



## ISTITUTO NAZIONALE DI RICERCA METROLOGICA Repository Istituzionale

European Metrology Network (EMN) for Advanced Manufacturing

*Original*

European Metrology Network (EMN) for Advanced Manufacturing / Favre, G.; Przyklenk, A.; O'Connor, D.; Balsamo, A.; Evans, A.; Bosse, H.. - (2023). (Intervento presentato al convegno 21st International Metrology Congress - CIM 2023 tenutosi a Lyon /FR) nel 2023-03-07/10).

*Availability:*

This version is available at: 11696/80039 since: 2024-03-01T11:48:59Z

*Publisher:*

*Published*

DOI:

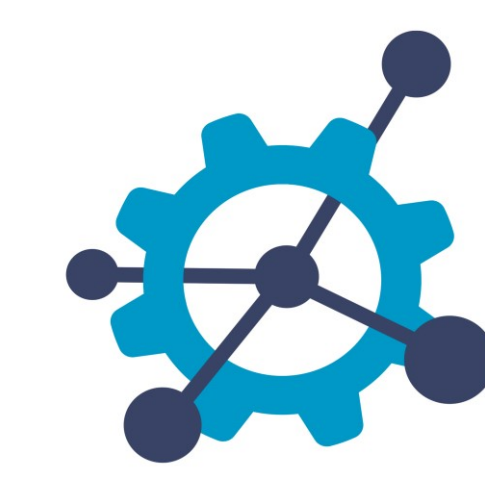
*Terms of use:*

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

*Publisher copyright*

(Article begins on next page)

# European Metrology Network (EMN) for Advanced Manufacturing



ADVANCED MANUFACTURING



Georges Favre<sup>1</sup>, Daniel O'Connor<sup>2</sup>, Alessandro Balsamo<sup>3</sup>, Alexander Evans<sup>4</sup>, Fernando Castro<sup>2</sup>, Anita Przyklenk<sup>5</sup> & Harald Bosse<sup>5</sup>

<sup>1</sup>Laboratoire national de métrologie et d'essais (LNE), Paris, France <sup>2</sup>National Physical Laboratory (NPL), Teddington, United Kingdom  
<sup>3</sup>Istituto Nazionale di Ricerca Metrologica (INRIM), Torino, Italy <sup>4</sup>Bundesanstalt für Materialforschung und -prüfung (BAM), Berlin, Germany  
<sup>5</sup>Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany

georges.favre@lne.fr

## INTRODUCTION

The European Metrology Network (EMN) for Advanced Manufacturing has been established in June 2021. Currently 11 EMNs focussing on different important topics of strategic importance for Europe exist and form an integral part of EURAMET, the European Association of National Metrology Institutes (NMI). EMNs are tasked to

- develop a **high-level coordination of the metrology community in Europe in a close dialogue with the respective stakeholders (SH)**
- develop a Strategic Research Agenda (SRA) within their thematic areas
- provide contributions to the European Partnership on Metrology research programme

Based on the analysis of **existing metrology infrastructures and capabilities of NMIs**, the **metrology research needs for advanced manufacturing** are identified in close cooperation with academic, governmental and industrial stakeholders. Here, we report on **advanced materials metrology needs** addressed in the EMN's preliminary SRA.

## WHO WE ARE

### EMN members

- 18 European NMI & Designated Institutes (DI) (Figure 1)

### Partner Organisations

- European Technology Platform ManuFuture [1]
- EFFRA Made in Europe Partnership [2]
- NanoFabNet [3]
- euspen [4]

Options for formal relationship between

- VAMAS [5]
- AMi2030 [6]

### Stakeholder Council

- Currently 12 members from industry
- Representing EMN key industry sectors (Figure 2)

