ARESIA
Bolder together

25th of
October 2022

Innovation, Financing, Human Factors

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Chief Scientific Partnerships, ARESIA

Founder Agilising Innovation

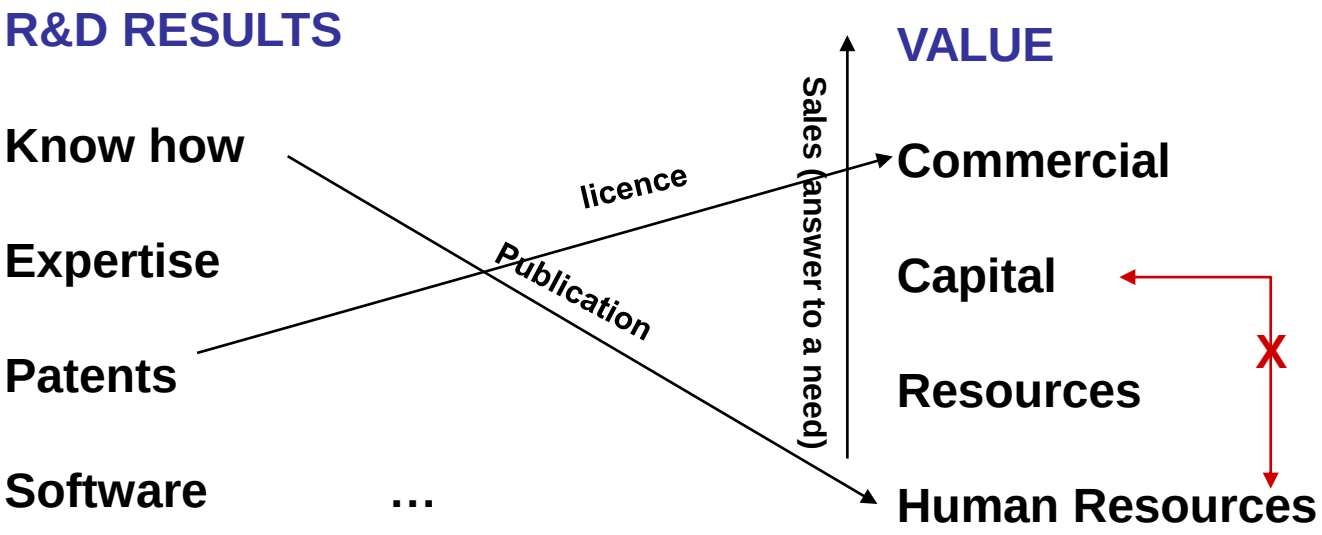
Member of EIC Jury Pilot – European Innovation Council

Member of JEDI – Joint European Disruptive Initiative

former Deputy Director Industrial Innovation – ONERA

former Director Innovation – Akka Group

Scientist and Organisations' roles inside the Innovation Process



Crossing Mechanisms induce Value Creation ← Public R&D **Organisations' Mission**

