
4. Reduction of development times
5. Reduction of development cost
6. Strengthening of long-term partnerships
7. Minimization of risks
8. Higher innovation performance
9. Competition to internal R&D department
10. Increased flexibility

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Benefits of Outbound Open Innovation

1. Increased RoI from R&D investments (find more revenue streams)
2. Leveraging of important network externalities
3. Access to important (complementary) technologies
4. Facilitating the creation of technological standards
5. Establishment of new (IP-based) business models (e.g., PingAn, ARM, Nvidia, Qualcomm)
6. Entering new markets
7. Creation of new external commercialization opportunities (e.g. incubation and spin-offs)

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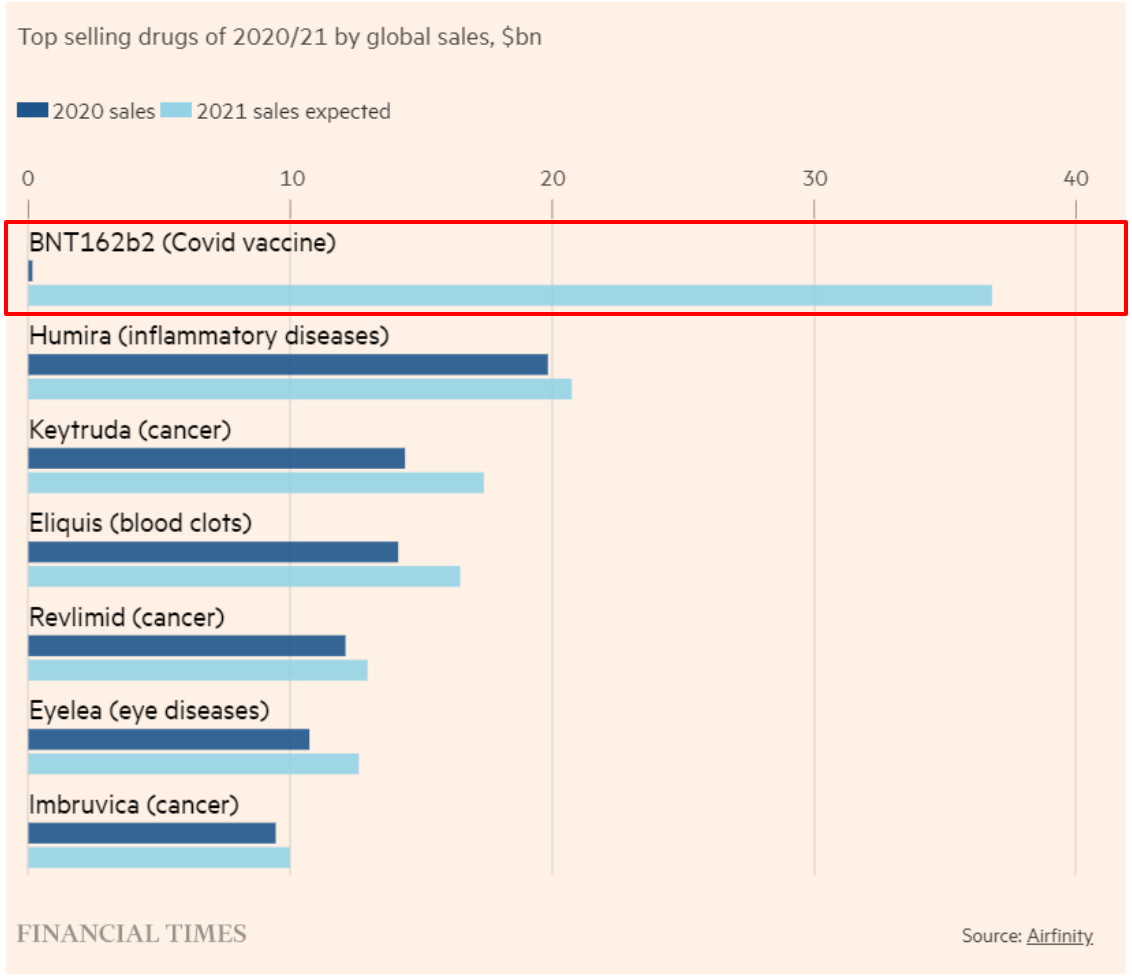
The vaccine against COVID-19: The successful partnership between BioNTech and Pfizer

