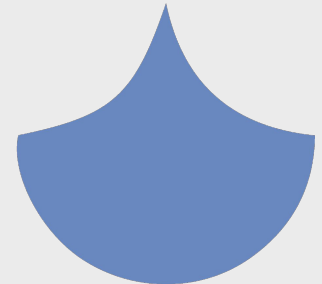


# Challenge Verwertung

Themenfindung Luftfahrt  
FFG

26. Juni, 2025

Sara García Arteagoitia  
Innovation Growth Lab





Innovation  
Growth Lab

## IGL ist ein globales Politiklabor für eine **wirksamere Innovations- und Produktivitätspolitik**

Unser Ziel ist es, die Wirkung der Innovations- und Produktivitätspolitik durch neue **Ideen, Experimente, Daten und Evidenz** zu erhöhen. Zu diesem Zweck bringen wir **politische Entscheidungsträger, Forscher, Praktiker und Geldgeber** zusammen, um wichtige politische Herausforderungen anzugehen und zu produktiveren, integrativeren und nachhaltigeren Volkswirtschaften beizutragen.

# Wir bringen zwei Communities zusammen

## Die IGL Mitglieder

Ministerien, Innovationsförderungsagenturen und Stiftungen aus der ganzen Welt.



## Das IGL Forschernetzwerk

Über 250 Forscher aus der ganzen Welt, die zu Innovation, Entrepreneurship, Produktivität und Wachstum arbeiten.



## IGL Wissenschaftlicher Ausschuss

**Nick Bloom** Stanford Business School | **Dietmar Harhoff** Max Planck Institute for Innovation & Competition | **Karim Lakhani** Harvard Business School | **Josh Lerner** Harvard Business School | **Fiona Murray** MIT Sloan | **Mark Schankerman** LSE | **Scott Stern** MIT Sloan | **John Van Reenen** LSE | **Reinhilde Veugelers** KULeuven | **Heidi Williams** Stanford University

Unsere Arbeit erstreckt sich auf die Bereiche **Wissenschaft, Innovation, Entrepreneurship und Unternehmensförderung** und konzentriert sich derzeit auf vier Schlüsselbereiche

### Finanzierung von Wissenschaft und Innovation

Verbesserung der Gestaltung und Verwaltung von Finanzierungsmechanismen für Wissenschaft und Innovation

### Zusammenarbeit Universität und Industrie

Überbrückung der Kluft zwischen Universität und Industrie, um die Kommerzialisierung der Wissenschaft zu beschleunigen und gesellschaftliche Auswirkungen zu fördern

### Inclusive Innovation

Schaffung inklusiver Innovationssysteme und Rückgewinnung des verlorenen Innovationspotenzials

### Technologieeinführung bei KMUs

Untersuchung der Frage, wie die Politik Unternehmen dabei unterstützen kann, neue Technologien und Praktiken einzuführen, um die Produktivität zu steigern und den Übergang zu einer Netto-Null-Produktion zu schaffen

# Wer bin ich



**Sara García Arteagoitia**

Senior Researcher  
Innovation Growth Lab

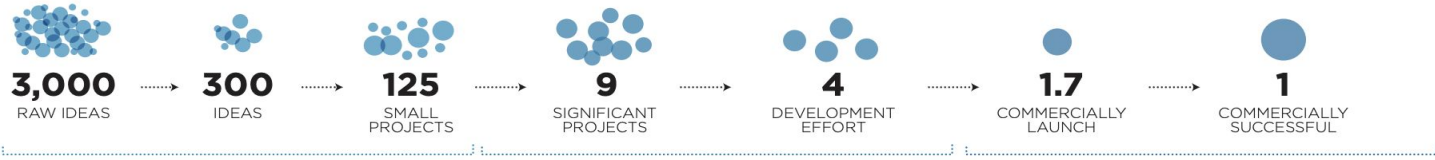
[sara.garcia-arteagoitia@nesta.org.uk](mailto:sara.garcia-arteagoitia@nesta.org.uk)



