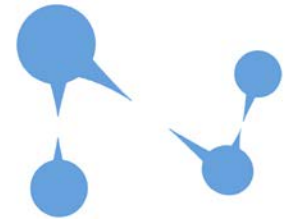




EPPN



## Interaction of EPPN with European Ecosystem

Prof. Paolo Matteazzi  
Chair of NANO*futures* ETIP



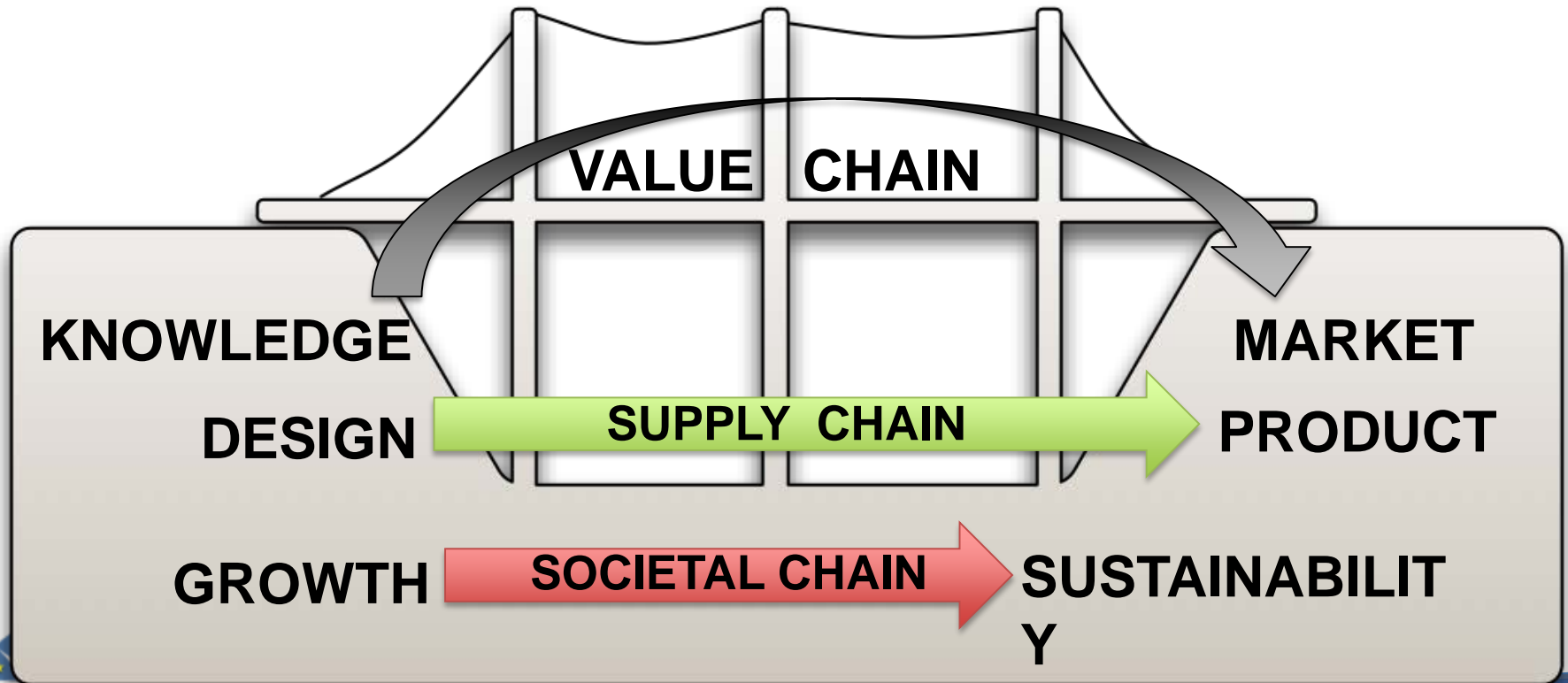
## BACKGROUND OF EPPN

### EPPN and current EU Ecosystem

# The Approach

To structure the roadmapping work vertical sectors and horizontal issues were organized in Value Chains according to:

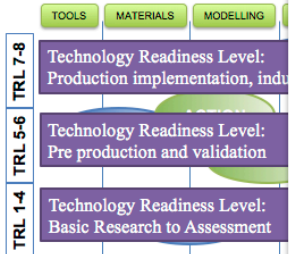
- The KET approach to the Valley of Death
- The industrial approach of the Supply Chain
- The European Societal Challenges



# Roadmapping Activity

2012

From first roadmap we get a clear message: Apart Key Nodes there are missing links in the chains that hamper products to reach the market => The implementation roadmap focus on the missing links



NON-TECH ACTIONS to complete the definition of the market

NON-TECH ACTIONS

NON-TECH ACTIONS

MEDIUM TERM 2017-2020

LONG TERM 2020-2025

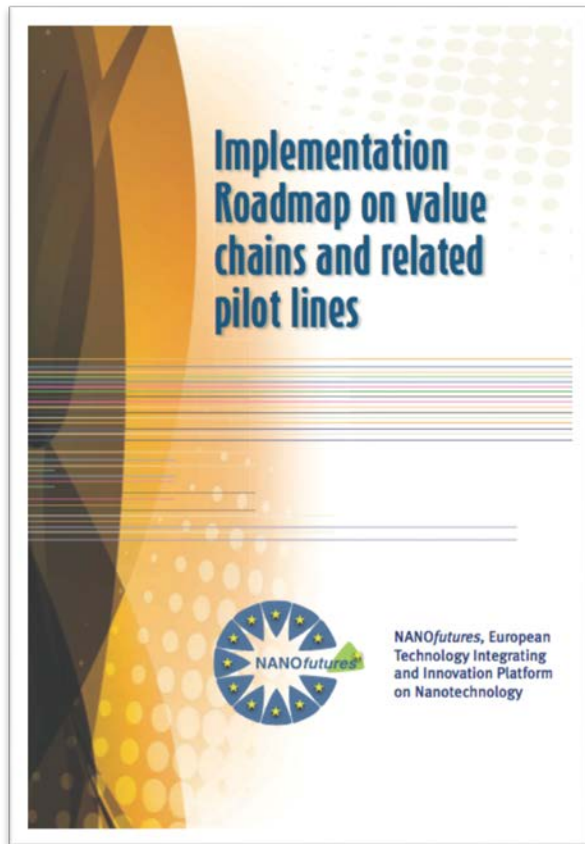
Timeline	Material	Tool	Assembly	Final Products
Short Term	Surface functionalization by structuration in injection molding (5-7)	Development and upscale of technologies for low cost lithography for deep submicron applications (<20nm) enabling breakthrough applications in optics and opto-electronics (1/2/7/8/10/11/13) (5-6)	Demonstrators for non conventional MEMS & other mechatronic devices (2/4) (7)	13. CMOS-fab forbidden materials (2/8) (5-7)
Medium Term	Enhanced interfaces to improve solid-gas, solid-liquid, and liquid-gas interactions for breakthrough applications (1/4) (6)	Development and enhancement of inspection technologies and methods for nanostructures over large areas (1/7/8/10/12) (7-8)	Industrial oriented research and demonstration on injection molding of polymeric-based products with nanostructured functionalized surfaces (1/2/3/5/6/7/9) (7)	10. Optical photonics integrated on Si (8)
Long Term	Combinatorial approaches to develop materials with new functionalities combining chemical composition, nano size and shape effect (1) (6)	Ultra-high barrier tech for flexible organic based printed devices (i.e. OLED, OPV, OTFT) (1/3) (7-8)	Development of nano composite multilayered and multifunctional plastic meshes (6)	9. Customer specific packaging solutions (9)
VC1	Breakthrough Hybrid smart materials & systems (2/4/13) (6-7)	New generation of disruptive injection molding machines (5/6) (7)		1. Printed devices (1)



