

**Airi**

ASSOCIAZIONE  
ITALIANA  
PER LA RICERCA  
INDUSTRIALE

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**Le Innovazioni del Prossimo Futuro:  
Tecnologie Prioritarie per L'industria, VIII edizione, AIRI, 2012**

***Le Key Enabling Technologies nelle Tecnologie Prioritarie***

# The 6 Key Enabling Technologies

- **NANOTECHNOLOGY**

is an umbrella term that covers the design, characterisation, production and application of structures, devices and systems by controlling shape and size at nanometre scale

- **MICRO- AND NANO-ELECTRONICS**

deal with semiconductor components and highly miniaturised electronic subsystems and their integration in larger products and systems.

- **PHOTONICS**

is a multidisciplinary domain dealing with the science and technology of light, encompassing its generation, detection and management.

- **INDUSTRIAL BIOTECH**

is the application of biotechnology for the industrial processing and production of chemicals, materials and fuels

- **ADVANCED MATERIALS**

lead both to new reduced cost substitutes to existing materials and to new higher added-value products and services

- **ADVANCED MANUFACTURING SYSTEMS :**

range of high technologies involved in manufacturing, leading to improvements in terms of new product properties, production speed, cost, energy and materials consumption, operating precision, waste and pollution management

Source: EC Staff Working Document, Current situation of key enabling technologies in Europe, (COM(2009) 512/3)

**Broad definition, cross cutting character**

# Key Enabling Technologies – drivers for EU industrial growth

European Commission policy report:

A Stronger European Industry for Growth and Economic Recovery (10.10.2012):

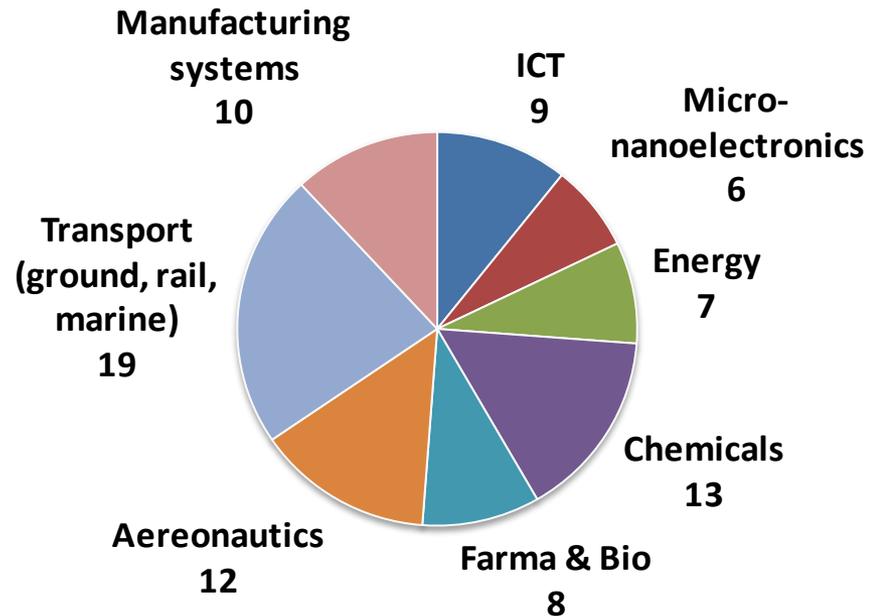
- *KETs global market forecast:*
    - €646 billion today
    - over € 1 trillion by 2015 (around 8% of the EU's GDP)
  - *Europe global leader in KETs R&D, global patent share of more than 30%.*
  - *Europe slower than trading partners in converting R&D into market*
- Need for cooperation/coordination of R&I policies  
(government, industry, public research) to maximize KETs benefit

**AIRI promoted (2012) a WG on KETs at national level,  
on the basis of its regular assessment of the industrial tech in Italy**

# The AIRI Working Group on KETs

- **AIRI KETs WG:**  
industry and academia experts, close relation with Priority Tech WG
  - Members: AIRI/Nanotec IT, CNR, Mossi & Ghisolfi Group, Finmeccanica, Ericsson, Politecnico di Milano, STMicroelectronics
- **Scope: providing a strategical vision of KETs at national level**

