

**Innovation and value creation
sourced through aerospace based technologies
-
from research results to market products**

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Innovation

What is the INNOVATION?

- Is it a New Idea?
- Is it a New Concept?
- Is it a Patent ?
- Is it a Solution?

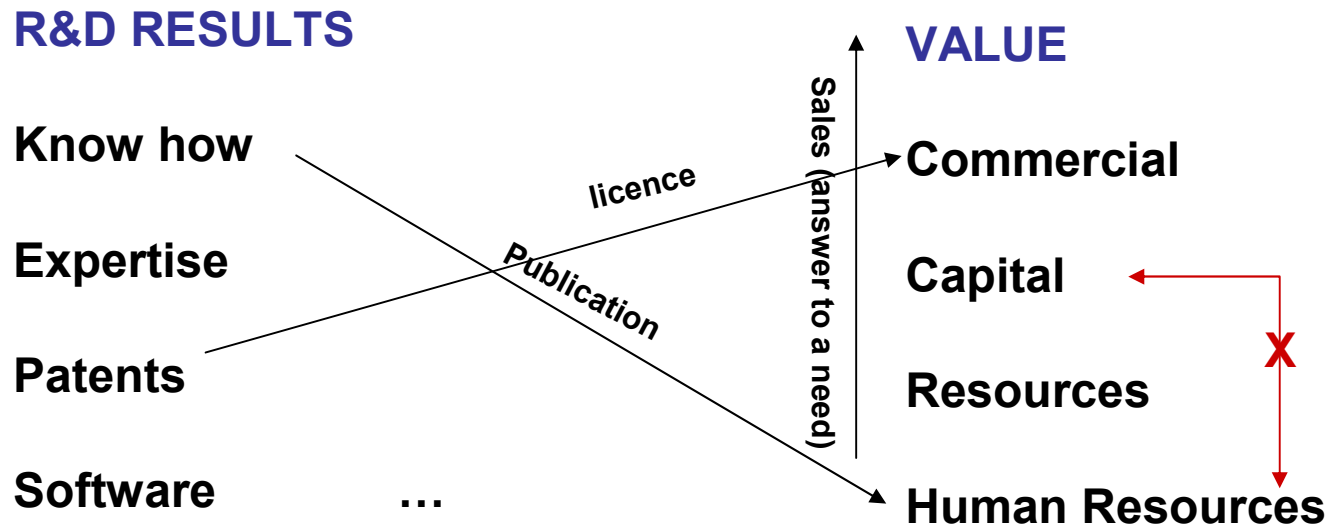
When does it occur ?

- While responding to an identified need?
- While doing Fundamental Research? Applied?

CREATIVITY

INNOVATION = CREATIVITY + VALUE (Recognized by a Market)
« Successful Exploitation of a New Idea » E. von Hippel