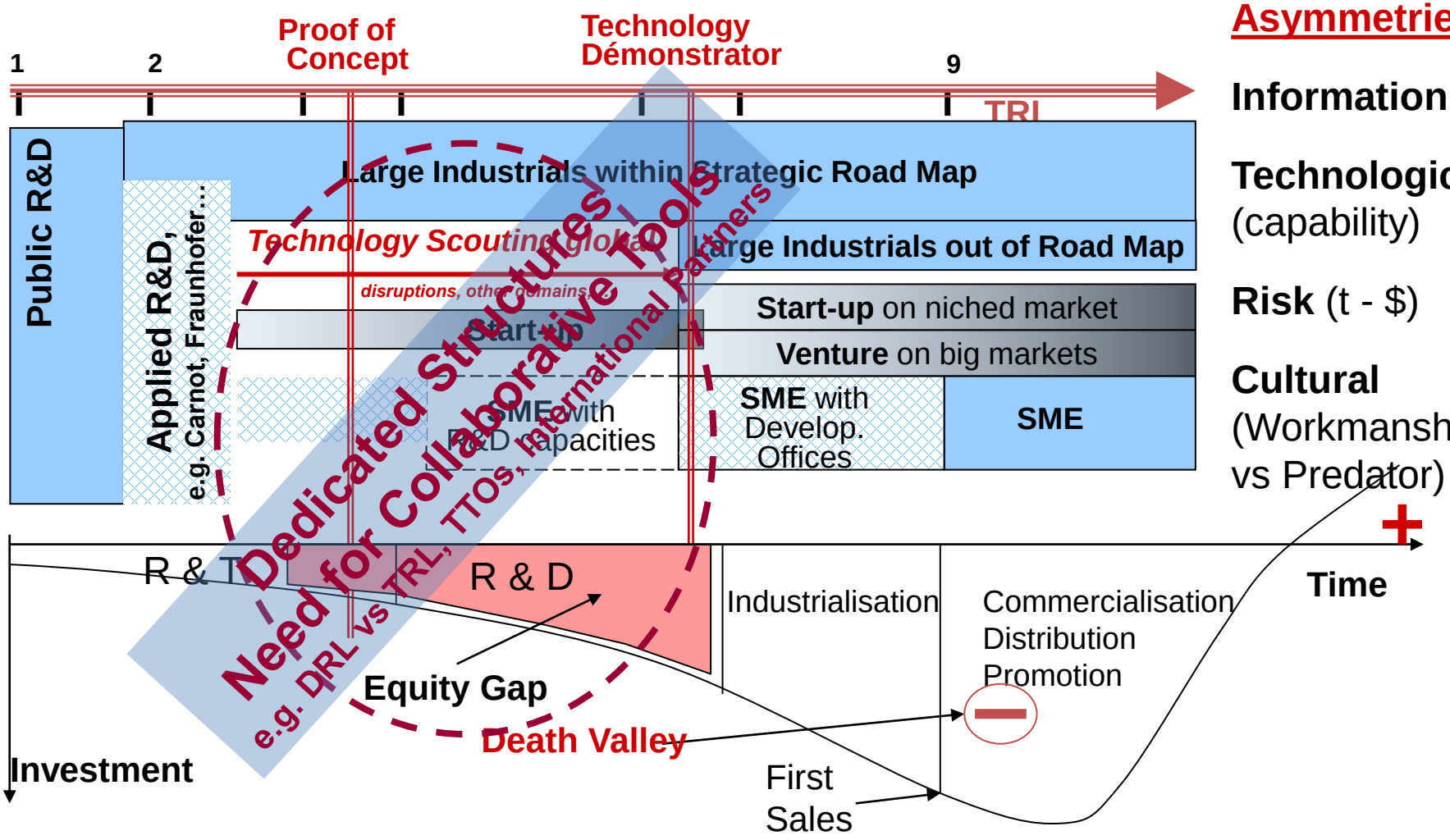
Commercial Value recognize the Innovation

(else « Invention which doesn't work », « Born dead idea »,...)

Technology Creator is Part of the Tech. Developpement Chain < **Innovation Process**

Agilising Innovation

Value on R&D Results : Actors Positioning on TRL & Identified Related Asymetries !



Agilising Innovation

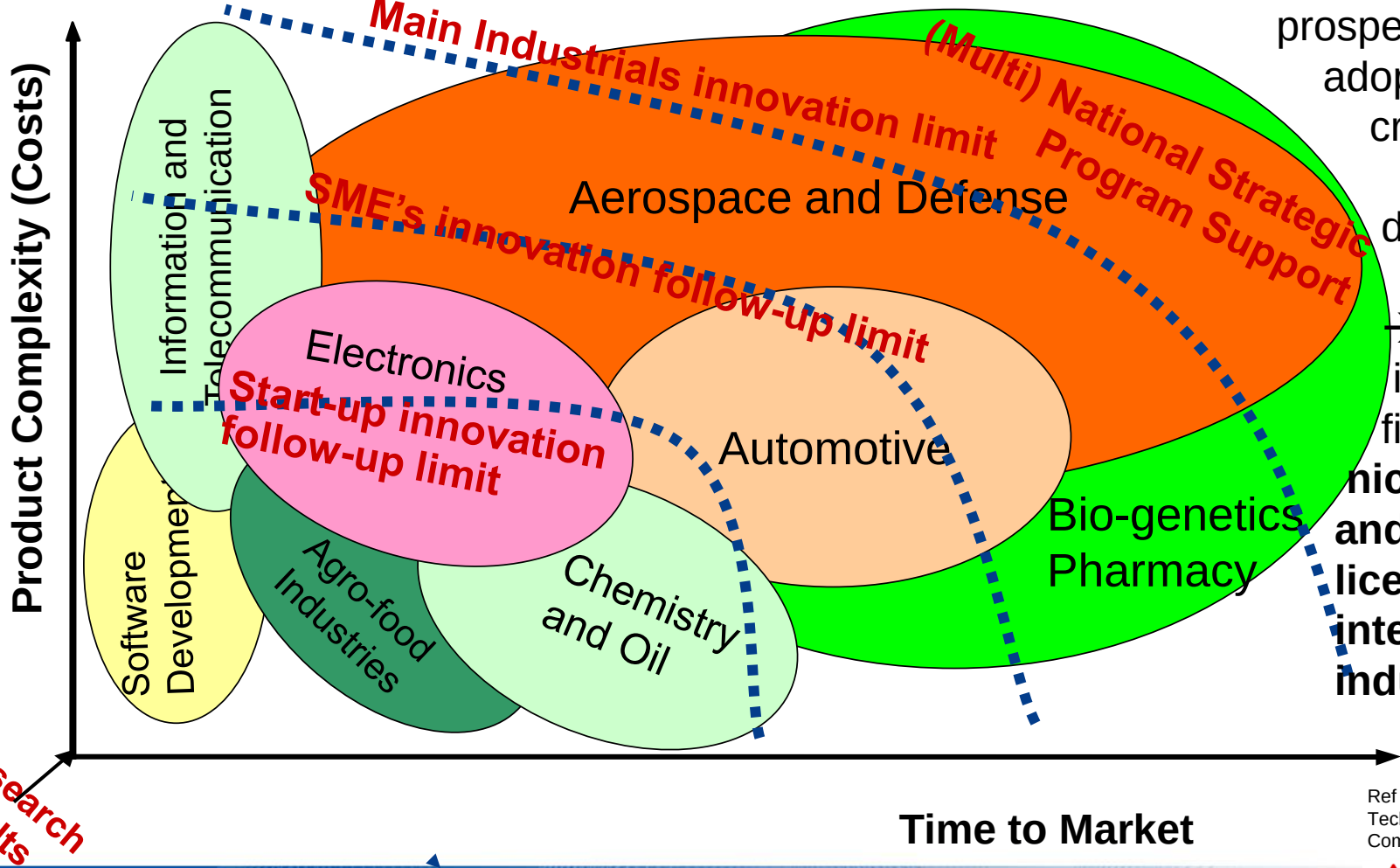
Innovation process follow-up ability by the Technology creator