2015

# Roadmapping Results

**NANO*futures* Implementation Roadmap of 2015 has a focus on Pilot Lines  
Because pilot lines are enabling factors for Value Chains**



New Actions in the four VC

Examples of Pilot Lines

Market scenario of those Pilot Lines

Consortia examples of those Pilot Lines

# From 2014 PILOT LINES CALLs DEFINED BASED ON ROADMAPPING

## Roadmapping Results

### PILOT 1

#### Nanostructured surfaces and nanocoatings

- A) Nanostructured and  
antiviral surfaces  
for medical devices
- B) Nanocoatings for  
enhanced surfaces

PILOT-02

### PILOT 3

#### Printed microfluidic MEMS and biological applications

Sensor  
Multi-  
/s  
and other

PILOT-04

The focus on Nanotechnologies helped in keeping an open approach due to the high crosscutting topics, but is valid for all the market sectors

### PILOT 2

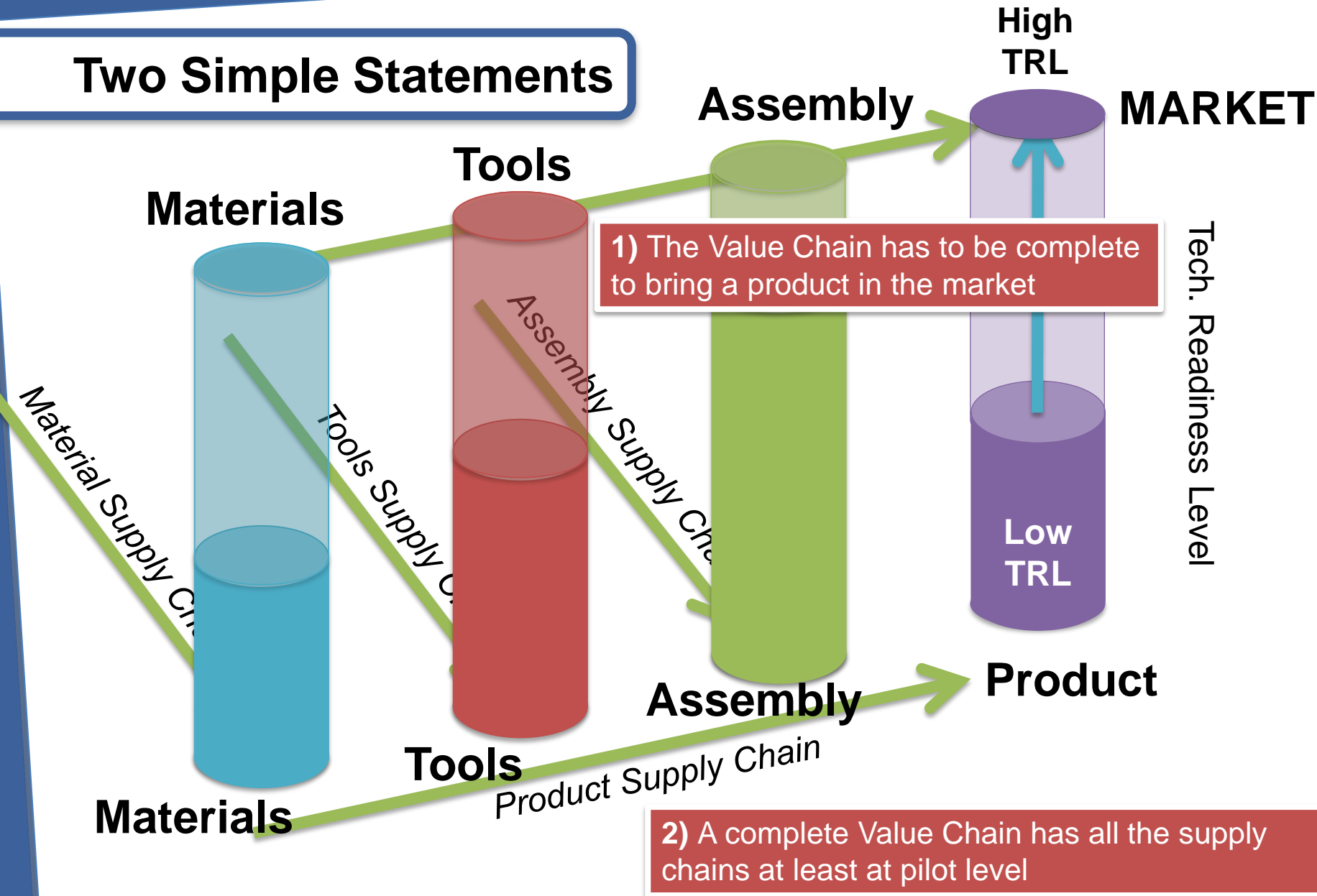
#### Multifunctional nano-enabled thermal/electrical properties