Scientist and Establishment roles inside the Innovation Process



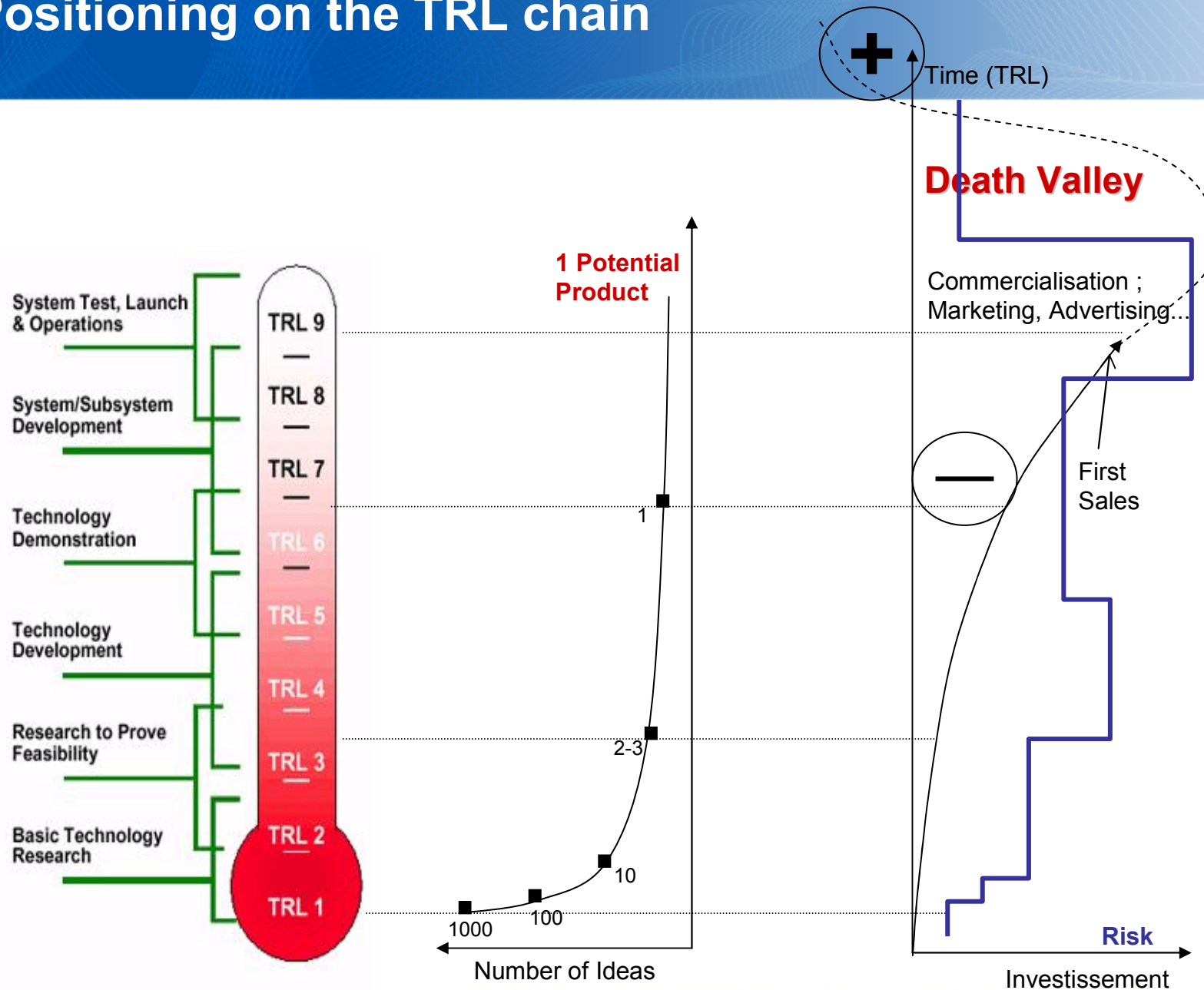
Crossing Mechanisms induce Value Creation ← **Public R&D Establishments' Mission**