strategy

→ SMEs as best vector for technology demonstrators

→ Major Industrials partners for incremental Innovation & prospective adopter of critical tech for disruptive

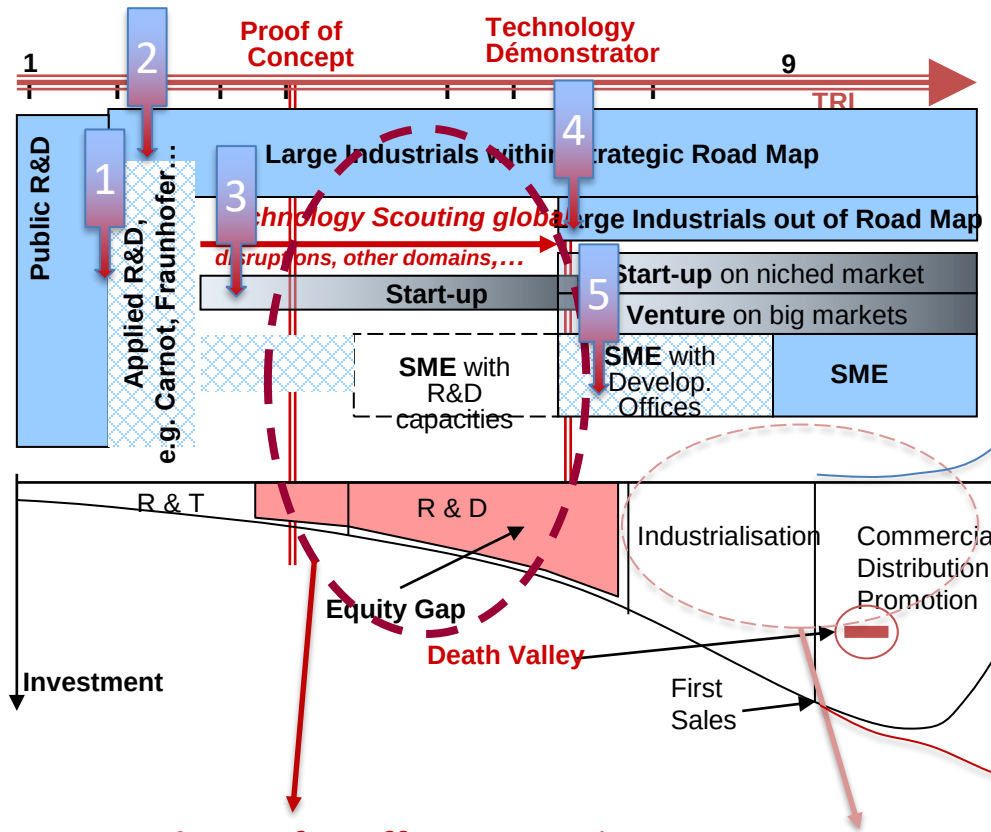
→**Start-up** in every field **only** if **niche** market **and no licensing interest from industrials**



Ref Université Technologique de Compiègne

Agilising Innovation

Innovation Paradigm : Actors positioning on TRL beyond TRL Death Valley and Return on Investment – TechTransfer in TechPush



Revenues
S-Curve

1- Screening for Applied Research teams within the appropriate domains → **Network of Partners**

2- Search for Corporations based on their Strategic Road Maps and Promote Competencies → **Economic Intelligence & Tech. Offer Catalogue**

3- Searching for Entrepreneurs and Incubation and promote the PoC → **Network of Incubators & PoC Catalogue/Showrooms + Spin-Off Charter**