The WG analysed the KETs impact across 84 Priority Technologies on 8 sectors



# KETs and Priority Tech are closely related

**Key Enabling Technologies (KETs)**

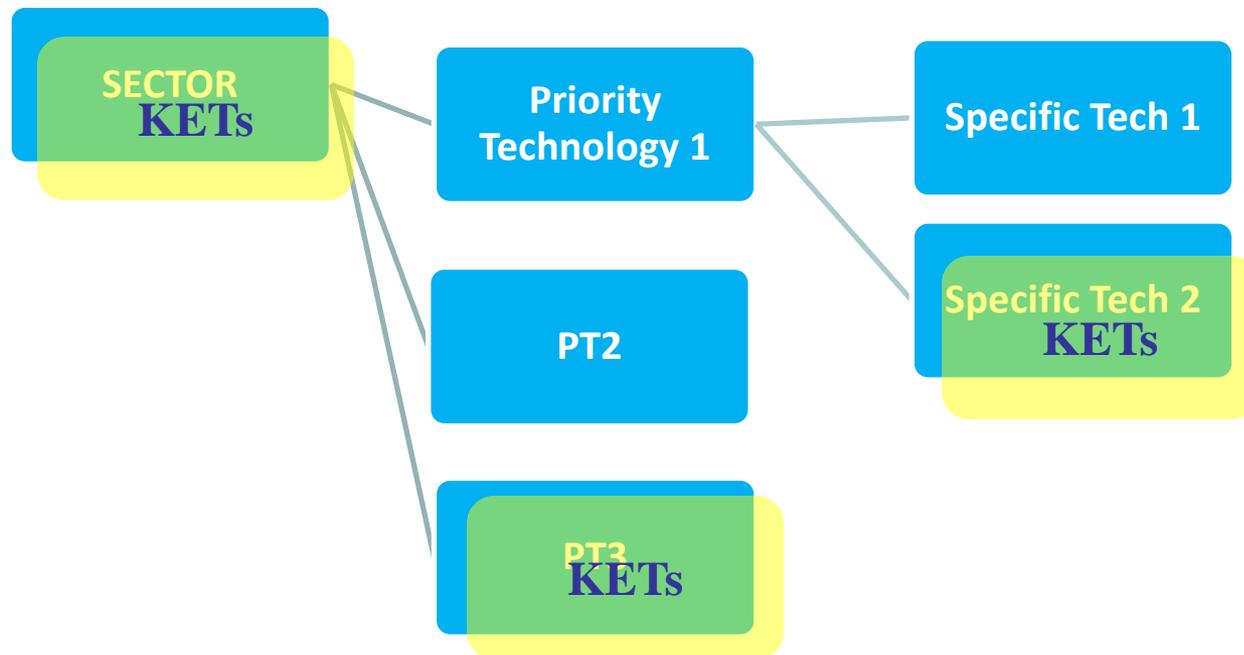


**Priority Technologies (PT)  
for the Italian industry**

**Share several characteristics:**

- **Enabling processes and innovation**
- **Systemic relevance (impact on one or more sectors)**
- **High R&D intensity**
- **Rapid and integrated innovation cycles**
- **Multidisciplinary**
- **Integrated in a value chain perspective**
  