PILOT-01

MEMS and  
es  
compatible

B) Cheap flexible hybrid or full  
polymer MEMS ecosystems

# Two Simple Statements





## ORIGINS OF EPPN

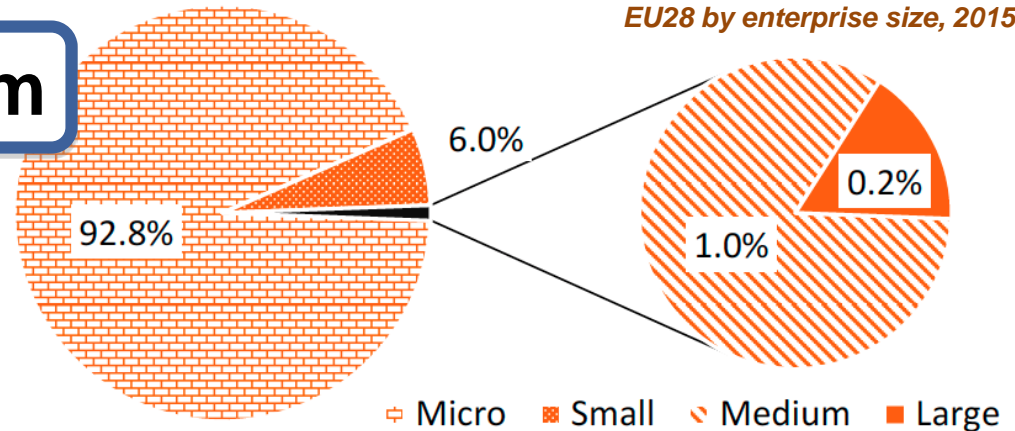
## EPPN and current EU Ecosystem



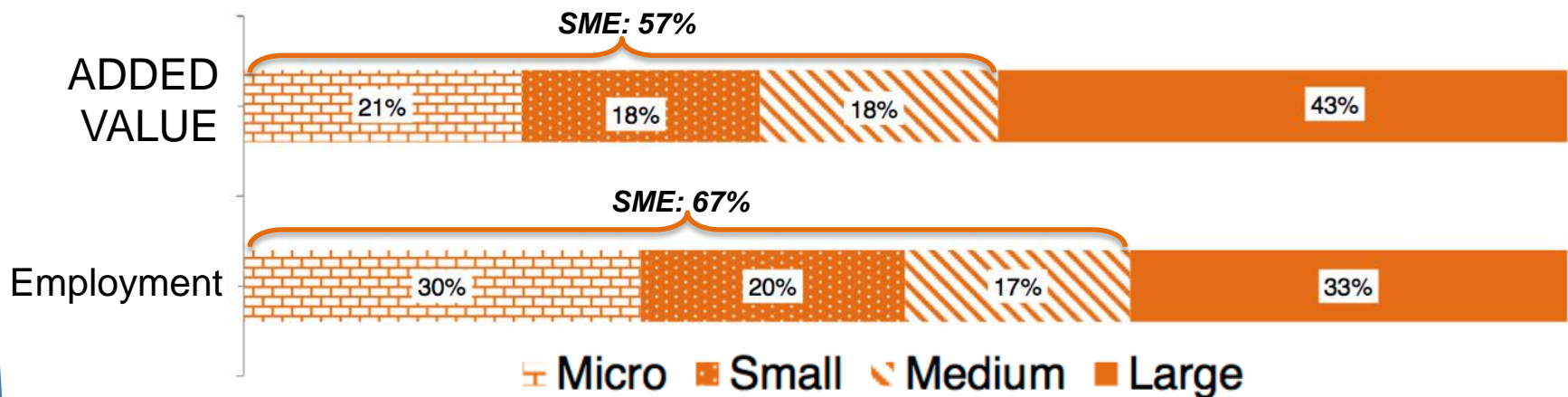
# Europe Ecosystem

**SMEs form the backbone of the EU28 economy:** In 2015, just under 23 million SMEs generated €3.9 trillion in value added and employed 90 million people.

Number of enterprises in the non-financial business sector in the EU28 by enterprise size, 2015



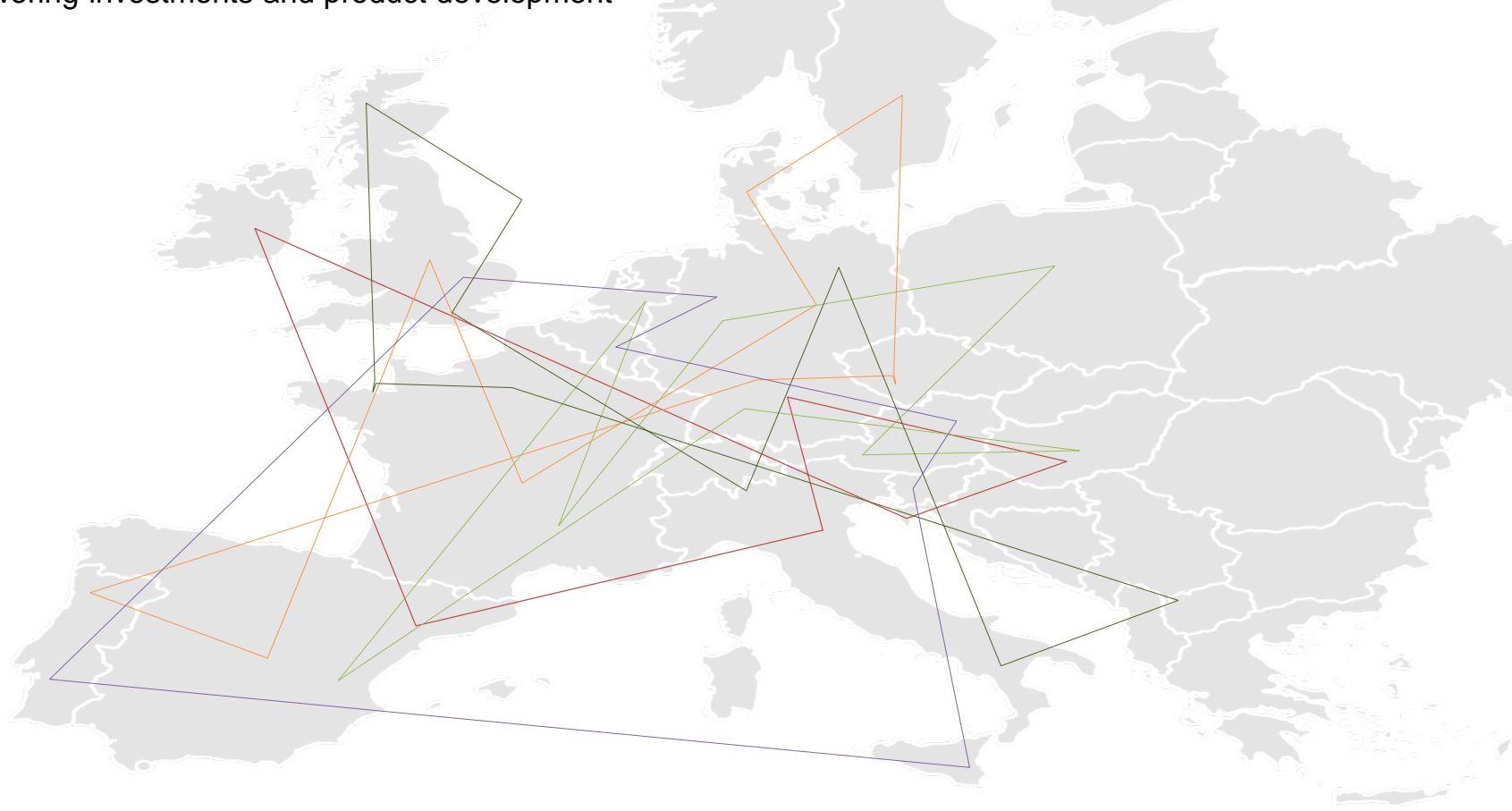
*This heterogeneous and fragmented scenario is Europe richness that enables innovation, high value products and high level skills*



# Europe Ecosystem

*EU supports the growth of this ecosystem with several tools:*

**PILOT Projects:** to strengthen the competitiveness of European industry by leveraging existing research activities, empowering investments and product development