4- Search for Corporations' Open Innovation Challenges → **Network of Program/R&D Managers and Demo-tech Catalogue/Showrooms**

5 – Search for Tech adopting SMEs → **Create and Animate an SME Innovation Club**

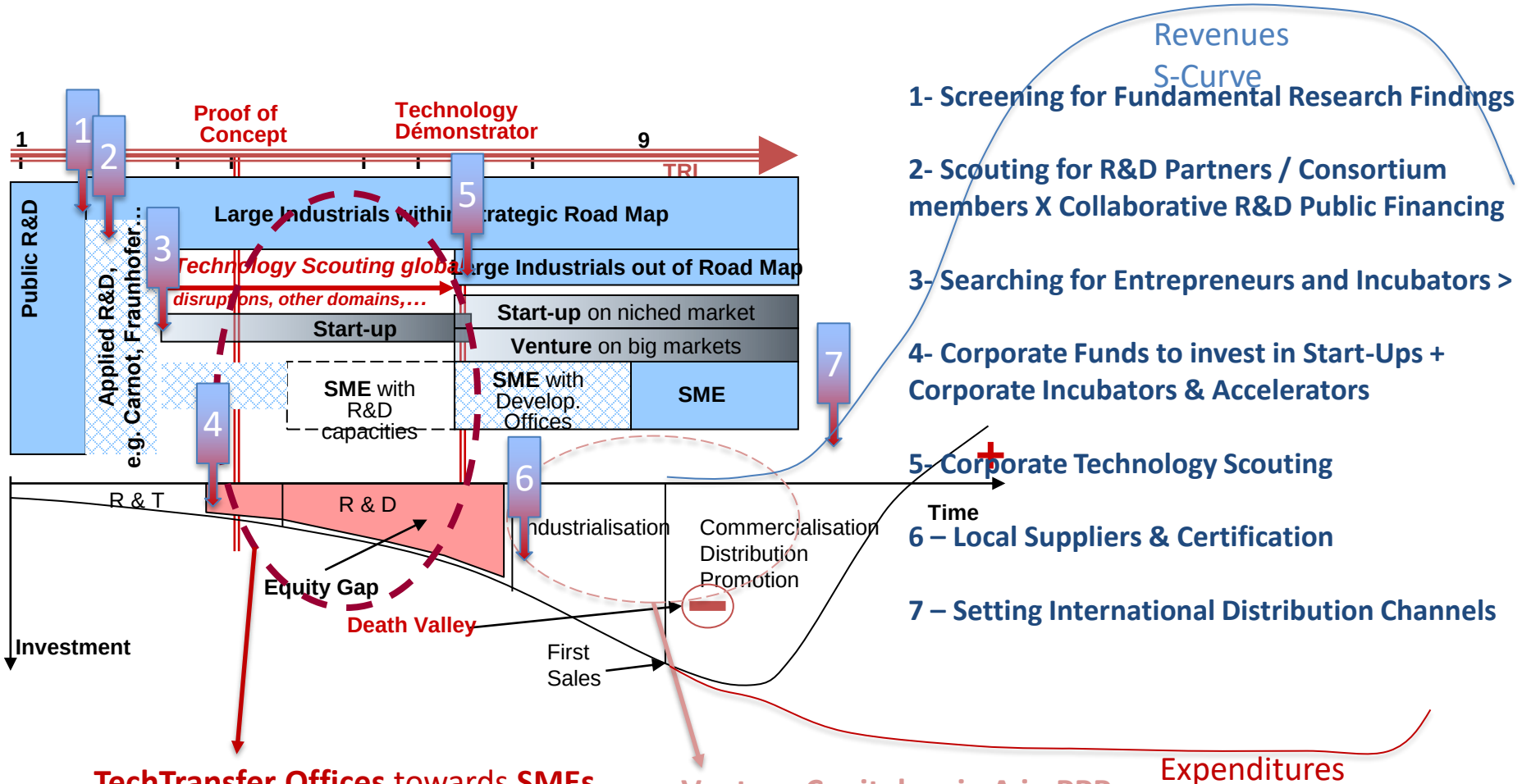
Expenditures

TechTransfer Offices towards **SMEs**
Incubators for **Start-Ups**
Business Angels & **Public-Private Partnership**