- **capital intensive**
- **require highly skilled employment**

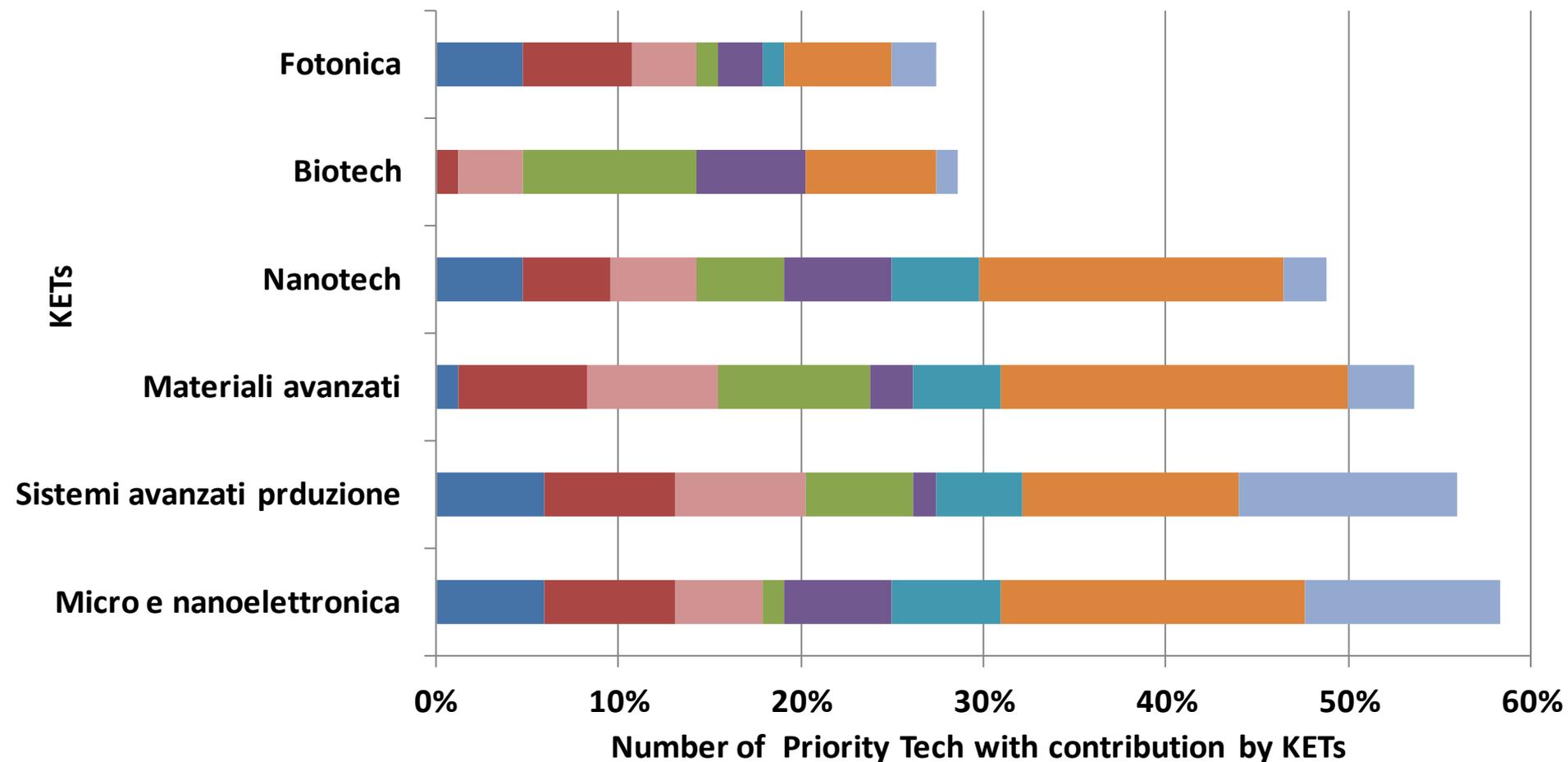
# How KETs contribute to Priority tech



## Three cases:

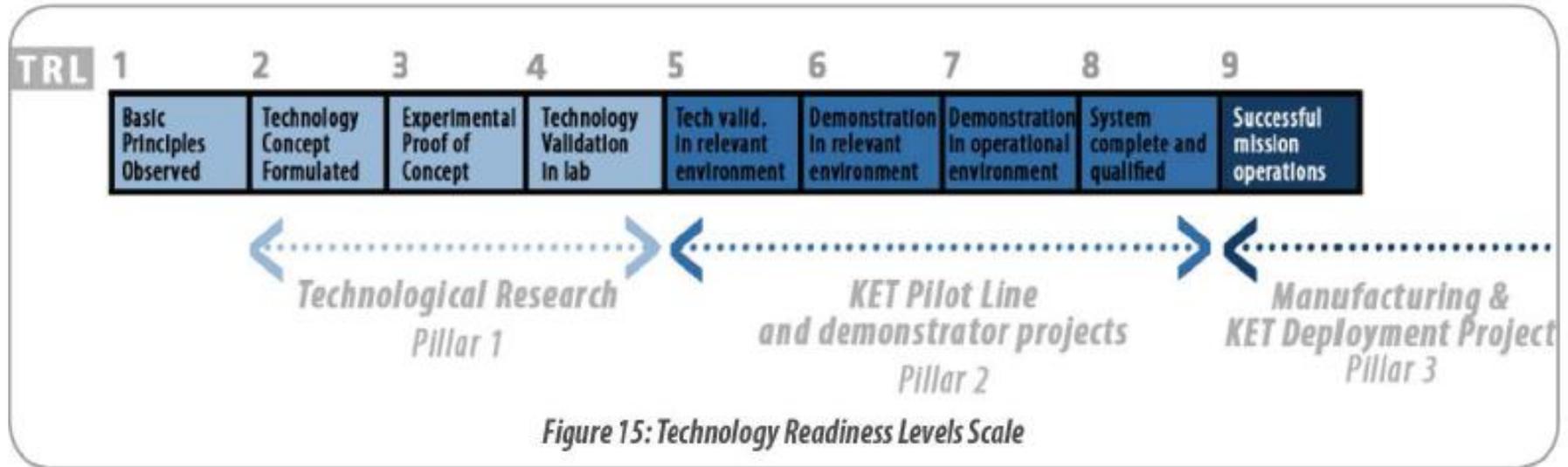
- KET same as the sector (e.g. micro-nanoelectronics, AMS)
- KET same as the Priority Technology (es. nanomaterials for catalysis)
- KETs contribute to some extent to the Priority tech