BIONTECH

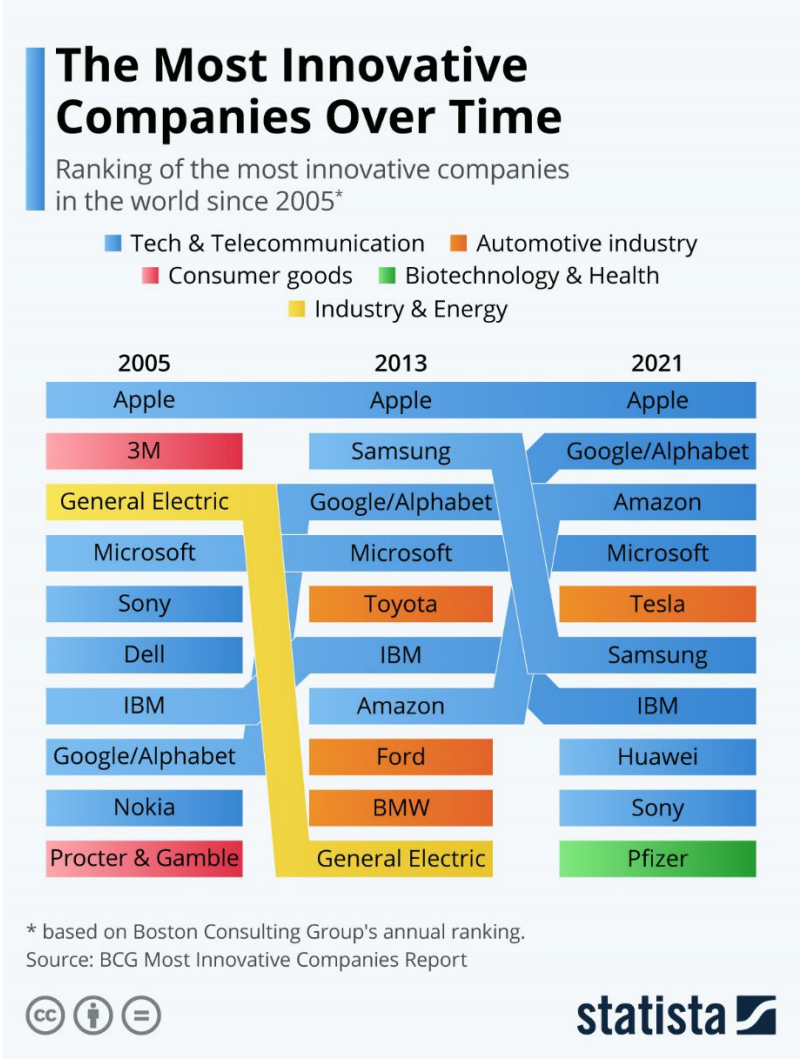
Pfizer

The BioNTech/Pfizer vaccine was the best-selling pharmaceutical product in 2021



Source: Kuchler et al. (2021). The inside story of the Pfizer vaccine: 'a once-in-an-epoch windfall'. Financial Times (November 30, 2021).

The 10 Most Innovative Companies in the World over Time (BCG)



Source: BCG (2021), Statista (2021)

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Key Results of the Capgemini Open Innovation Study (2023)

71%

of organizations plan to increase investment in open innovation in the next two years.

83%

of organizations see open innovation as a critical success factor in addressing sustainability goals.