Venture Capital serie A in PPP

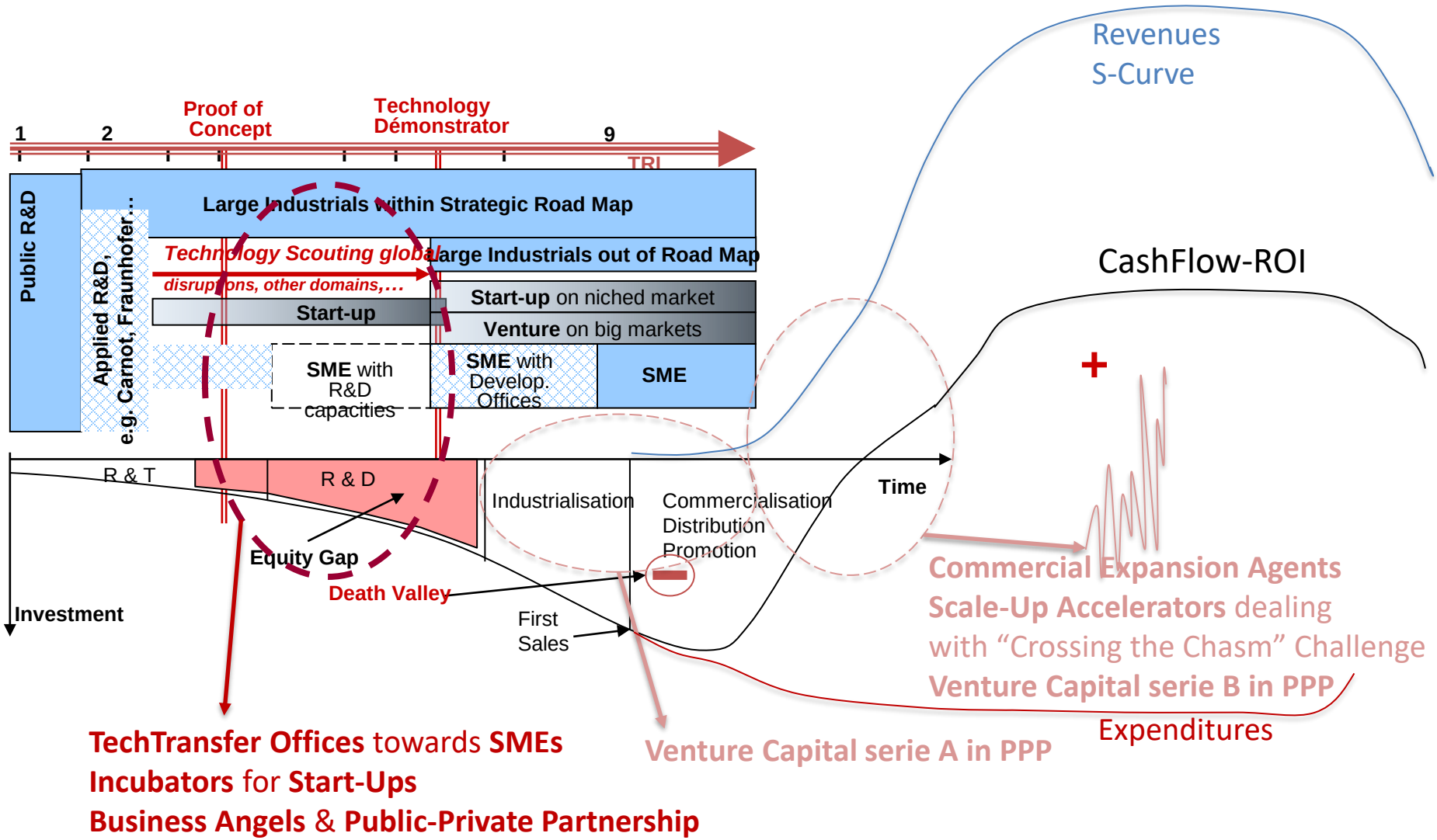
Agilising Innovation

Innovation Paradigm : Actors positioning on TRL beyond TRL Death Valley and Return on Investment – Gates for MarketPull