# KETs contribution to industry sectors – *breakdown by KET*

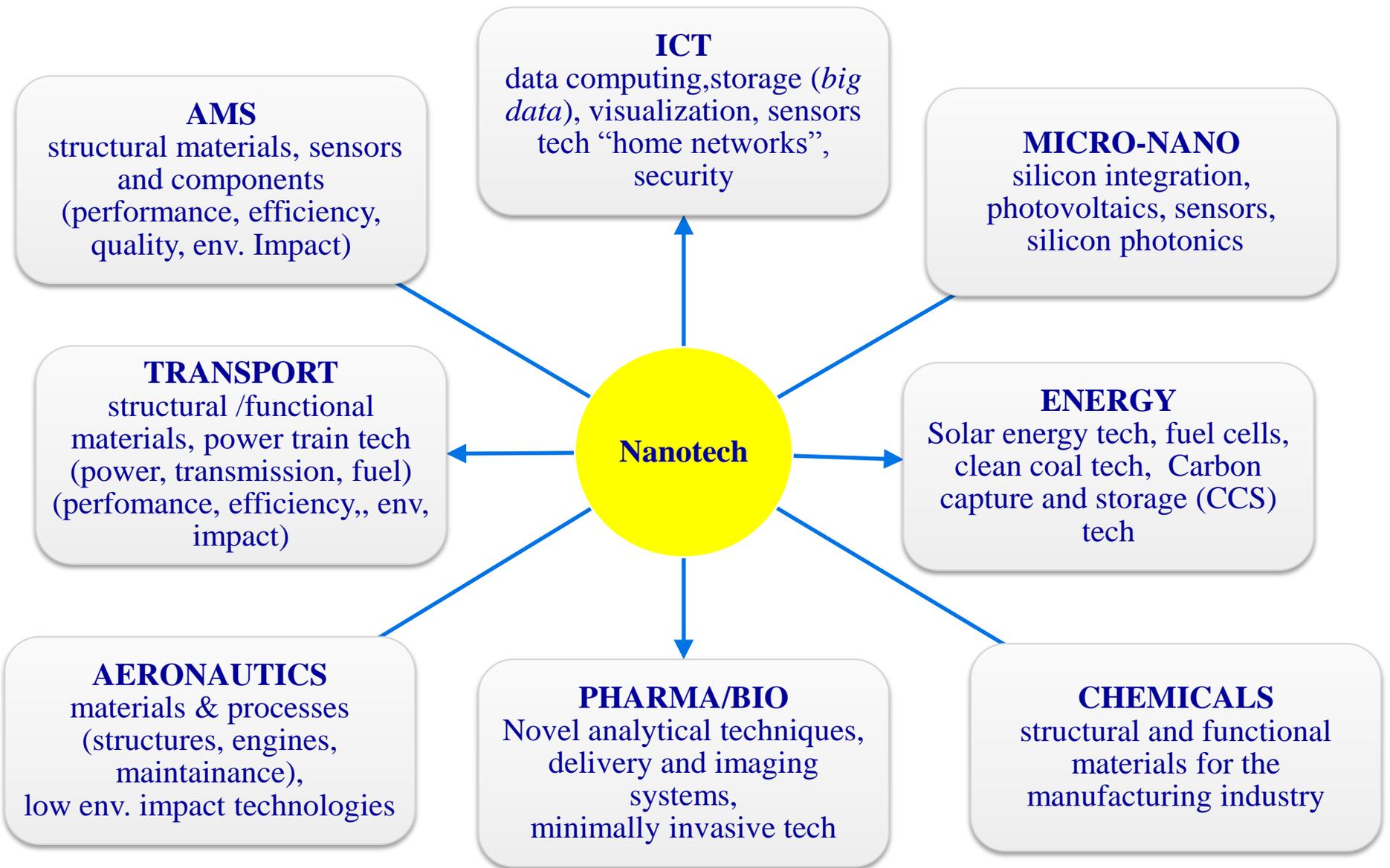


- ICT
- Micro-nanoelectronics
- Energy
- Chemicals
- Farma & Bio
- Aeronautics
- Transport (ground, rail, marine)
- Manufacturing systems