53%

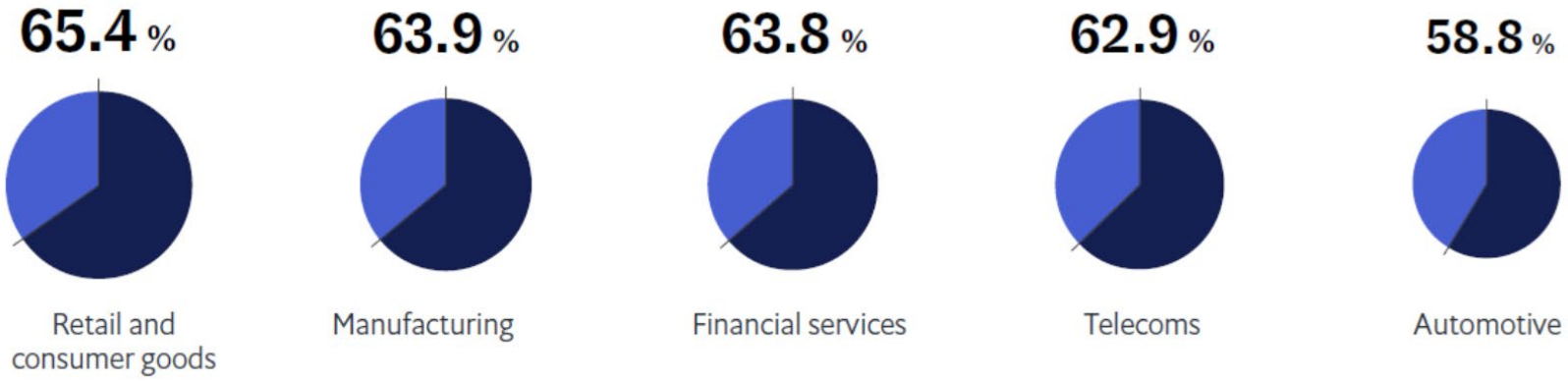
of organizations in our survey rate the quality of outcomes from open innovation as "above average" or better, while the rest describe their outcomes as “average” at best.