Commercial Value recognize the Innovation

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

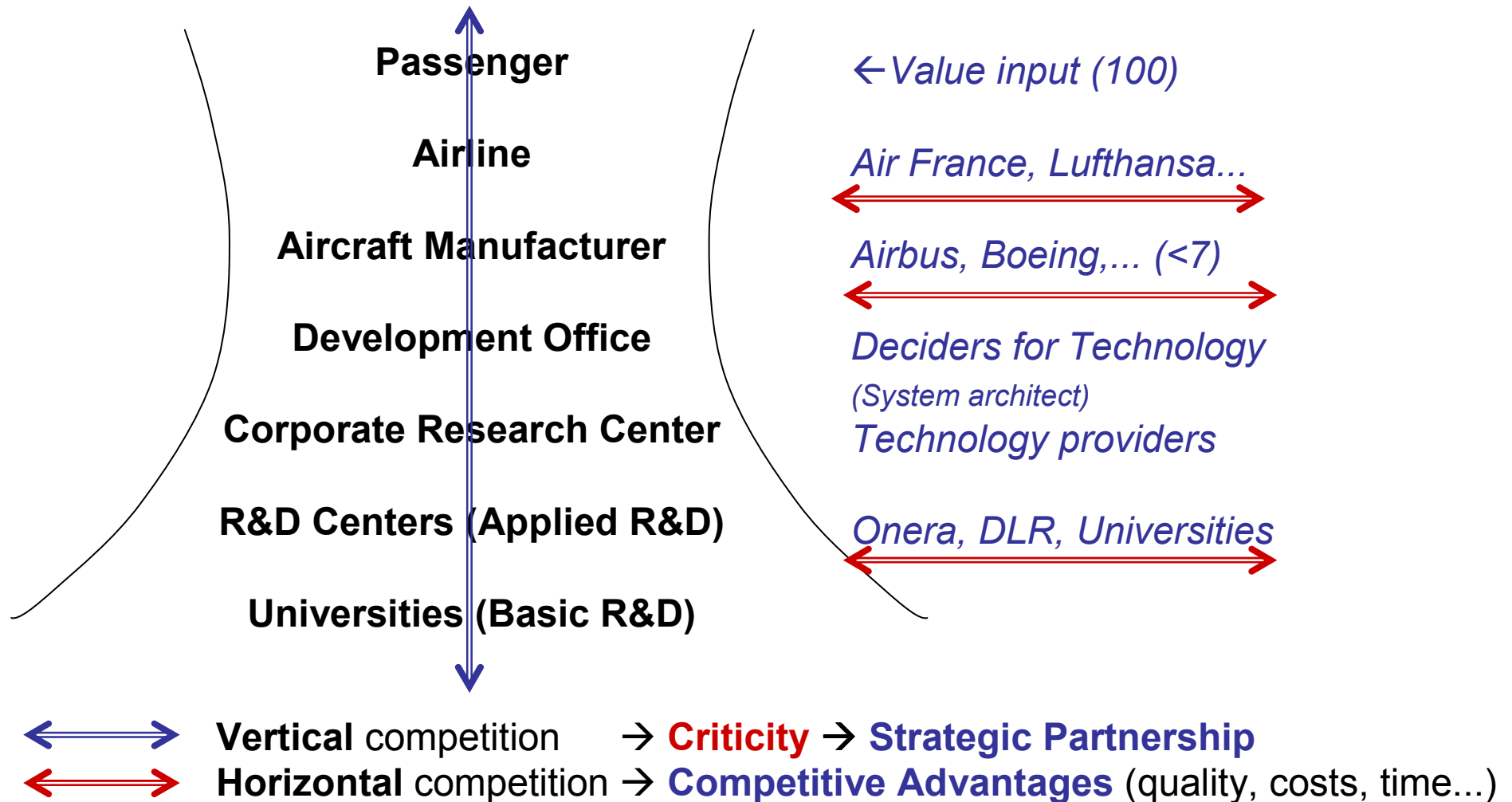
Technology Creator is Part of the Tech. Developpement Chain < **Innovation Process**