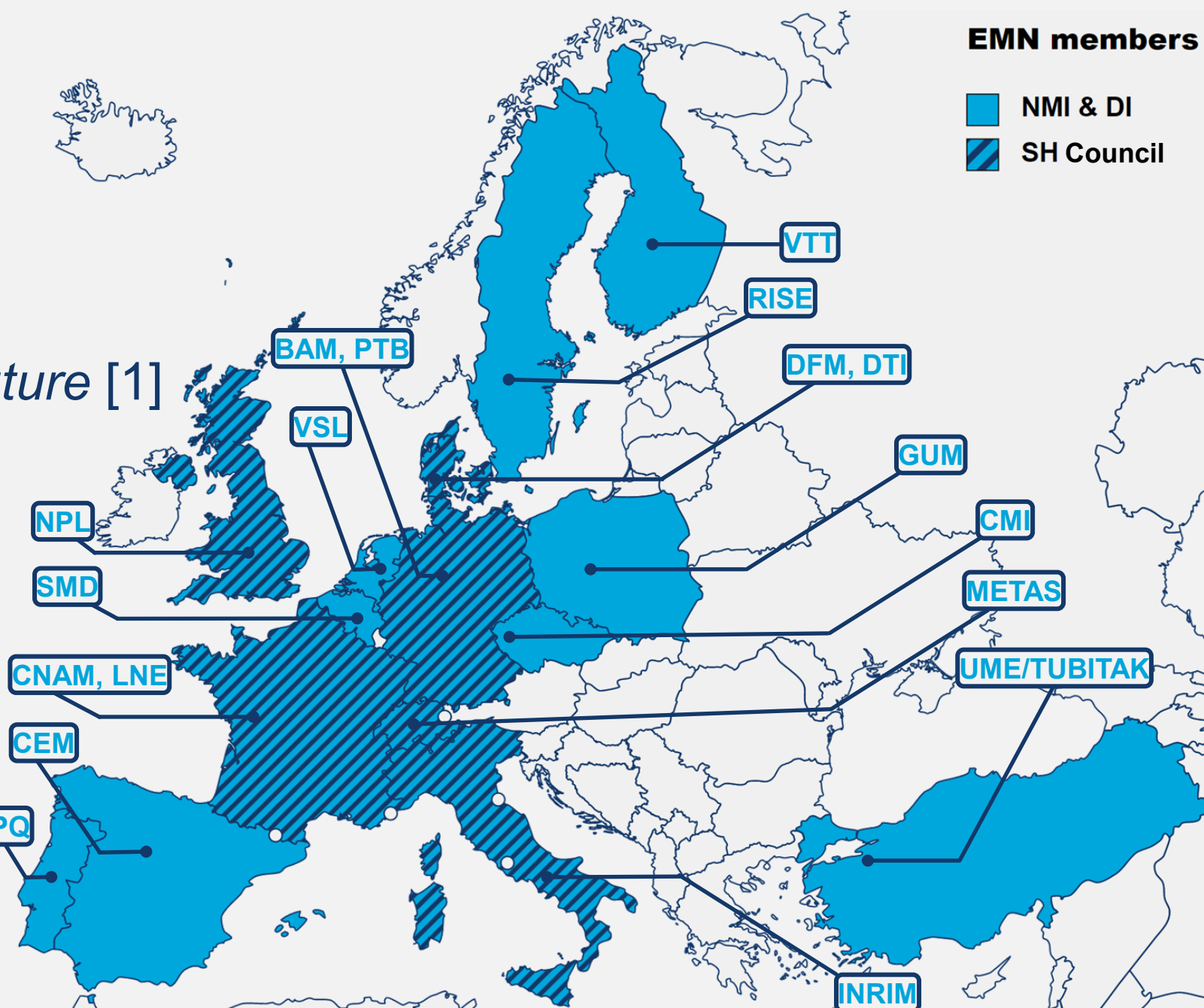


Figure 1: Map of EMN members.

## STRATEGIC RESEARCH AGENDA

The EMN for Advanced Manufacturing is developing a SRA to identify priorities for research by Europe's NMIs and DIs and collaboration partners. Download: <https://www.euramet.org/european-metrology-networks/advanced-manufacturing/strategic-research-agenda>. The content of this preliminary versions may change due to ongoing consideration of stakeholder feedback. Updates are planned in summer on a yearly basis.