22%

only 22% of organizations described their outcomes from open innovation as “good” or “excellent”.

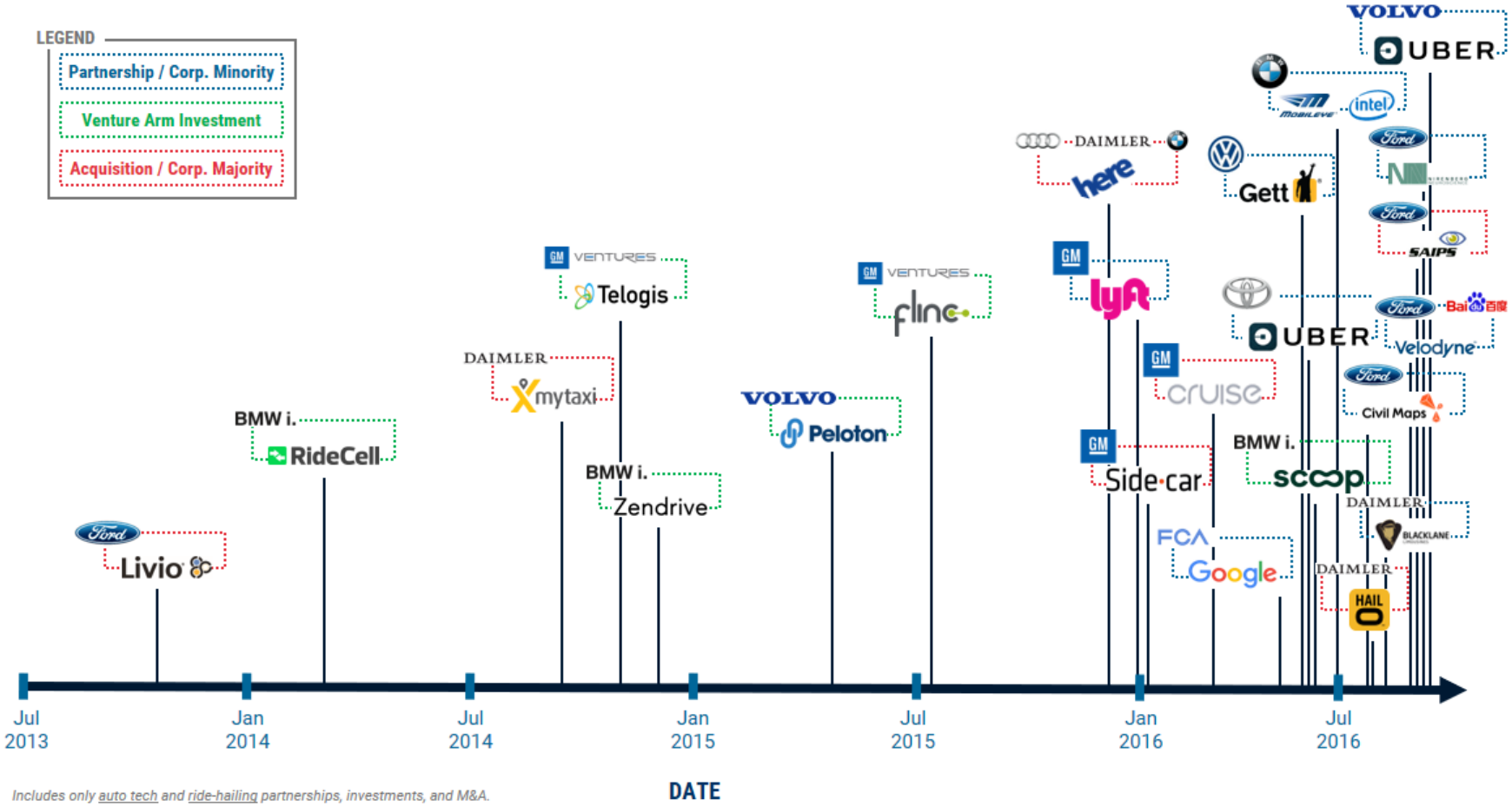
Source: Capgemini Research Institute 2023