Positioning on the TRL chain

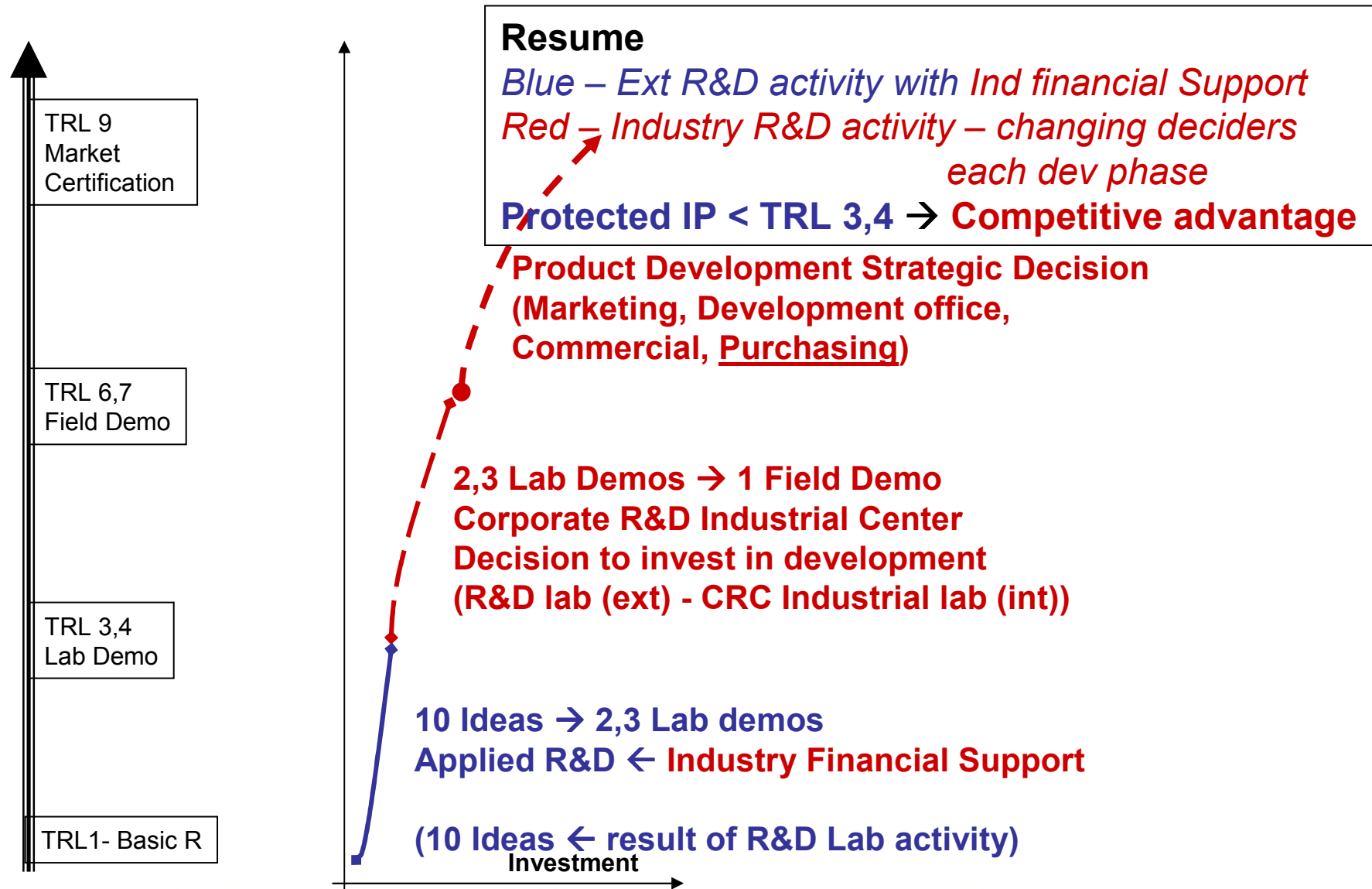


Aerospace Innovation Distribution Channel

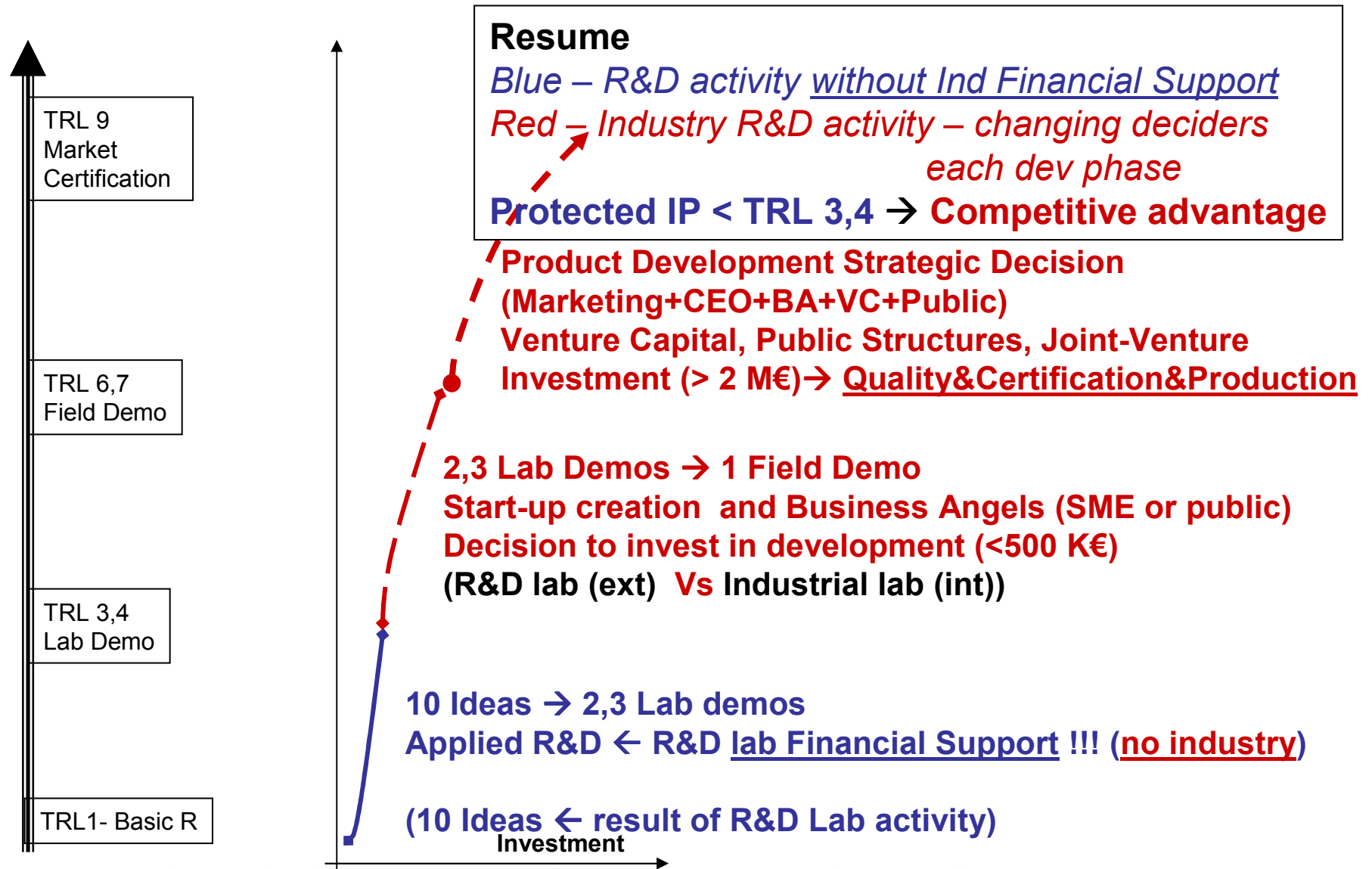
Study case – Commercial Aircraft



Decision process related to the TRL chain roles of the different actors – study case “Main Industrials”