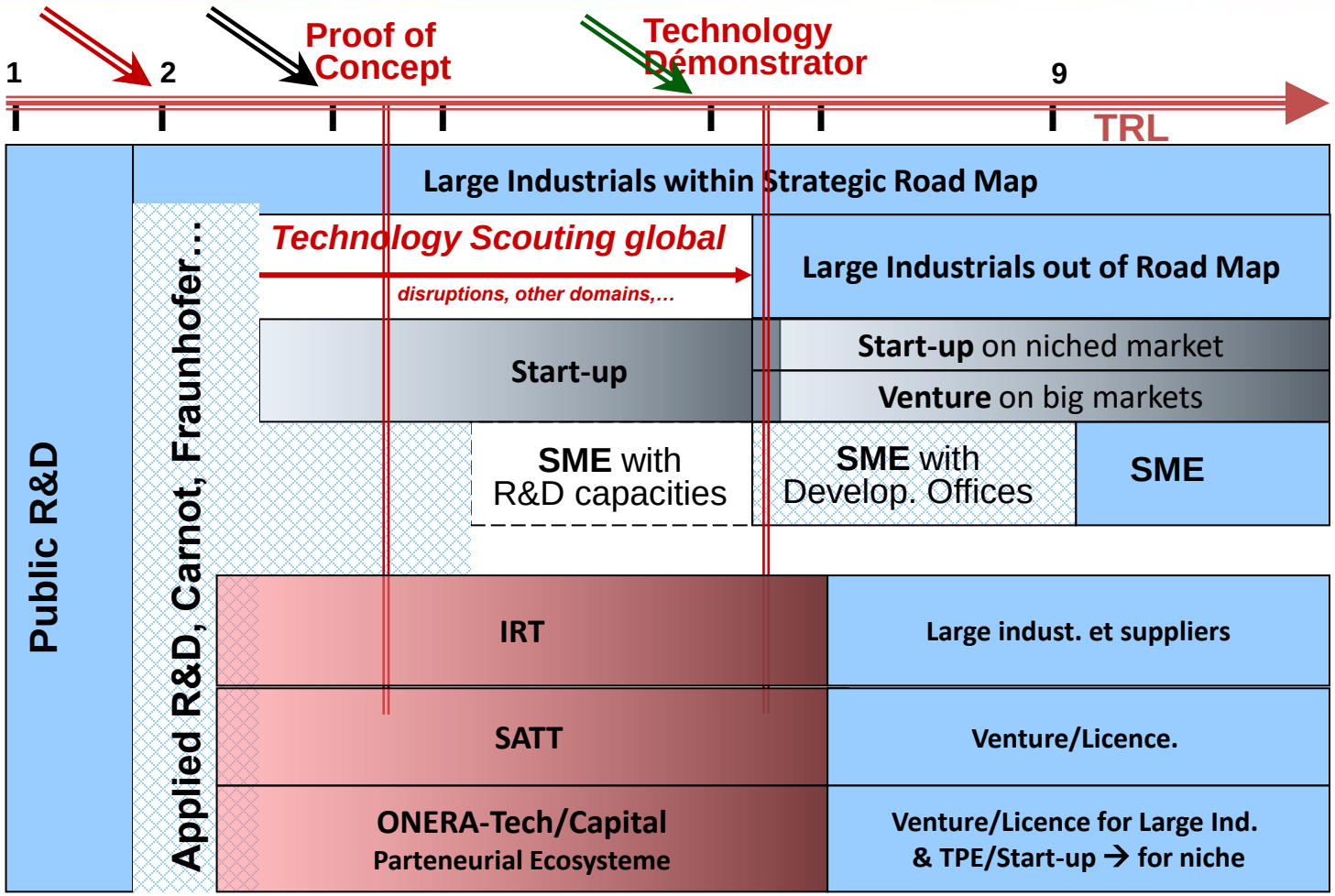
Agilising Innovation

Innovation Paradigm : Actors Positioning on TRL & beyond TRL
Death Valley and Return on Investment – Ecosystem's Instruments



Agilising Innovation

(Positioning on TRL)



Inputs ; R&D consortium (R&D) ; R&D contracts (R&D, methods + supply?) ; Venture/Licence (Program Manager, Supply Chain)