**Handbuch  
herunterladen**

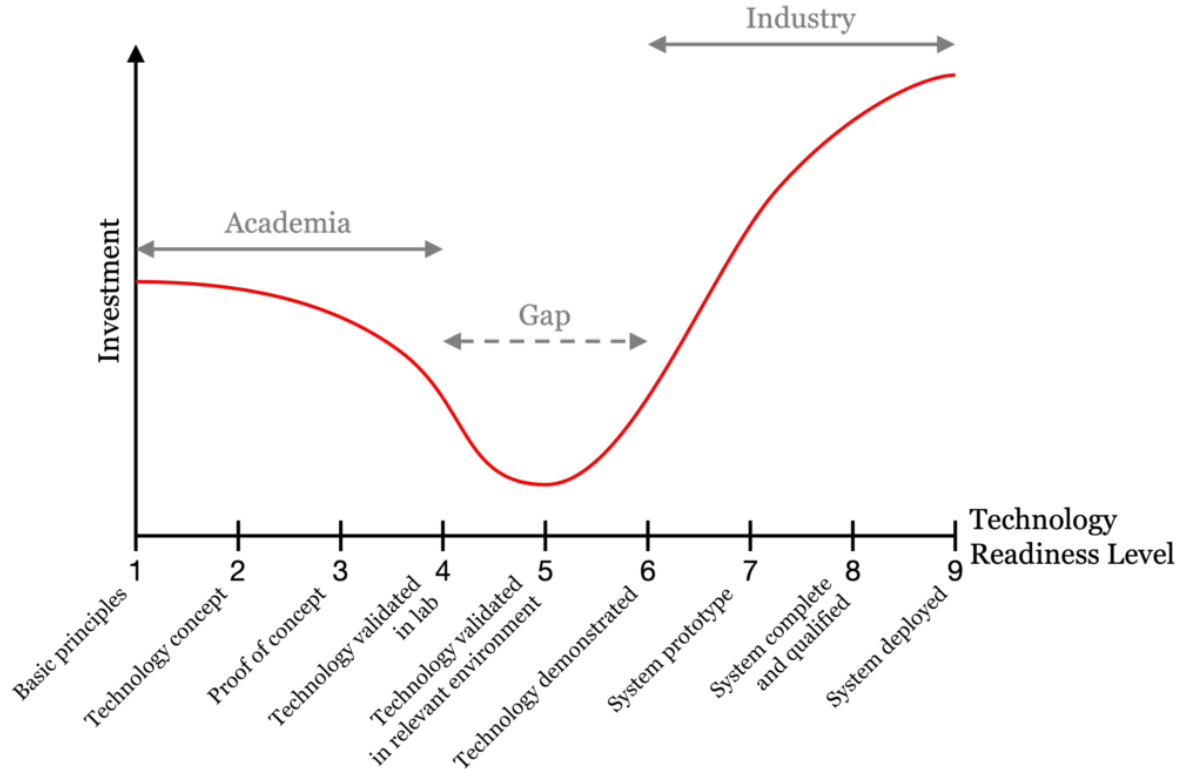


# Innovationsfunnel



STAGE	STAGE 1	STAGE 2	STAGE 3
ACTIVITIES & OUTPUT	<b>RESEARCH</b> Discovery Knowledge assets. Intangible and highly adaptable (e.g., gas)	<b>TRANSFORMATION</b> Invention Tangible assets, still adaptable (e.g., liquid)	<b>COMMERCIALIZATION</b> Innovation Commercial assets. Adaptable and tangible (e.g., solid)
AREAS OF CHALLENGES	<b>PERFORMANCE METRICS</b> How to choose from different initiatives in the research stage	<b>MARKET UNDERSTANDING</b> Principles for understanding the market and successfully transforming discoveries into products and services	<b>INDUSTRY COLLABORATION</b> Mechanisms to commercialize discoveries effectively
6 SYMPTOMS TO IDENTIFY BROKEN INNOVATION	<b>ECONOMIC VS. ACADEMIC</b> <ol style="list-style-type: none"> <li>Are you experiencing a decline in research quality?</li> <li>Are you facing a decrease in economic profitability?</li> </ol>	<b>ASSUMING VS. FOLLOWING</b> <ol style="list-style-type: none"> <li>Are you coming up with products or services that no one wants to buy?</li> <li>Are you producing outdated products?</li> </ol>	<b>RESEARCH VS. FURTIVE</b> <ol style="list-style-type: none"> <li>Are you experiencing increased difficulty in monetizing your discoveries?</li> <li>Are you experiencing increased difficulty in getting access to industry data and professional networks?</li> </ol>