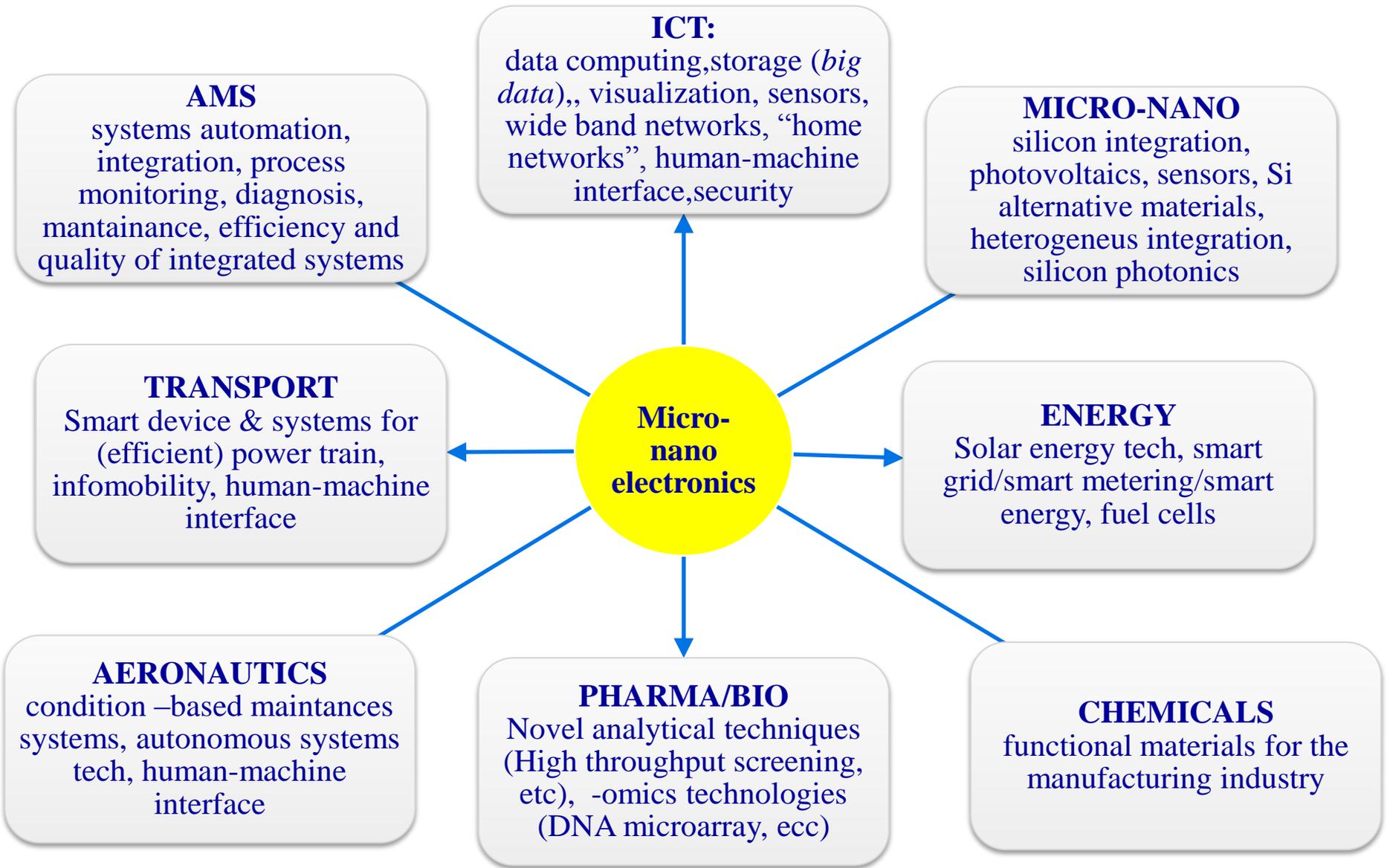
# KETs : Technology Readiness Level



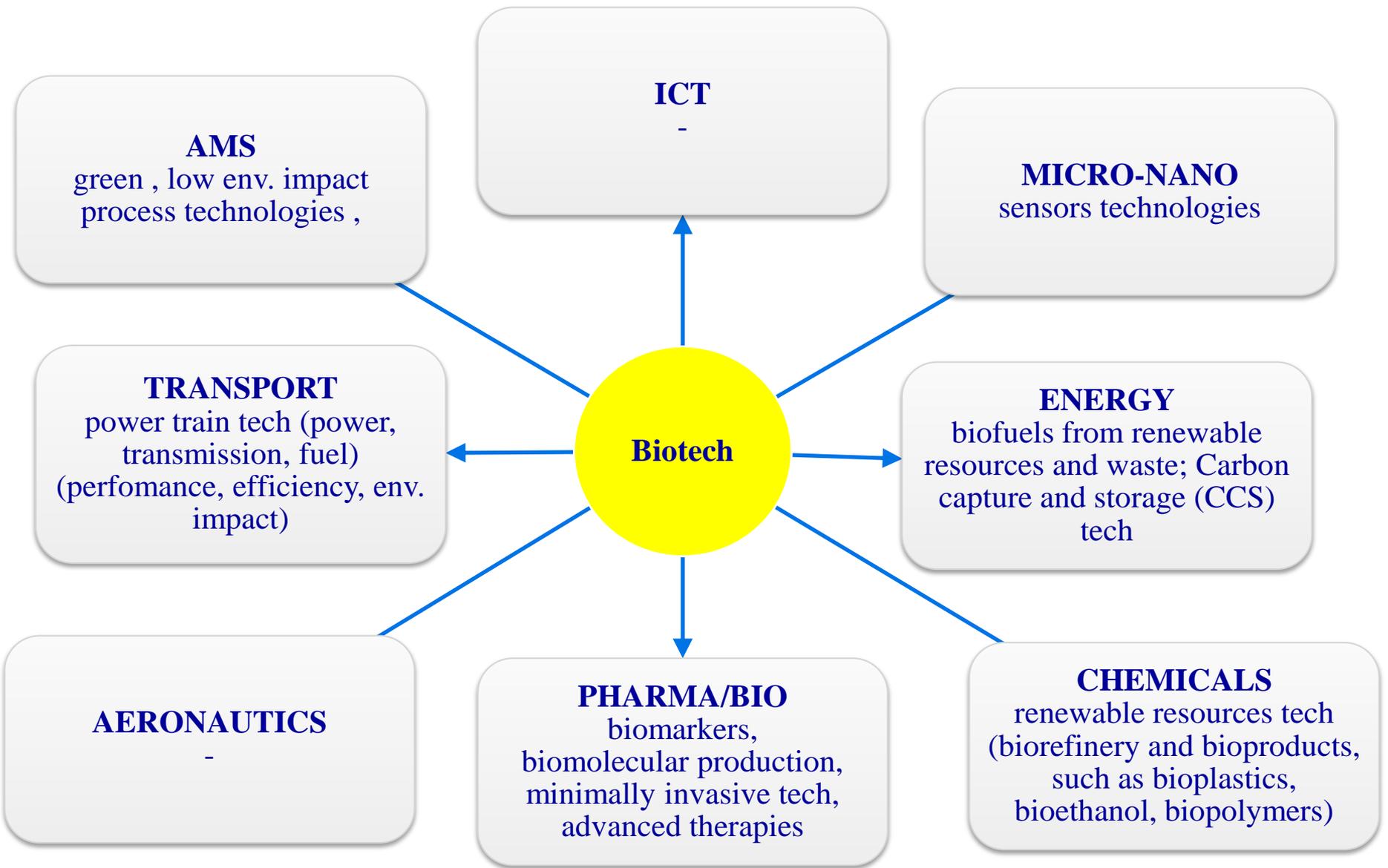
- Policy for KETs development depends from their maturity level
- More than 30% of priority technologies includes at least a KET with TRL>6