Open Innovation Use Across Industries



Source: The Open Innovation Barometer, The Economist Group, 2022

Major technology partnerships, investments and acquisitions in the automotive industry



Source: CBInsights (2016). Big Auto's Scramble For Auto Tech Partnerships, Investments, And M&A. (August 25, 2016)

Daimler relies on Nvidia's technology for future cars

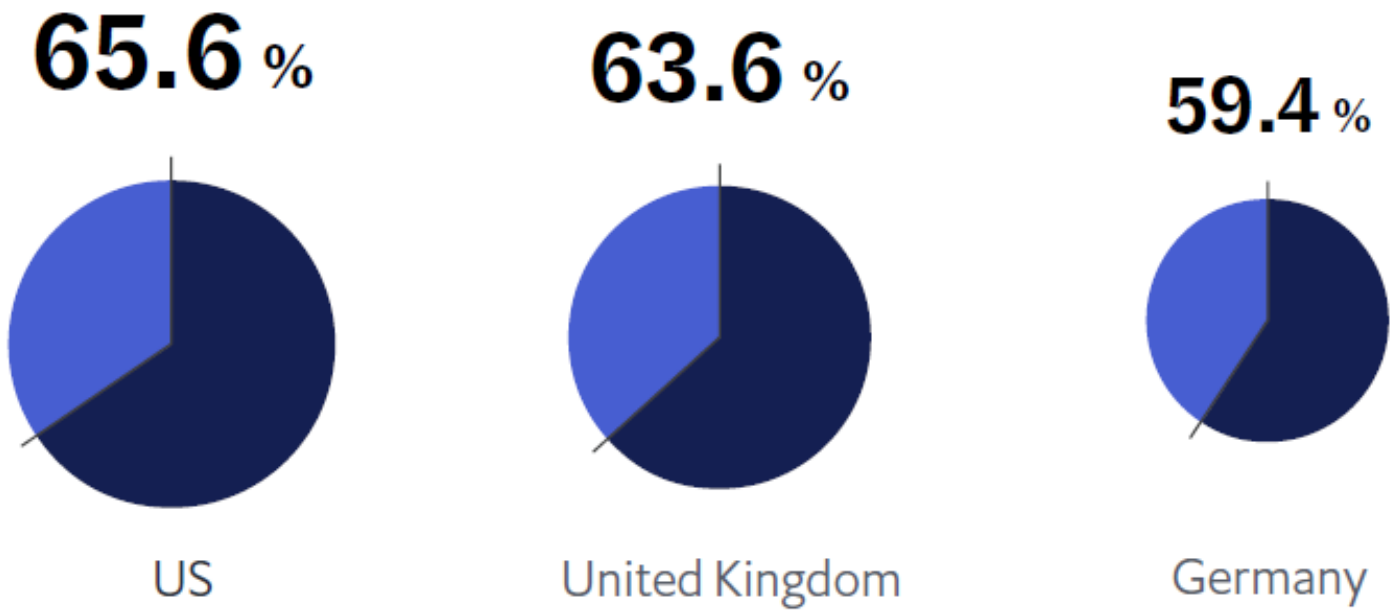
Mercedes-Benz

NVIDIA

- Daimler and Nvidia announced a strategic partnership to create a revolutionary in-vehicle computing system and AI computing infrastructure, powered by Nvidia's Orin chips and its DRIVE software platform.
- From 2024, Mercedes will begin delivering over-the-air software updates to its entire fleet, enabling state-of-the-art automated driving functions and safety features – already standard at Tesla. Besides, customers will be able to purchase and add capabilities, software applications and subscription services during the lifetime of their car.
- "This is a crucial point in our strategy, our business model will change," said Ola Källenius, CEO of Daimler. Software is now playing a key role in the car industry, stressed the head of Nvidia's automotive business, Danny Shapiro: "It's software that can make products better and better."
- Mercedes will license Nvidia's technology; a Joint Venture is not planned. Thousands of engineers of both companies are busy implementing the project.
- When it comes to software, German car manufacturers are running late and have been shifting their strategy: Daimler recently abandoned a similar collaboration with BMW that relied on Intel technology. Volkswagen established its own digital unit "Car.Software.Org" to accelerate the development of software and operating systems for all its new vehicles.

Source: Postinett, A. & Fasse, M. (2020). Liaison für das Auto der Zukunft. Handelsblatt (June 25, 2020); Welt (2020). Mercedes setzt für künftige Autos auf Nvidia-Computer. Welt.de (June 23, 2020); Daimler (2020). Press release.

Open Innovation Use Across Regions



Source: The Open Innovation Barometer, The Economist Group, 2022

Use of Open Innovation Channels

Table 5. OI channels in practice

Open innovation channels	% respondents
OSS	46%
Consumer and customer co-creation	45%
R&D consortia and/or collaborative networks	45%
Contracting with external R&D service providers	43%
Joint venture activities	38%
Idea and start-up competitions	37%
IP in-licensing	28%
University research partnerships	32%
IP out-licensing and patent selling	26%
Other open-source platforms	23%

Source: Economist Impact survey

Source: The Open Innovation Barometer, The Economist Group, 2022

Open Innovation Partners

Table 6. Innovation partners in practice

Partner type	% respondents
Contracted R&D service providers	53%
Vendors/suppliers	49%
Customers/clients	45%
Industry peers	44%
Universities & public research organizations	42%
Entrepreneurs & startups	40%
Organizations in other industries	36%
Government organizations	25%