# The Valley of Death



# Technology Readiness Levels

Level	Official description
TRL1	Basic principles observed and reported
TRL 2	Technology concept and/or application formulated
TRL 3	Experimental proof of concept
TRL 4	Technology validated in the lab
TRL 5	Technology validated in relevant environment
TRL 6	Prototype demonstrated in relevant environment
TRL 7	System prototype demonstration in operational environment
TRL 8	Actual system completed and qualified
TRL 9	Actual system proven in operational environment

FFGs  
Einzugsgebiet

**ABER:** Marktforschung  
und Nutzernachfrage  
und sozialer Reifegrad  
sind nicht Teil des TRL  
frameworks!

# TRL vs CRL vs MRL vs SRL










TRL (Technology Readiness)	CRL (Commercial Readiness)	MRL (Market Readiness)	SRL (Societal Readiness)
<b>TRL 1</b> — Basic principles observed and reported	<b>CRL 1</b> — Tech idea exists, commercial potential not assessed	<b>MRL 1</b> — Market need loosely understood, basic awareness only	<b>SRL 1</b> — Societal impact is mentioned but unexplored
<b>TRL 2</b> — Technology concept and/or application formulated	<b>CRL 2</b> — Value proposition and potential users identified	<b>MRL 2</b> — Problem validated via early user input	<b>SRL 2</b> — Societal issues or actors identified
<b>TRL 3</b> — Experimental proof of concept	<b>CRL 2-3</b> — Business case explored, possible partners identified	<b>MRL 3</b> — Value proposition matches user needs; solution defined	<b>SRL 3</b> — Stakeholder mapping and early engagement
<b>TRL 4</b> — Technology validated in the lab	<b>CRL 3</b> — Commercial model drafted; risks assessed	<b>MRL 4</b> — Market testing with early adopters (MVP, interviews, pilots)	<b>SRL 4</b> — Societal needs and concerns assessed
<b>TRL 5</b> — Technology validated in relevant environment	<b>CRL 3-4</b> — Partnerships formed, finance strategy in progress	<b>MRL 4-5</b> — Strong feedback; signs of product-market fit	<b>SRL 5</b> — Stakeholder input shaping development
<b>TRL 6</b> — Prototype demonstrated in relevant environment	<b>CRL 4</b> — Go-to-market plan finalised; early commercial traction	<b>MRL 5-6</b> — First sales or pilot contracts; repeatable demand	<b>SRL 6</b> — Design adjusted based on deeper social input
<b>TRL 7</b> — System prototype demonstration in operational environment	<b>CRL 5</b> — Operational readiness for market entry	<b>MRL 6</b> — Market entry with defined channel and offer	<b>SRL 7</b> — Legitimacy and social support visible
<b>TRL 8</b> — Actual system completed and qualified	<b>CRL 5-6</b> — Scaling underway; systems in place	<b>MRL 7</b> — Active adoption in the market; scaling initiated	<b>SRL 8</b> — Societal readiness broad; institutions aligned
<b>TRL 9</b> — Actual system proven in operational environment	<b>CRL 6</b> — Fully commercial; revenue growing	<b>MRL 7</b> — Broad market traction; established demand	<b>SRL 9</b> — Fully integrated and socially accepted