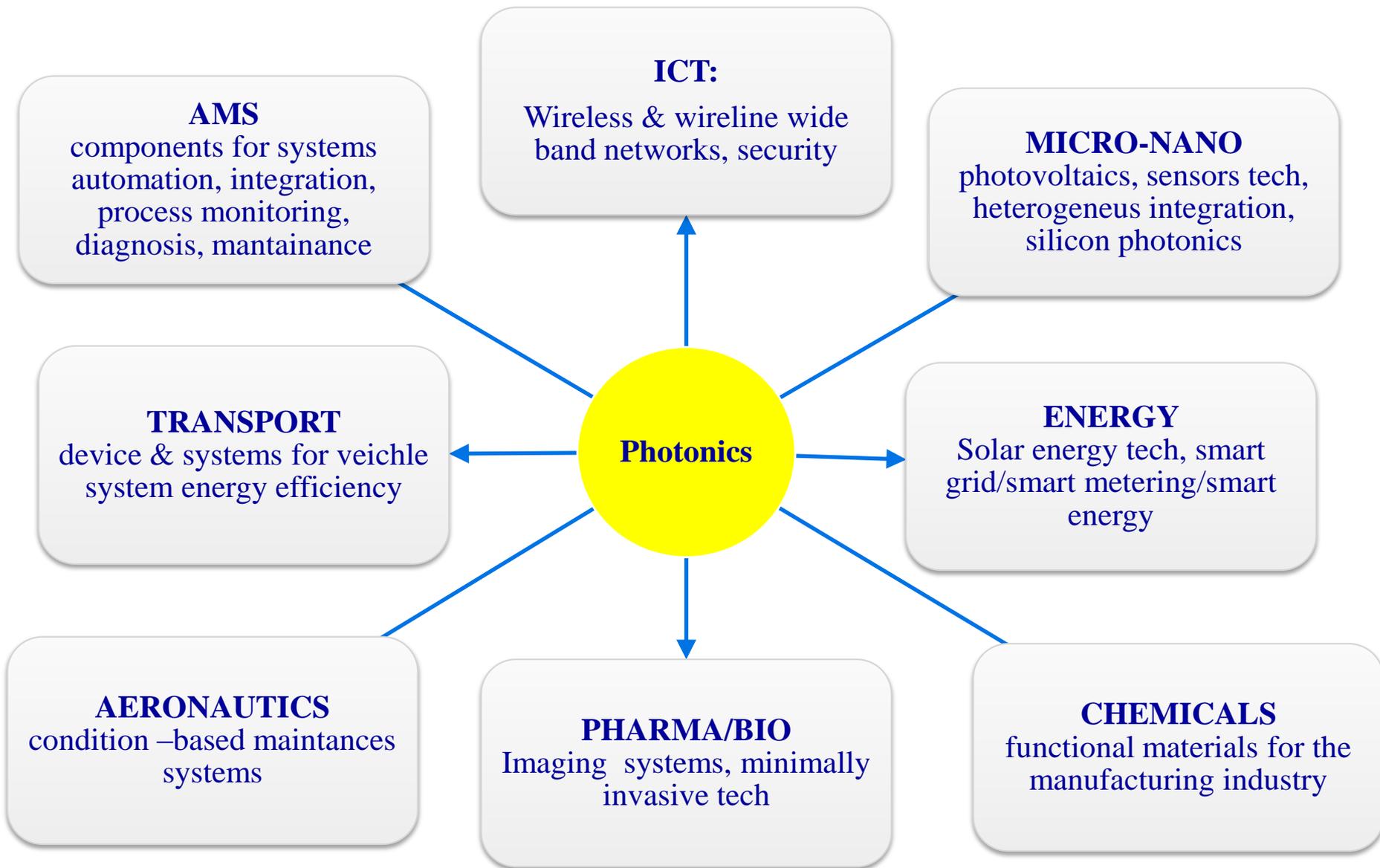
*Nanotech contributes to smore than 50% of Priority Technologies*