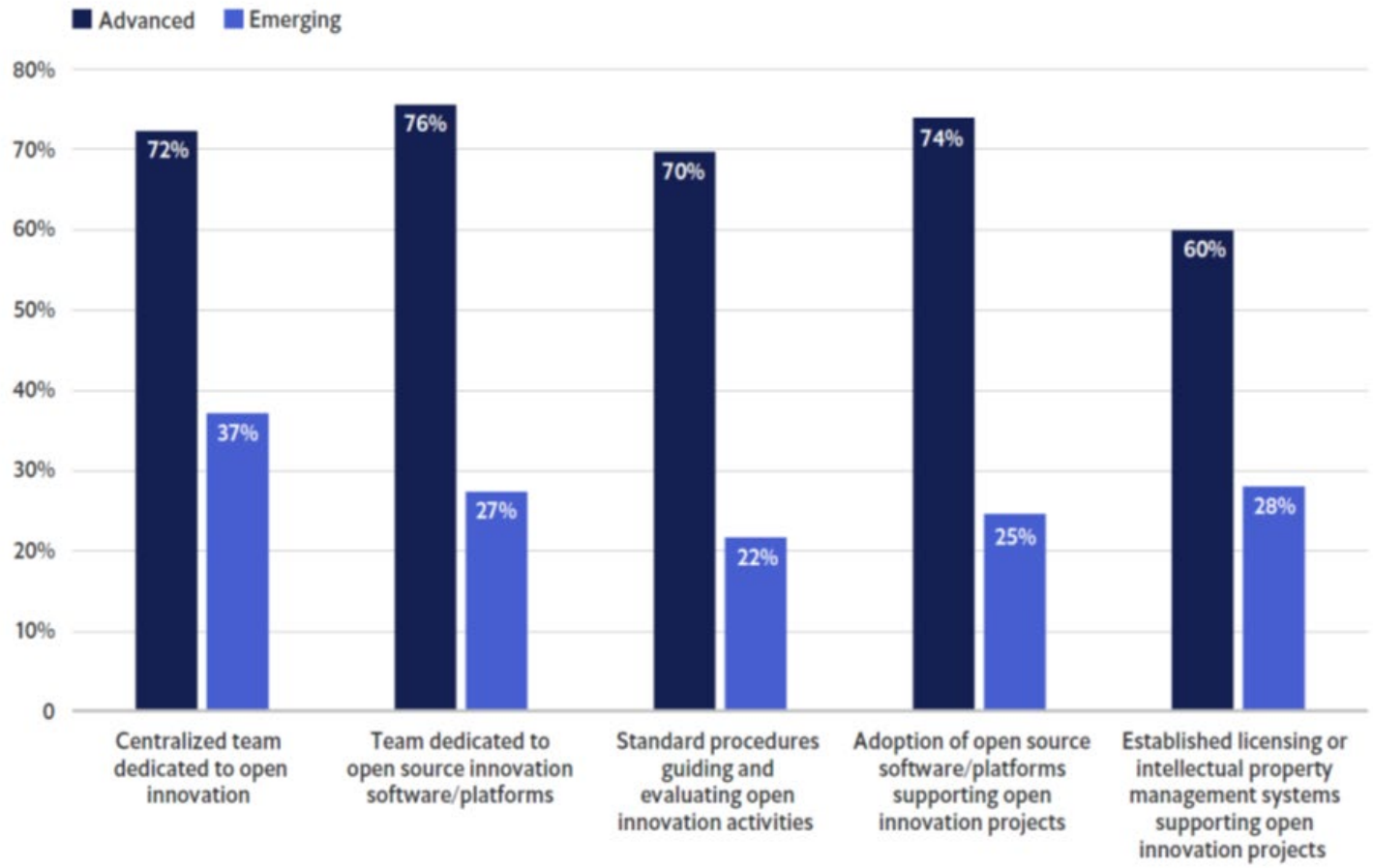
Source: Economist Impact survey

Source: The Open Innovation Barometer, The Economist Group, 2022

Open Innovation – Managerial Practices

Figure 1. Adoption of supportive OI practices in advanced and emerging organizations

Source: Economist Impact survey



Source: The Open Innovation Barometer, The Economist Group, 2022

Open Innovation – Satisfaction with Outcomes

Table 3. OI and satisfaction with innovation outcomes

% of respondents that reported high levels of satisfaction	Advanced	Emerging
Level of innovation within the organization	62%	36%
Extent of OI within the organization	63%	23%
Impact of innovation on business performance	64%	36%
Impact of open innovation on business performance	64%	27%

Source: Economist Impact survey

Source: The Open Innovation Barometer, The Economist Group, 2022

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Open Innovation – Barriers to Adoption

Table 7. Barriers to OI adoption

Barriers to OI adoption	% respondents
Increased time and managerial costs	28%
Increased managerial and organizational complexity	27%
Reliance on outdated or insufficient technology	25%
Regulatory risks	25%
Conflicting expectations between organization and partners	23%

Source: Economist Impact survey

Source: The Open Innovation Barometer, The Economist Group, 2022

Open Innovation – Further Managerial Challenges

1. Lack of absorptive capacity
2. Culture ("not-invented" here and "not-sold here" syndromes)
3. Lack of top management support
4. Missing to implement organizational adjustments and new roles (e.g., champions)
5. Short and unrealistic pay-back period
6. Appropriability issues (esp. IP)

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Source: Capgemini Research Institute 2023

Characteristics of Open Innovation Leaders (Capgemini, 2023)

1. **Embrace bold open innovation:**

   - Engage more in adjacent/transformational innovation (i.e., going beyond innovating incrementally in existing business areas and target newer, and potentially riskier, business areas)

   - Collaborate more closely with innovation partners not directly linked to their core business model