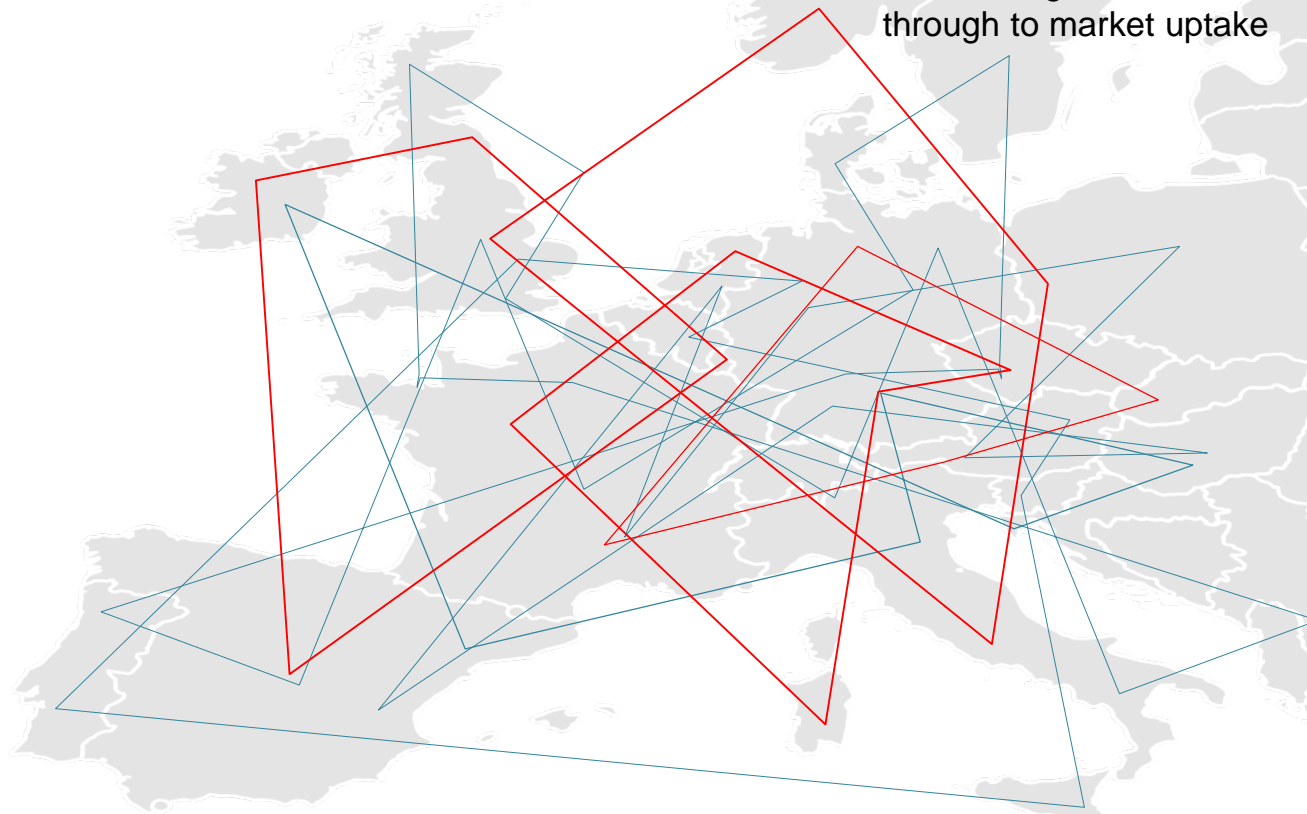


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# Europe Ecosystem

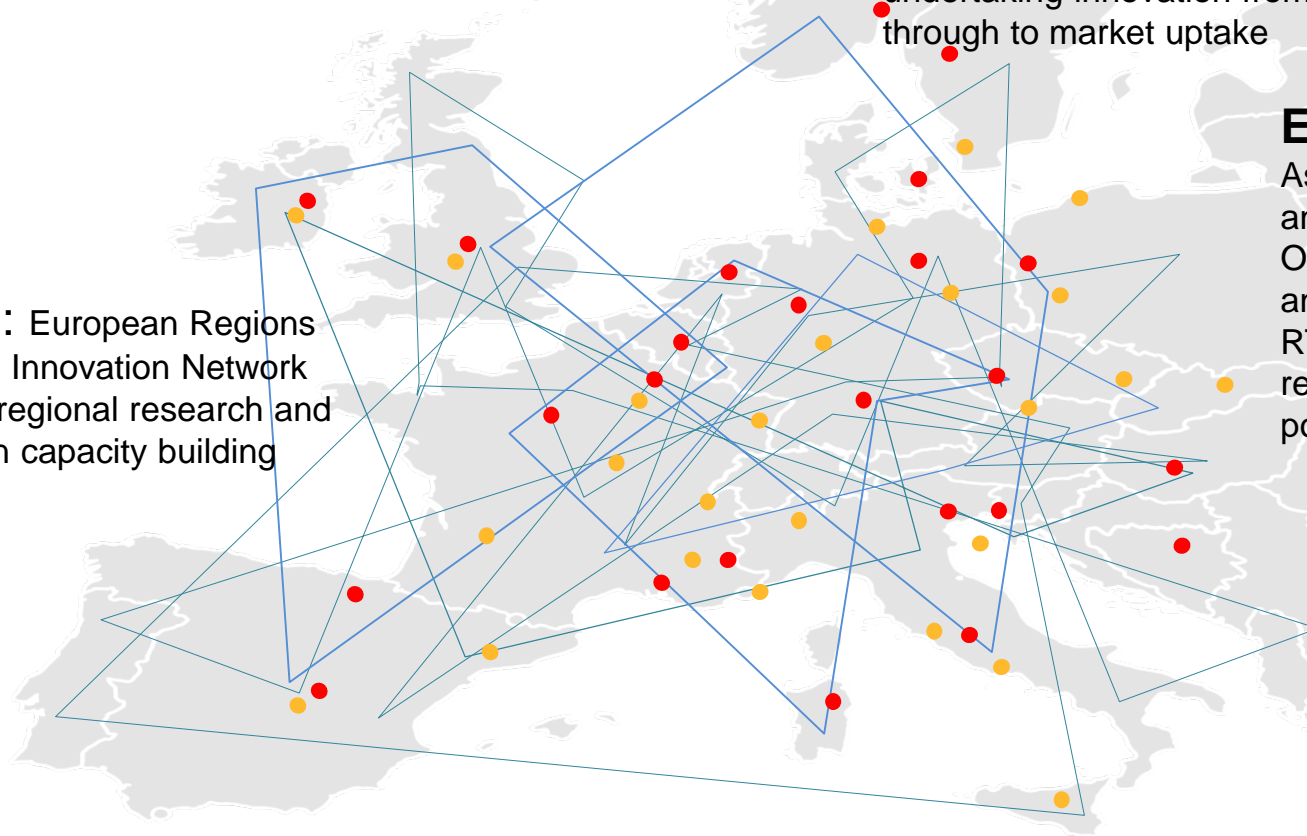
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**ERRIN:** European Regions Research Innovation Network supports regional research and innovation capacity building

**EARTO:** European Association of Research and Technology Organizations promotes and defends the interests of RTOs in Europe by reinforcing their profile and position as a key player



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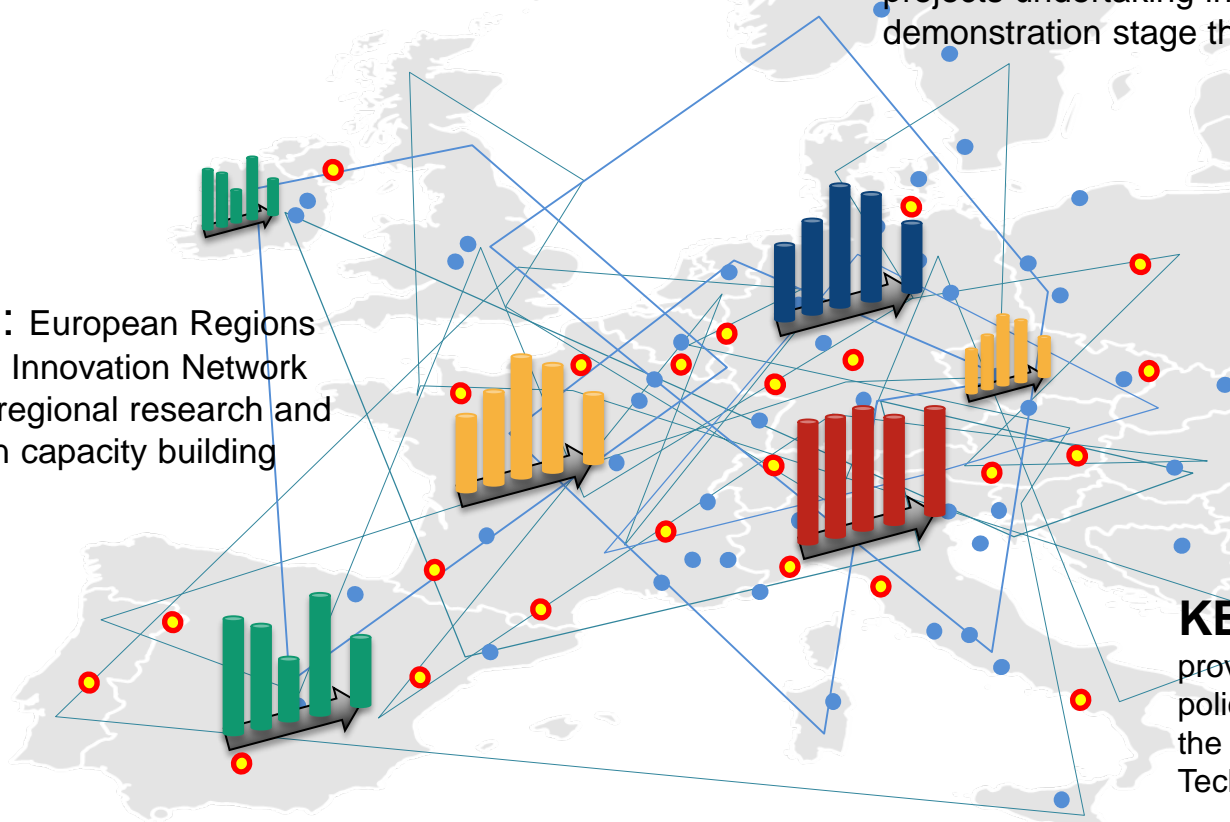
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**ERRIN:** European Regions Research Innovation Network supports regional research and innovation capacity building