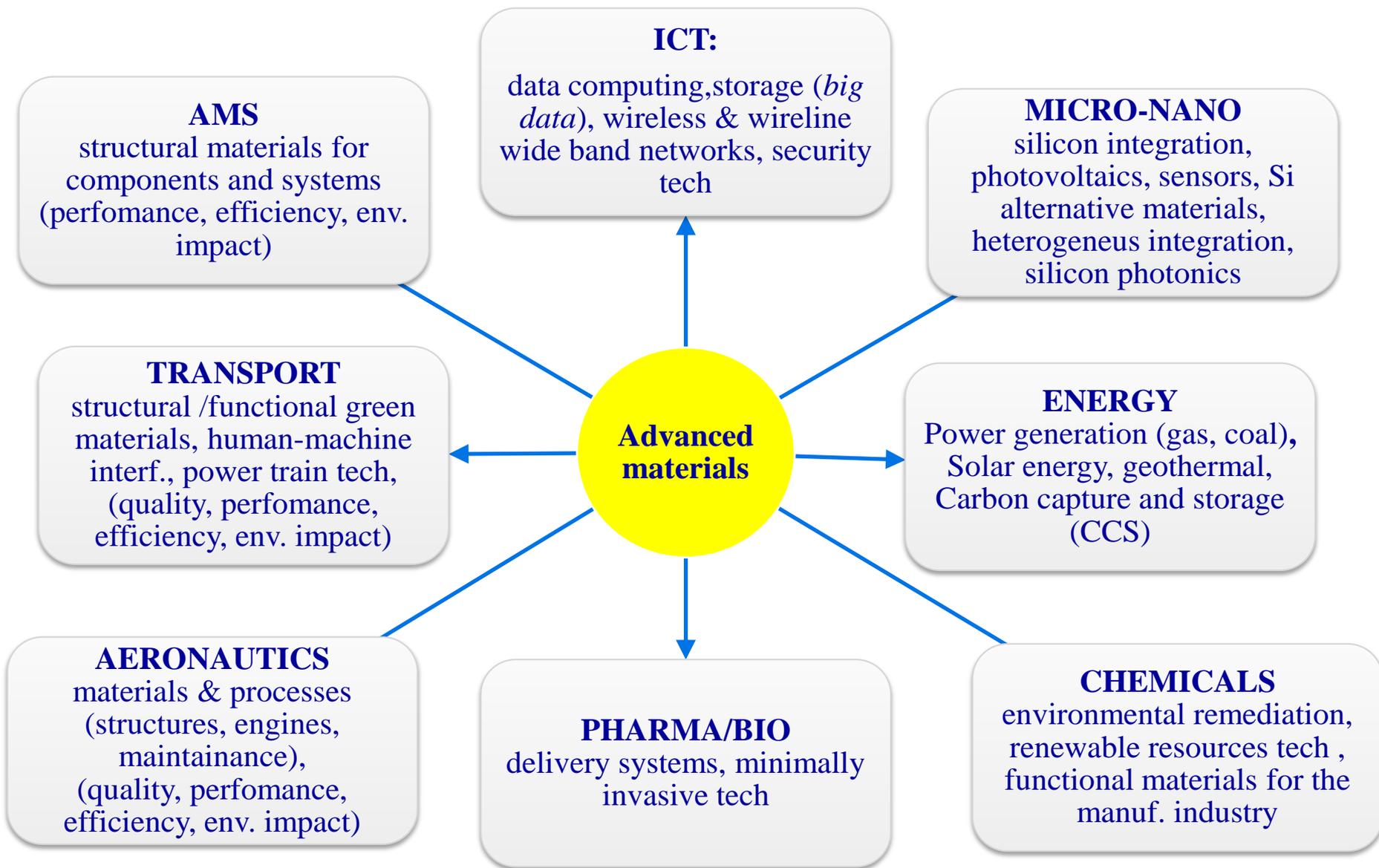
*Micro-nano contributes to some 60% of Priority Technologies*