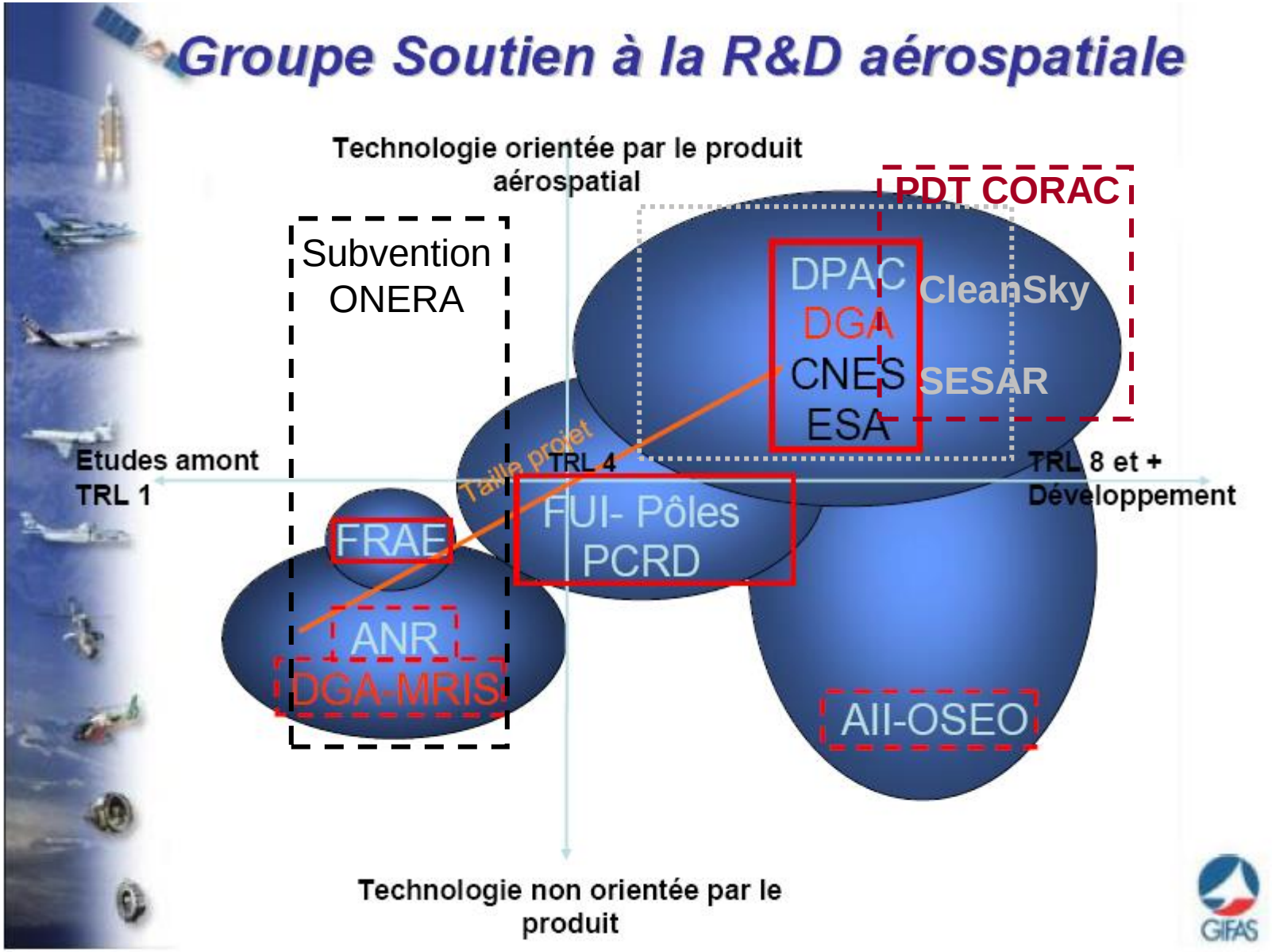


Figure 11 Répartition des différents dispositifs de soutien direct en fonction des TRL visés et du degré d'orientation par le produit

Need to change the reference system
MktPull vs TechPush → Hybridating the 2 approaches

"What is the TRL level ?"
- Customer Voice are sunken inside the TRL scale and our minds are Technology Push driven.
- Why not referring to a scale related to the Degree of Maturity for the Expression of a Need by a customer on a given market including the lead markets for eco-innovation?
- Why not define this scale and plot it in a reverse manner related to the classic TRL scale?

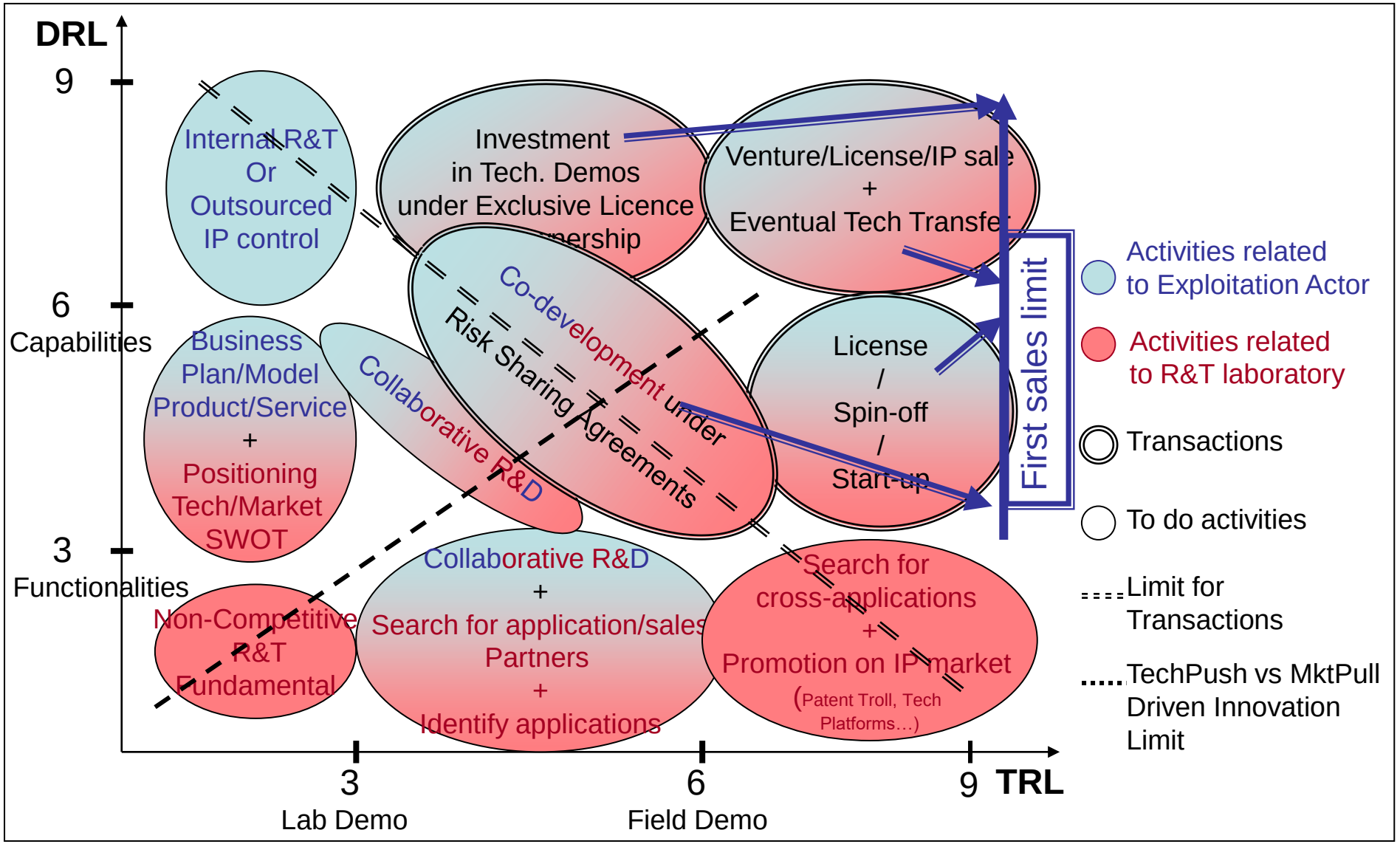
DR Level	Description for the **Demand Readiness Level**	Description TRL level	TR Level
1	Occurrence of a Feeling "something is missing"		
2	Identification of a specific need	Market certification and sales authorisation	9
3	Identification of the expected functionalities for the new Product/Service	Product Industrialisation	8
4	Quantification of the expected functionalities	Industrial Prototype	7
5	Identification of the systemic capabilities (including the project leadership)	Field demonstration for the whole system	6
6	Translation of the expected functionalities into needed capabilities to build the response	Technology development	5
7	Definition of the necessary and sufficient competencies and resources	Laboratory demonstration	4
8	Identification of the Experts possessing the competencies	Research to prove feasibility	3
9	Building the adapted answer to the expressed need on the market	Applied research	2
		Fundamental research	1