   - Broaden the scope of open innovation beyond R&D/product development

2. **Support of open innovation at the C-suite level**

3. **Existence of clear objectives for open innovation**

4. **Right culture and mindset**

5. **Alignment of open innovation and business teams**

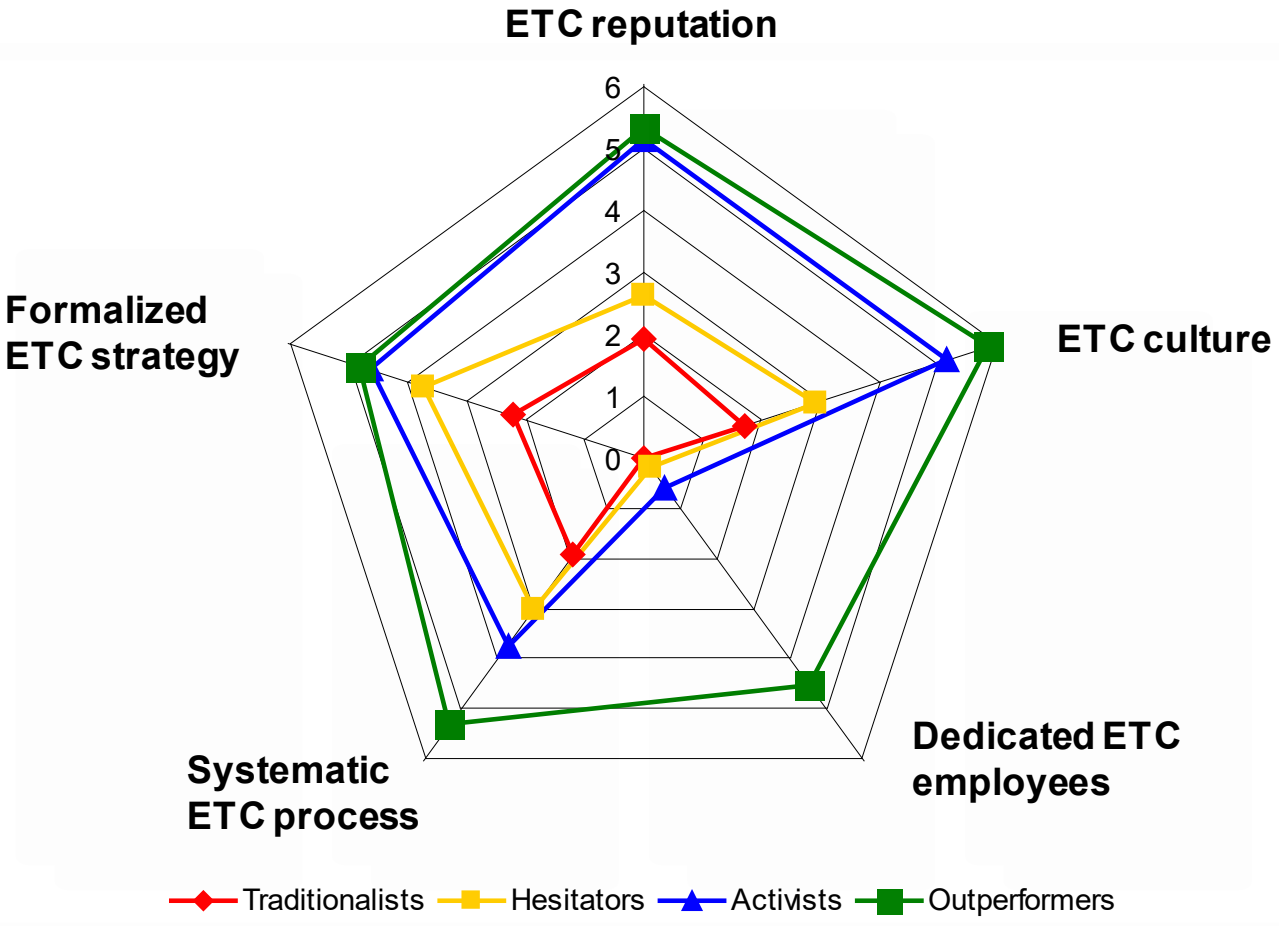
Source: Capgemini Research Institute 2023

Success Factors of R&D Alliances (Inbound Open Innovation)

- Openness (# 'Not-Invented-Here-Syndrome')
- Trust
- Alliance Experience (overall and with specific partner)
- Open and Frequent Communication
- Strategic Fit (complementary capabilities)
- Cultural Fit
- Technological Competence of Partners (strong IP positions)
- Physical Closeness (R&D globalization, knowledge clusters)
- Absorptive Capacity

Source: Prof. Ernst (WHU)

Success Factors of Outbound Open Innovation



Source: Lichtenthaler (2006)

Thank you for your attention!