**KET TCs Mapping:** to provide EU, national and regional policymakers with information on the deployment of Key Enabling Technologies

**RIS3:** To provide advice to EU countries and regions for the design and implementation of their Smart Specialisation Strategy



# EPPN & EU Ecosystem

*EU supports the growth of this ecosystem with several tools:*

EPPN

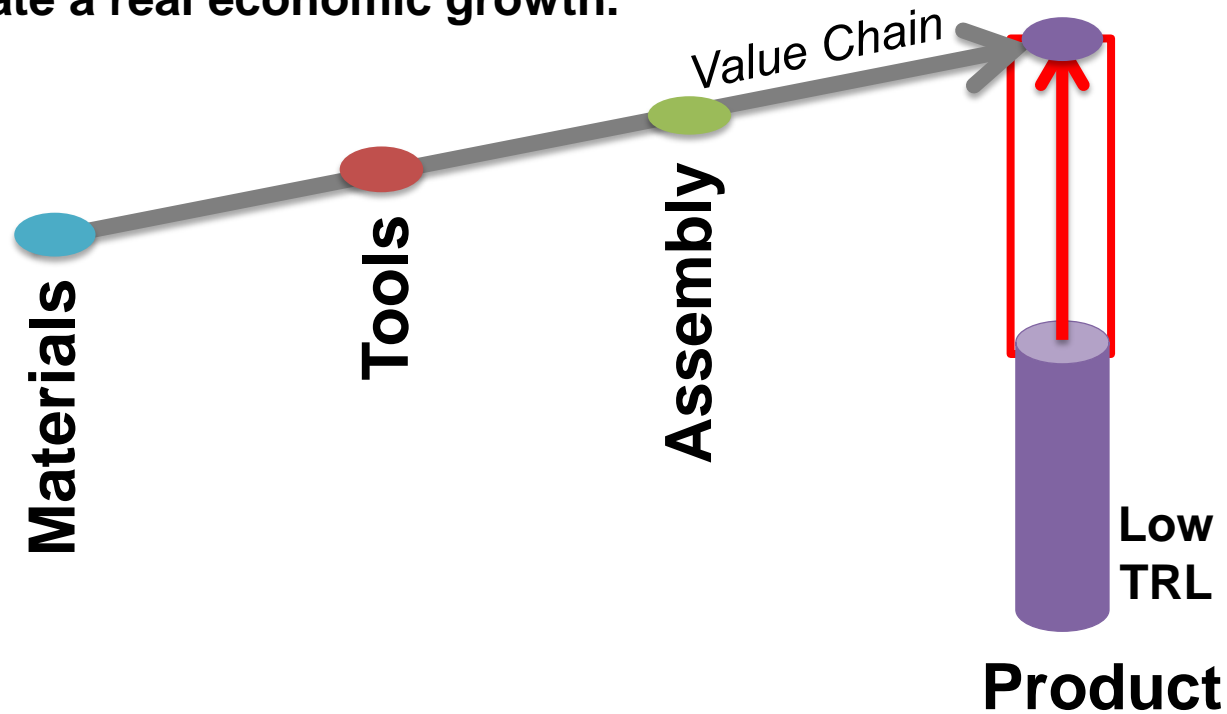
ROOTS ARE ALL THESE



# EPPN & EU Ecosystem

EPPN SUPPORTS THE INNOVATION ALLOWING PARTNERS TO LINK TOGETHER BRINGING PRODUCTS TO PILOT TRL AND TO MARKET

A pilot production that do not arrive to a final product does not create a real economic growth.