→ Theorem

Invest in Projects which match at the DRL+TRL>9 !

How to Invest ? *(First Suggested Analysis with the use of DRL)*

Innovation Process Readiness Diagram© - *for Tech. Projects*



In Practice → Onera's developed Tools

Risk sharing co-development contract

- French SME specificity : 95% < 50 employees
- Low Business Angels activity and Venture Capital culture

→ **Low SME cash disposal for technological development projects**

Onera's Proposed solution → Risk sharing co-development contract

- Product Business Plan analysis
- Onera investment for its own working program
- Financial return based on the Product success (≠ subsidies, licenses…)
- Global benefit on the co-development Onera's budget

Spin-off 4 Spin-in new Employees Onera's Charter

Working Program- long term and high complexity → scientist consequent involvement

Solution → ***Scientist migration from ONERA to the SME development team to compensate the socio-cultural asymmetry***

Need to Measure the SME interest

- the best evidence > 5% of equity open for the scientist

Onera's solutions to compensate / reduce the Asymmetries

→ Assigning the role of "Cultural" Translator to the TTO

→ Shifting the TTO mission from "Look to my baby" to "I'm here to help you succeeding"

→ Shifting from Technology Push to Market Pull

→ Onera-SME collaboration Charter

Main objectives :

- Favour access to Aerospace & Defence R&D results
- Favour emergence of innovative proposals
- Provide contract opportunities
- Complies with Onera's mission → provide economic growth

CREATE "TRUSTFULL SPACES"
(by "cognitive proximity" [Uzunidis])

Onera et l'Open Innovation avec des PME et Start-ups

91 - « Wind » Lidar

LEOSPHERE
Lidar Environmental Observations

SATIMO
The microwave vision company

91-Medical Imagery

Adaptive Optics from space to eyes

31_EM environment simulation

MICROCERTEC
Advanced Ceramics for High-Tech Industries

Ultrasounds machining

PHASICS
the phase control company

91-LASER Interferometer

Fogale nanotech

Capacitive sensors

PROTiP

Porous Ti bio-medical prosthesis

andheo

78-ONERA's software

IXSEA

Accelerometers MEMS

SIREHNA

Ship landing For UAVs

C3EM

Crack tracking and detection

Targets & Scoring Systems
Secapem

77-Projectile acoustic signature

MAPAERO
Aerospace Coatings

31- Pressure Sensitive Paint

ACV
Aéro Service

13- Green Aircraft/ Silent propeler

SURVEY
copter

UAVs

flarm

Sense and avoid Aviation system

NHEOLIS

13- Wind mill

ONERA
THE FRENCH AEROSPACE LAB

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THANK YOU FOR YOUR ATTENTION

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