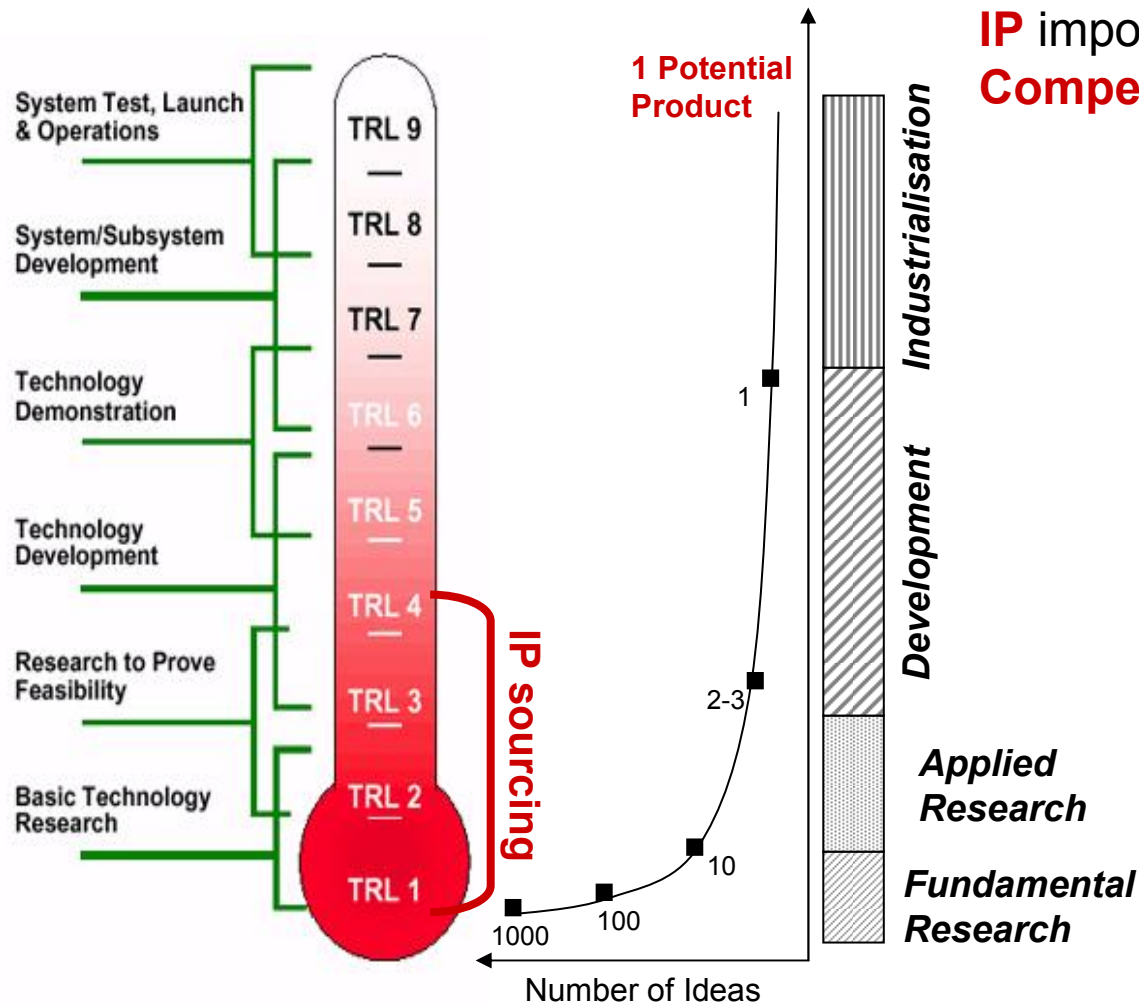


Decision process related to the TRL chain roles of the different actors – study case “SMEs & Start-ups”



Fundamental vs Applied Research

IP occurrence – R&D public mission



IP importance → **Competitiveness**
Competitive Advantage

→ reinforced position inside its “horizontal competition”
 → local economic growth

compliance with the public R&D mission

Patent?!

**Means (Component)
 Combination
 Function
 Result**

**Any new idea on
 one of the 4 key words
 Generates IP rights**

Innovation models

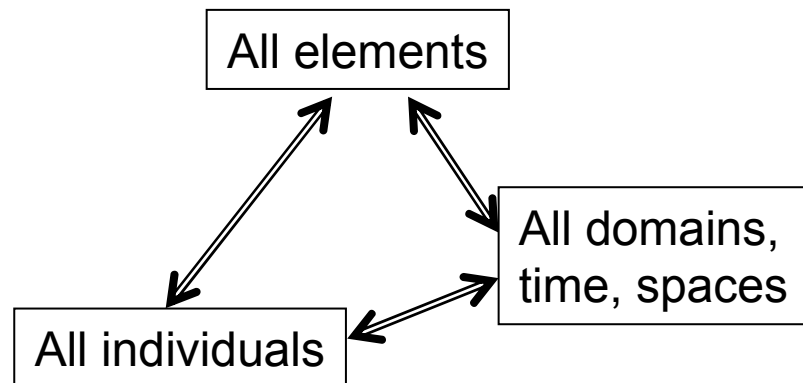
Linear Process focused on individual process, activities or components

- concept (Schumpeter) → entrepreneur as driving force (Myer, Freeman)
- R&D push (Abernathy, Utterback) → User (Lead) as Innovator (von Hippel)
- Co-innovation (Shapiro)

Integrated and Systematic Process

- coordination and relationship between participants (Hardy, Iansiti, Chen)
- innovative management (Tucker) – R&D + others/ organizational, systematical, continual opportunism/ every member involvement

→ **TOTAL INNOVATION MANAGEMENT – 3 Totalities Model**



Existing mechanisms must facilitate bridges
Inter and Intra Totalities to create a complete
cycle → Innovation Occurrence