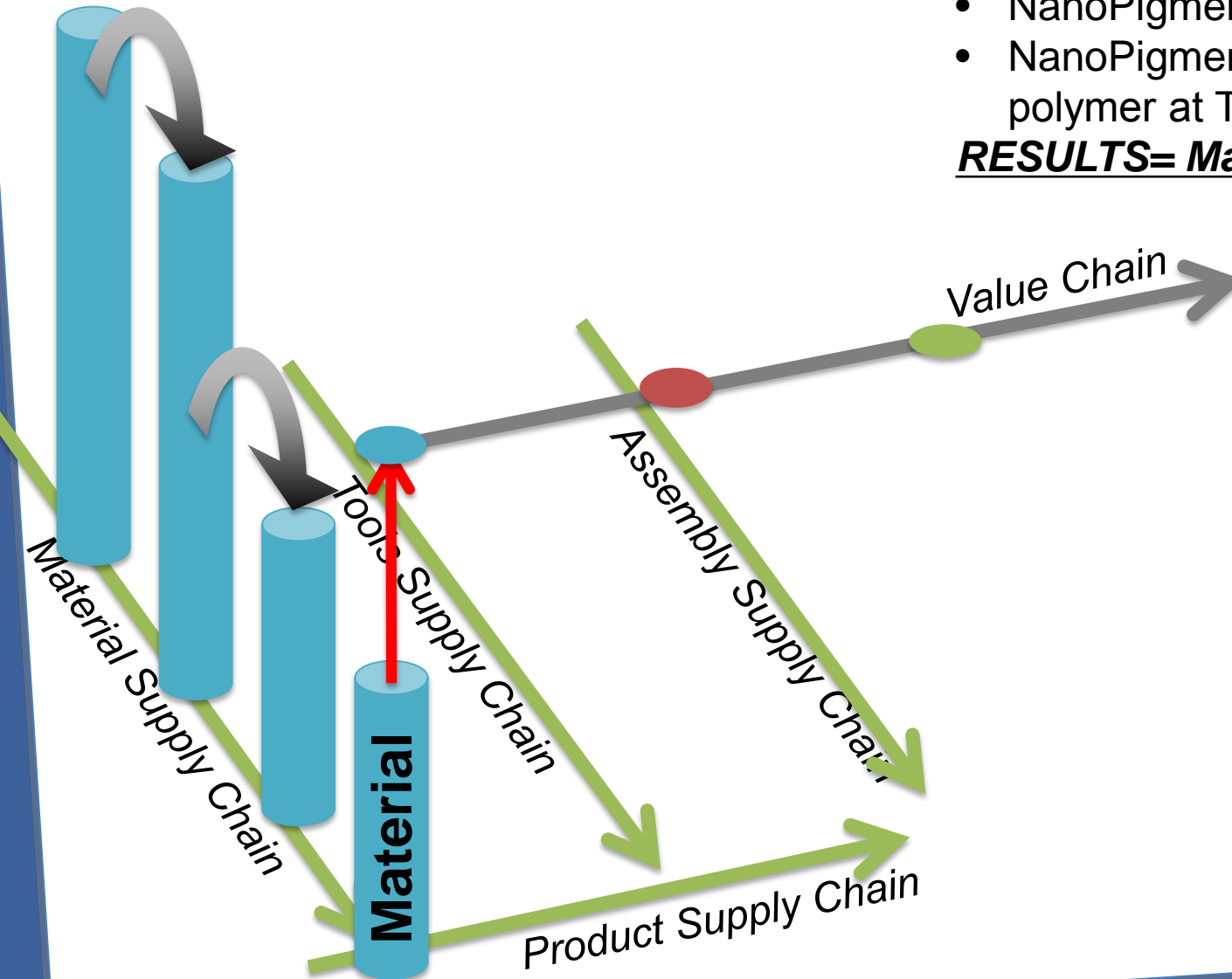


# EPPN & EU Ecosystem

## EXAMPLE: NanoPigments for car Bumpers

- Raw Material available at TRL>7
- NanoPigment production at TRL>7
- NanoPigment Compounding with polymer at TRL≈5