# TRL vs CRL vs MRL vs SRL



TRL (Technology Readiness)	CRL (Commercial Readiness)	MRL (Market Readiness)	SRL (Societal Readiness)
<b>TRL 1</b> — Basic principles observed and reported	<b>CRL 1</b> — Tech idea exists, commercial potential not assessed	<b>MRL 1</b> — Market need loosely understood, basic awareness only	<b>SRL 1</b> — Societal impact is mentioned but unexplored
<b>TRL 2</b> — Technology concept and/or application formulated	<b>CRL 2</b> — Value proposition and potential users identified	<b>MRL 2</b> — Problem validated via early user input	<b>SRL 2</b> — Societal issues or actors identified
<b>TRL 3</b> — Experimental proof of concept	<b>CRL 2-3</b> — Business case explored, possible partners identified	<b>MRL 3</b> — Value proposition matches user needs; solution defined	<b>SRL 3</b> — Stakeholder mapping and early engagement
<b>TRL 4</b> — Technology validated in the lab	<b>CRL 3</b> — Commercial model drafted; risks assessed	<b>MRL 4</b> — Market testing with early adopters (MVP, interviews, pilots)	<b>SRL 4</b> — Societal needs and concerns assessed
<b>TRL 5</b> — Technology validated in relevant environment	<b>CRL 3-4</b> — Partnerships formed, finance strategy in progress	<b>MRL 4-5</b> — Strong feedback; signs of product-market fit	<b>SRL 5</b> — Stakeholder input shaping development
<b>TRL 6</b> — Prototype demonstrated in relevant environment	<b>CRL 4</b> — Go-to-market plan finalised; early commercial traction	<b>MRL 5-6</b> — First sales or pilot contracts; repeatable demand	<b>SRL 6</b> — Design adjusted based on deeper social input
<b>TRL 7</b> — System prototype demonstration in operational environment	<b>CRL 5</b> — Operational readiness for market entry	<b>MRL 6</b> — Market entry with defined channel and offer	<b>SRL 7</b> — Legitimacy and social support visible
<b>TRL 8</b> — Actual system completed and qualified	<b>CRL 5-6</b> — Scaling underway; systems in place	<b>MRL 7</b> — Active adoption in the market; scaling initiated	<b>SRL 8</b> — Societal readiness broad; institutions aligned
<b>TRL 9</b> — Actual system proven in operational environment	<b>CRL 6</b> — Fully commercial; revenue growing	<b>MRL 7</b> — Broad market traction; established demand	<b>SRL 9</b> — Fully integrated and socially accepted

# Valorisation channels

	Prerequisites	Formalisation method	Execution	Results
 <p><b>Spin out</b> New company formed to commercialise university research or technology innovations</p>	Entrepreneurial & technical skills Funding Business model IP	Incorporation	Financing Product/service development Operations Sales	New company New products/services
 <p><b>Technology licensing</b> Granting rights to use university-developed intellectual property for commercial purposes</p>	IP	License agreement	Exploitation of technology through use and/or sales	Company benefits Compensation for licensing
 <p><b>Joint research</b> Collaborative projects between academia and industry to develop new technologies</p>	Research scope definition Relationship	Contract	Research for improved problem understanding, and/or solution testing	Solution and/or new process/product (with shared IP)
 <p><b>Contract research</b> Industry-funded research conducted by universities to address specific commercial challenges</p>	Scope definition Relationship	Contract	Attempt to solve specific problem of company	Solution to predefined industry problem (without shared IP)
 <p><b>Consultancy</b> Expert advice provided by academics to businesses for commercial innovation</p>	Problem definition Relationship	Contract	Think through problem with specialised knowledge	Summarising report
 <p><b>People movement</b> Academics transferring to companies or company employees transferring to labs</p>	Expertise	Employment contract Secondment agreement	Application of specialised knowledge	Knowledge incorporation into research or companies
 <p><b>Knowledge diffusion</b> Spread of academic research and expertise through informal interactions, training or publications</p>	Research outputs Expertise Absorptive capacity	None	Knowledge sharing and absorption	Knowledge incorporation into companies

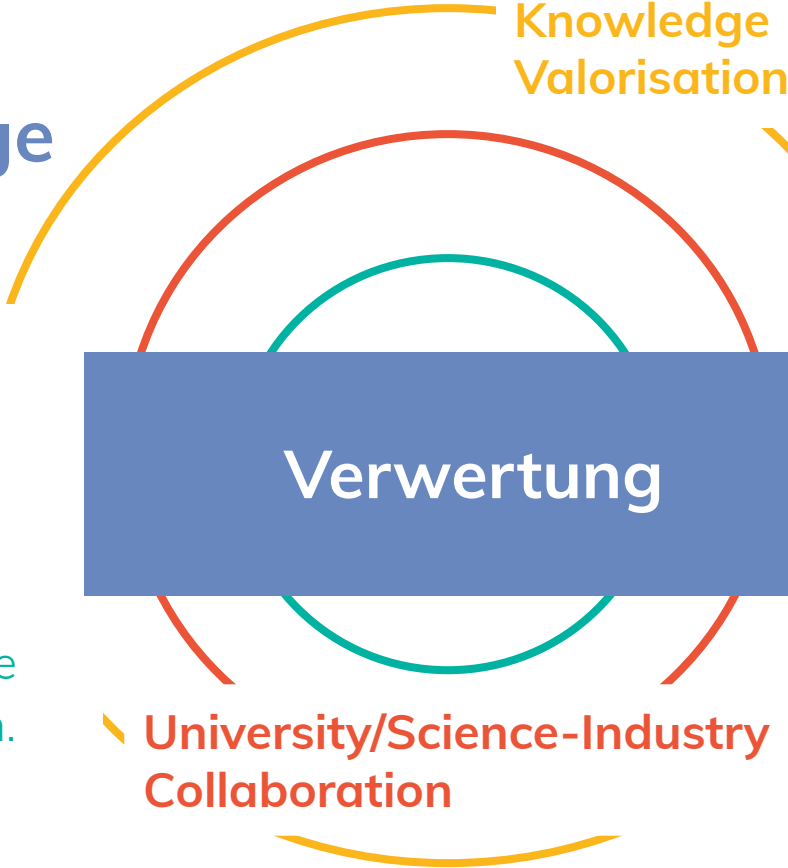
Quelle: [Experimenting in University-Industry Collaboration \(2025\)](#)