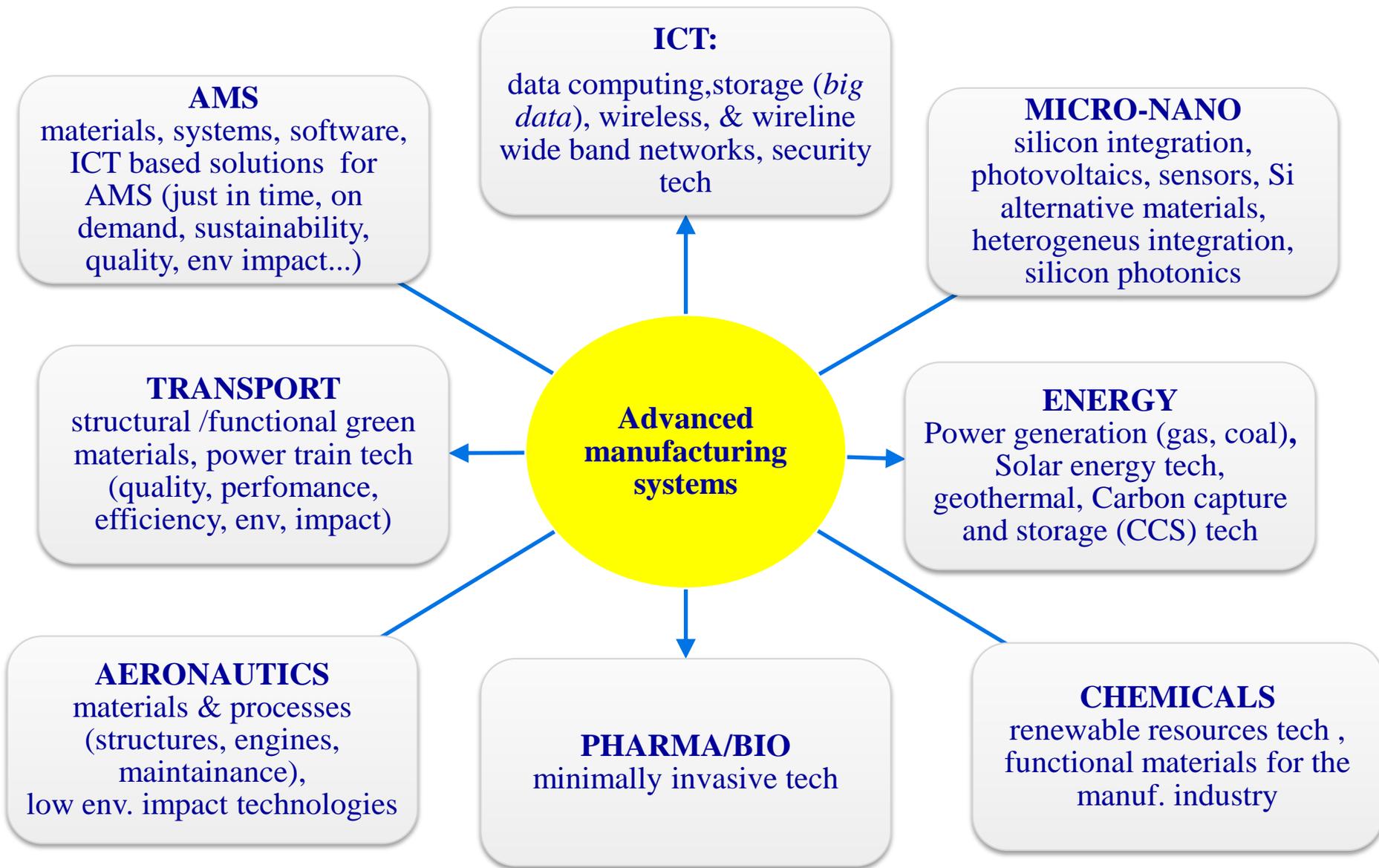
*Biotech contributes to some 30% of Priority Technologies*



*Photonics contributes to some 30% of Priority Technologies*



*Advanced materials contributes to more than 55% of Priority Technologies*



*AMS contributes to more than 55% of Priority Technologies*

- **Cross cutting KETs, contributing in most national priority industrial tech**
- **Key competences across sectors, products, value chains**
- **Alignment of KETs framework with Italian industrial system (as represented by AIRI)**
- **Different levels of maturity of KETs**

**AIRI is undertaking a roadmapping/SWOT exercise on Italian KETs, mirroring activities of the new 2013 European Commission High Level Group on KETs**

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# Thanks for your attention

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