**RESULTS= Material at TRL 5 in VC**

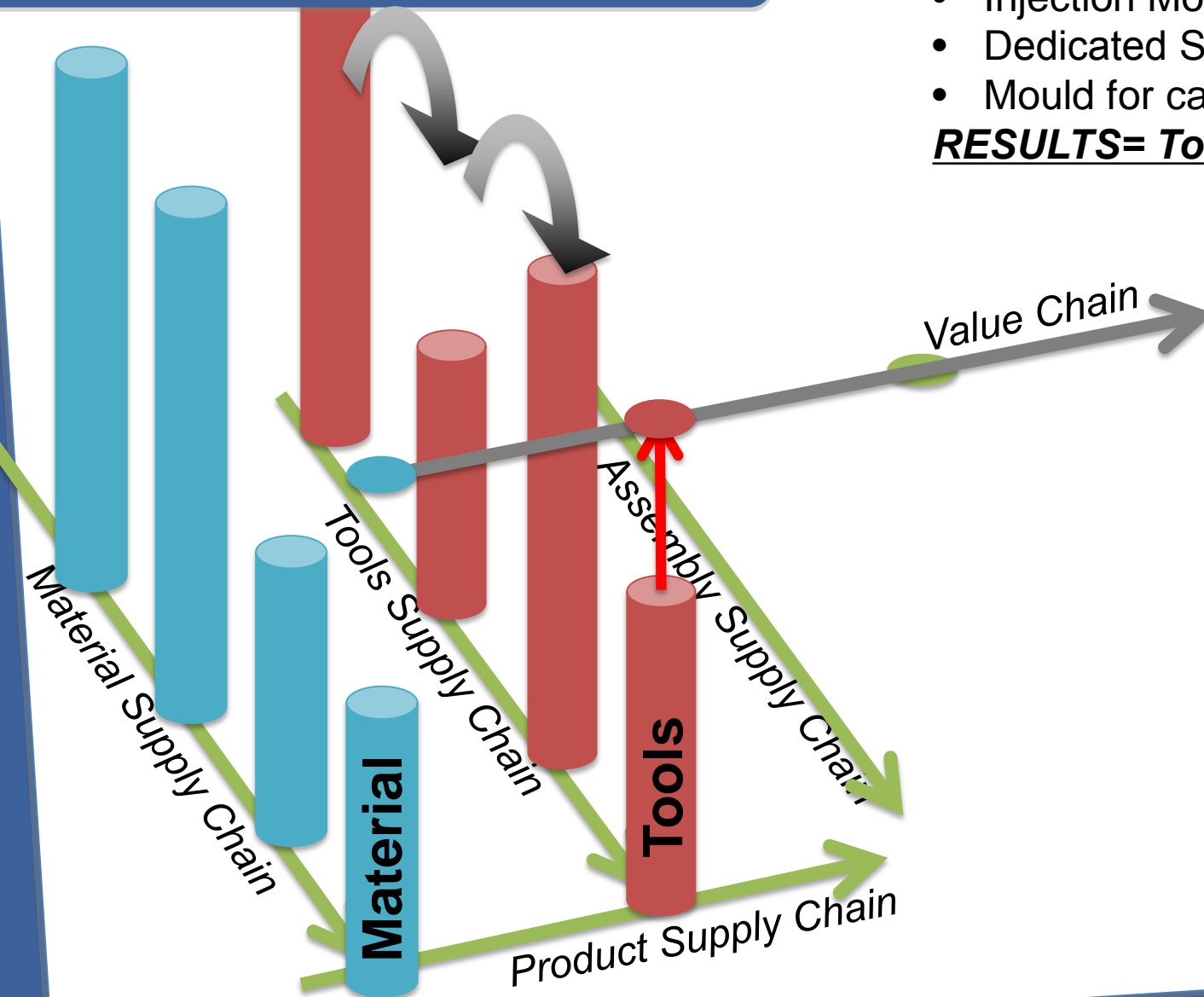




# EPPN & EU Ecosystem

## EXAMPLE: NanoPigments for car Bumpers

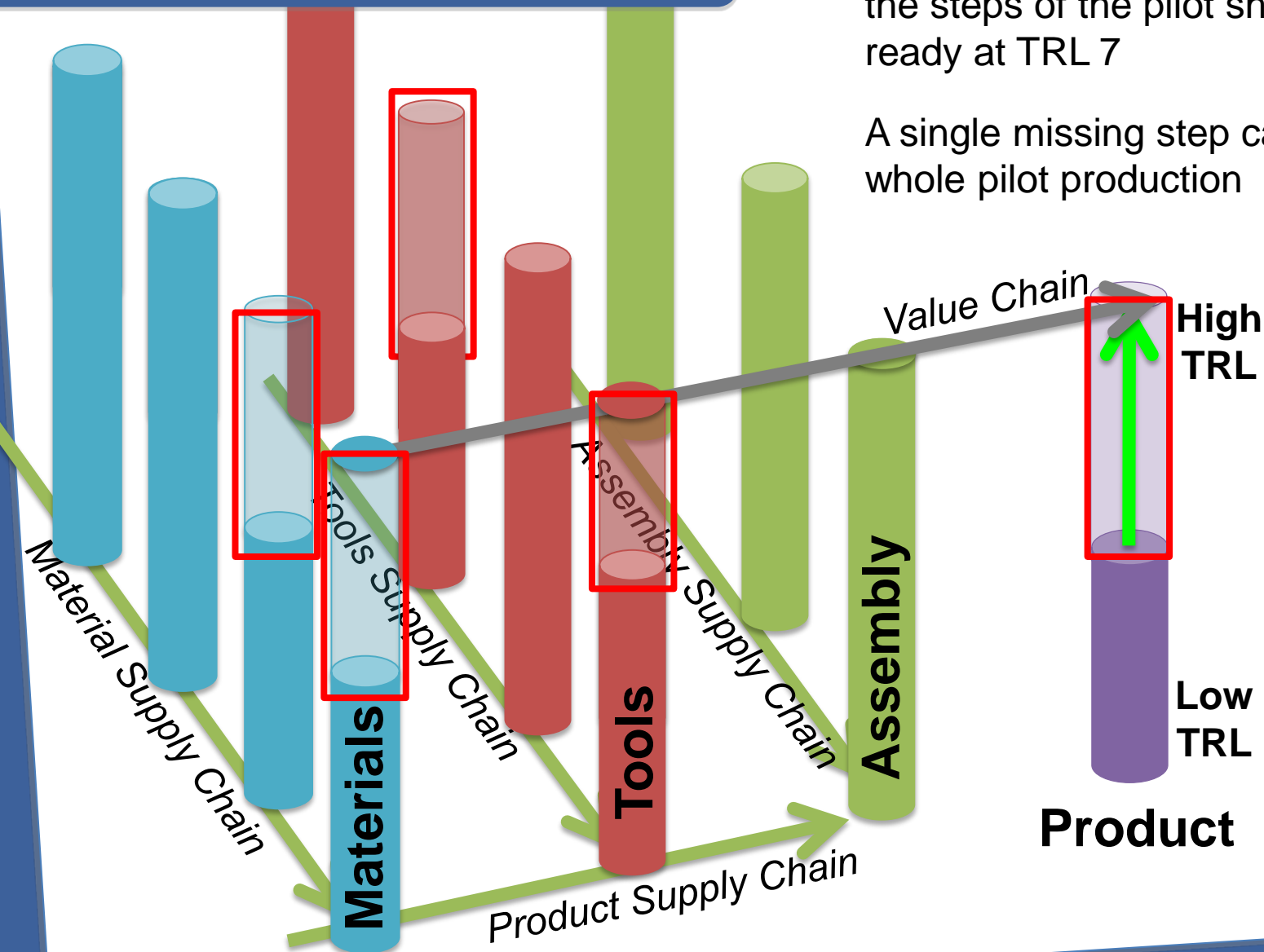
- Injection Molding Machines TRL>9
  - Dedicated Screw Design TRL≈6
  - Mould for car Bumpers TRL>9
- RESULTS= Tool at TRL ≈6 in VC**



# EPPN & EU Ecosystem

To bring a Product to the market all the steps of the pilot should be ready at TRL 7

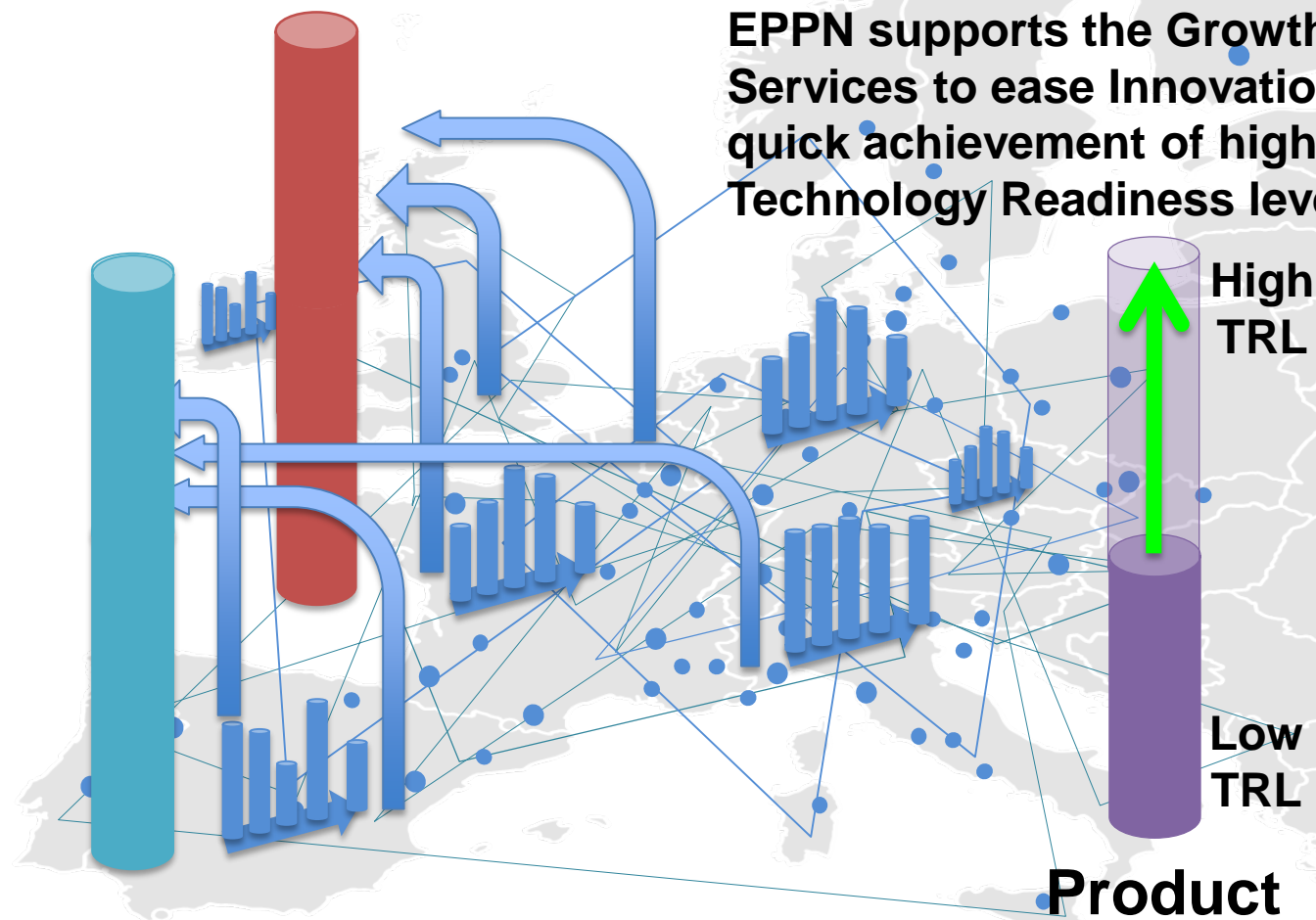
A single missing step can block the whole pilot production



# EPPN & EU Ecosystem

EPPN Enables the completion of Value Chains providing links to pilots facilities driven by RTOs and SMEs