Aber wovon reden  
wir eigentlich?



# Viele Definitionen Ein Challenge

Der Prozess der Umsetzung wissenschaftlicher Forschung und Entdeckungen in marktfähige Produkte und Dienstleistungen.



Der Prozess der Umsetzung von Forschung und Innovation in praktische Anwendungen, die einen wirtschaftlichen oder gesellschaftlichen Wert schaffen und Unternehmen, politischen Entscheidungsträgern und der Allgemeinheit zugute kommen.

Partnerschaften zwischen akademischen Einrichtungen und Unternehmen zur Förderung von Forschung, Innovation und Wissensaustausch.

# Das Ökosystem



# Key issues matrix

## Researchers

Academic and lab researchers focused on investigation, knowledge generation and scientific discovery outside of corporate R&D labs

## Businesses

Small and medium-sized enterprises (SMEs) engaged in commercial activities to generate profit

<h3>Motivation</h3> <p>Drivers influencing businesses and researchers to pursue commercialisation efforts</p>	<p>Increasing incentives for commercialisation</p> <p>1.1</p>	<p>Nurturing intrinsic motivation</p> <p>1.2</p>	<p>Addressing informational gaps</p> <p>1.3</p>	<p>Raising awareness of the possibility of collaboration</p> <p>1.4</p>	<p>Addressing misconceptions about university-industry collaboration</p> <p>1.5</p>	<p>Increasing the returns to collaboration</p> <p>1.6</p>
<h3>Capabilities</h3> <p>Skills and competencies necessary for successful science commercialisation processes</p>	<p>Improving non-technical communication skills</p> <p>2.1</p>	<p>Developing commercialisation skills</p> <p>2.2</p>	<p>Finding the most effective format for capability building</p> <p>2.3</p>	<p>Improving absorptive capacity and understanding of their technology needs</p> <p>2.4</p>	<p>Developing abilities to establish collaborations</p> <p>2.5</p>	<p>Finding the most effective format for capability building</p> <p>2.6</p>
<h3>Resources</h3> <p>Financial, human, and infrastructural assets required for effective commercialisation</p>	<p>Designing effective funding programmes</p> <p>3.1</p>	<p>Providing access to business expertise</p> <p>3.2</p>	<p>Providing access to other forms of support</p> <p>3.3</p>	<p>Designing effective funding programmes</p> <p>3.4</p>	<p>Unlocking access to talent and expertise</p> <p>3.5</p>	<p>Providing non-financial support</p> <p>3.6</p>

[Experimenting in University-Industry Collaboration \(2025\)](#)

## Researchers & Businesses

<h3>Matching</h3> <p>Aligning innovations with market needs and fostering effective partnerships</p>	<p>Identifying potential uses for scientific discoveries</p> <p>4.1</p>	<p>Identifying technologies to address particular challenges</p> <p>4.2</p>	<p>Building new relationships between researchers and businesses</p> <p>4.3</p>	<p>Executing effective collaborations</p> <p>4.4</p>
--	---	---	---	--



# Q&A



[www.innovationgrowthlab.org.uk](http://www.innovationgrowthlab.org.uk)

@IGLglobal

innovationgrowthlab@nesta.org.uk