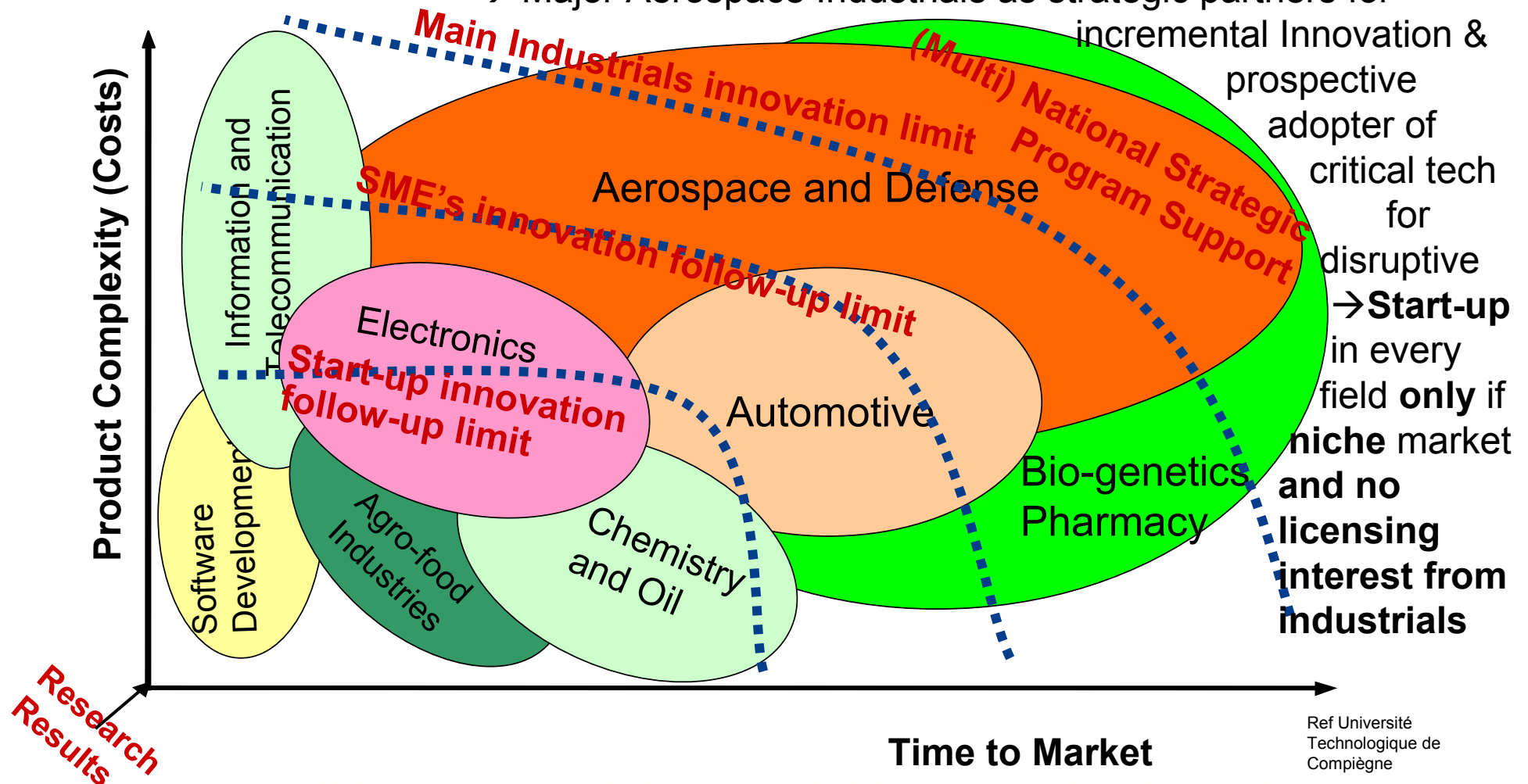
Importance of the “Helicopter View”

- Build at each level an ideas receptive system
- Identify barriers → build facilitating bridges

Aerospace barrier: Innovation process follow-up ability by the Technology creator

Onera's strategy

- SMEs as best vector for technology demonstrators
- Major Aerospace Industrials as strategic partners for incremental Innovation & prospective adopter of critical tech for disruptive



Aerospace R&D : A Changing Environment

- **Major industrial players are going global**
- **Aerospace programs rely increasingly on international cooperation**
- **New industrial and research players are emerging**
- **Scientific & technological expertise is globally accessible through outsourcing and higher mobility of engineers & scientists**
- **Business success depends on capacity to innovate quickly**
- **Institutional Aerospace R&T funding practices may evolve**

National R&D Business Environment

- **Public R&D in France historically not oriented toward market**
- **Cultural barrier - Contractual R&D is perceived as a constraint**
- **Applied research → National Institutes or Centers**
- **Law ‘Allegre’ 1999 → Universities Commercial and Legal services for TT**
- **Law ‘Pecresse’ 2007 → Universities ‘Autonomy’**
- **New trends : Carnot Institutes and ‘Competitiveness Poles’**
Carnot revealed as good indicator