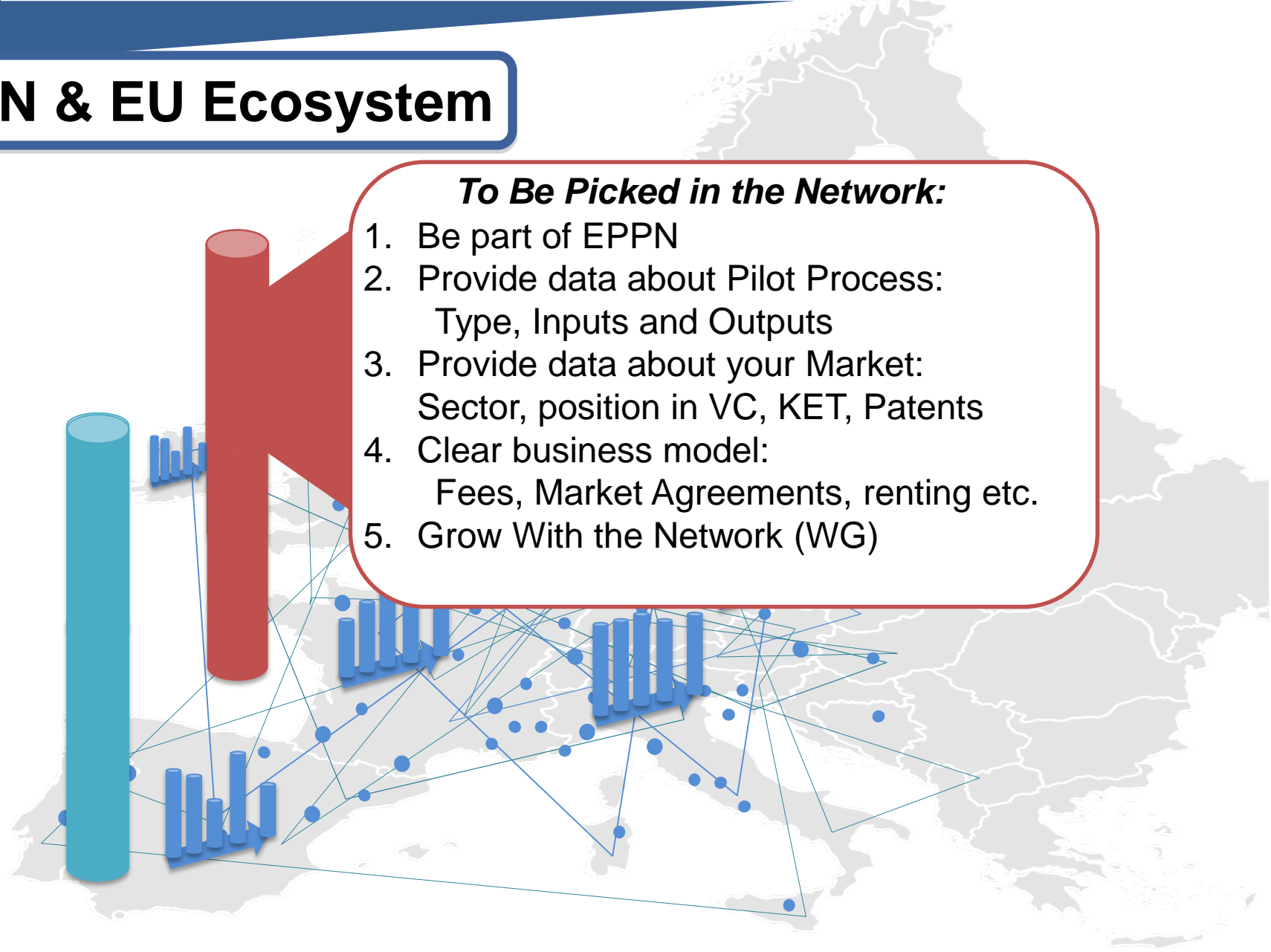
EPPN supports the Growth of Pilot Services to ease Innovation and quick achievement of high Technology Readiness levels



# EPPN & EU Ecosystem

## *To Be Picked in the Network:*

1. Be part of EPPN
2. Provide data about Pilot Process:  
Type, Inputs and Outputs
3. Provide data about your Market:  
Sector, position in VC, KET, Patents
4. Clear business model:  
Fees, Market Agreements, renting etc.
5. Grow With the Network (WG)



**On MEDIUM-LONG Term**

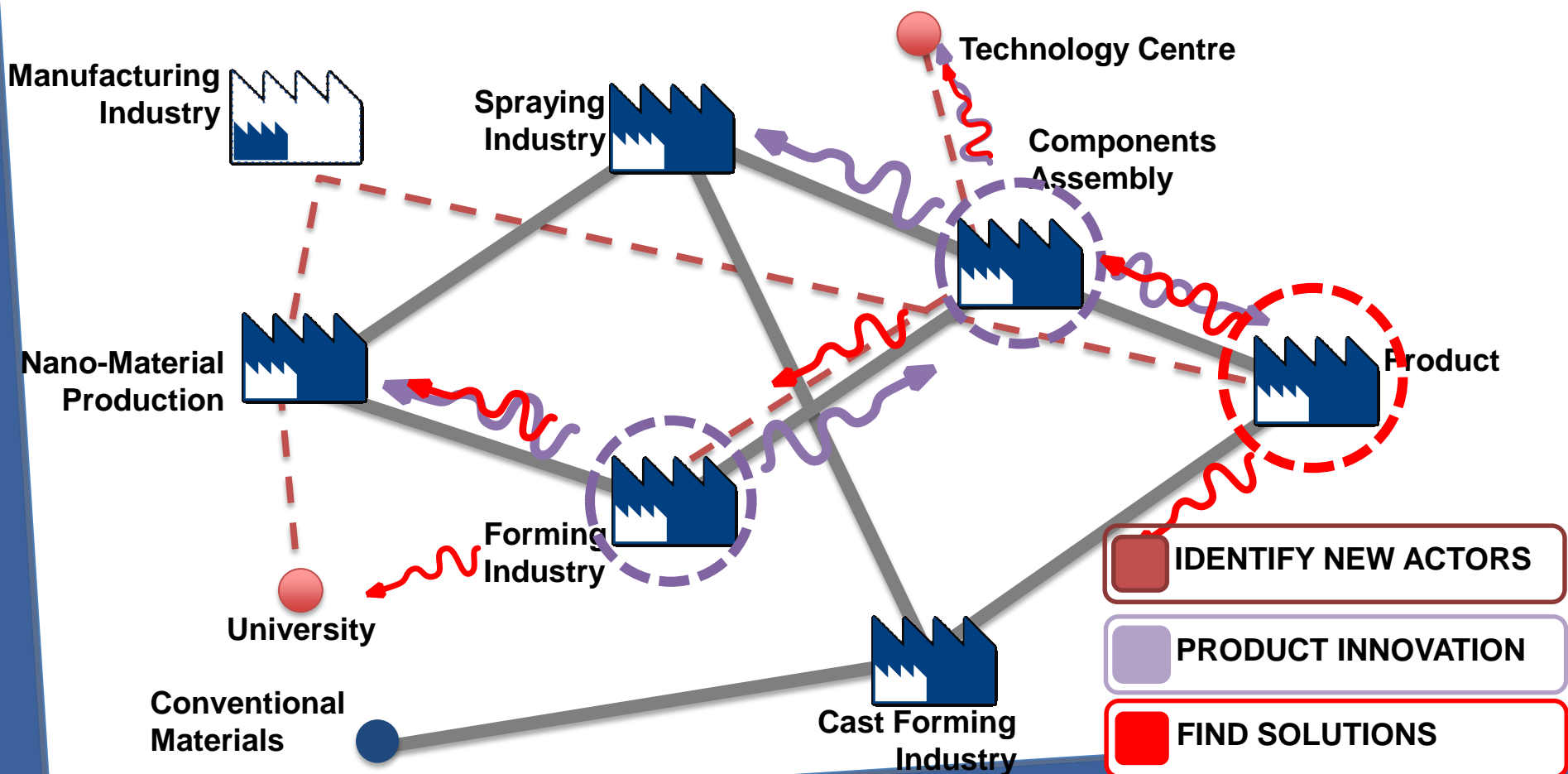


Active Networking Tools - Self-sustained - Web Based

On **MEDIUM-LONG** Term

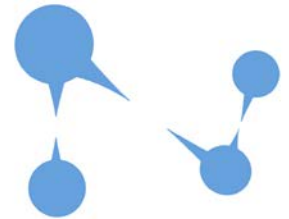


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EPPN



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