## WHAT WE DO

- Goal: Consideration of metrology aspects for the entire manufacturing chain (Figure 3)
- Cyclic approach for activities (Figure 4)

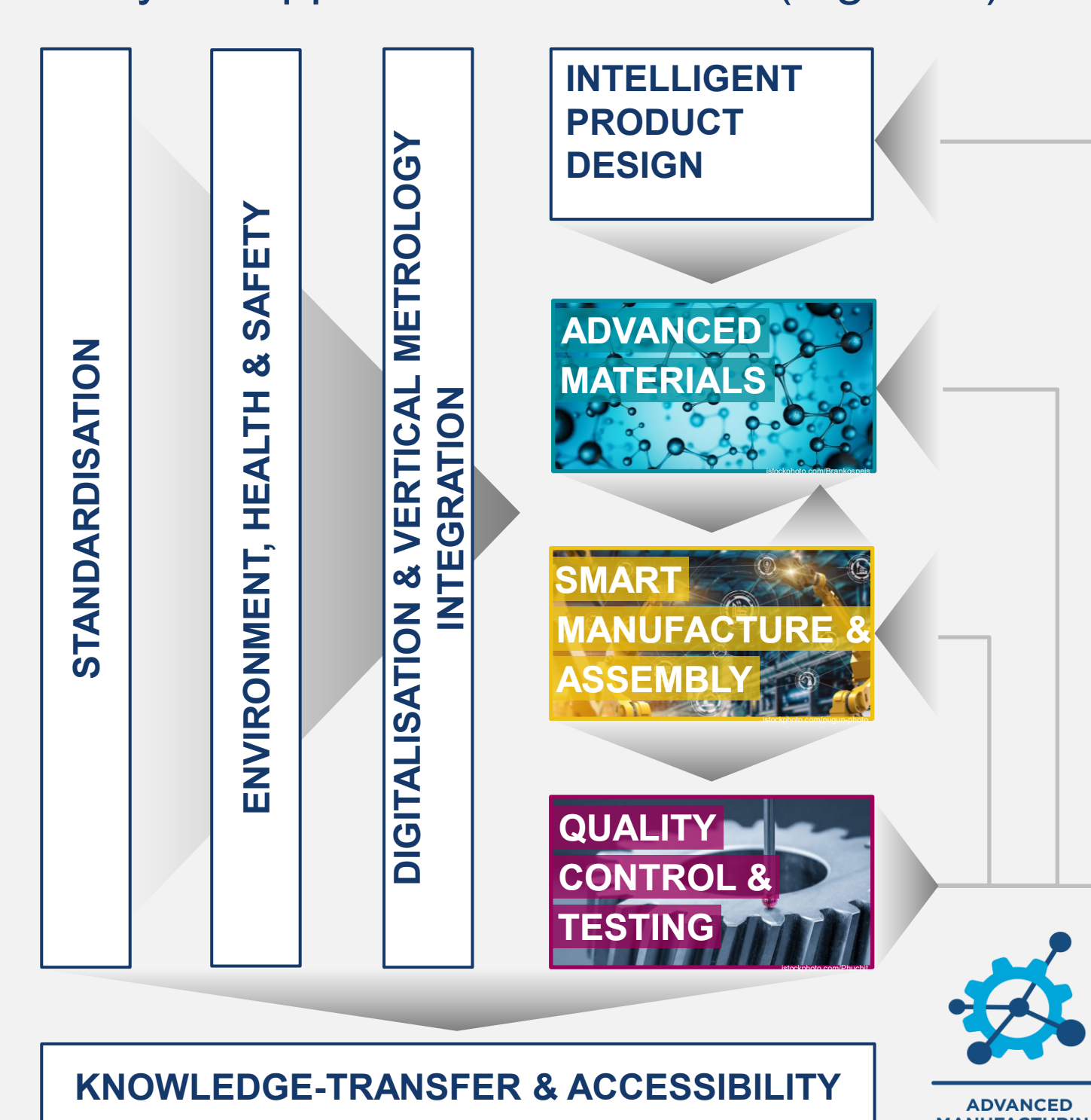
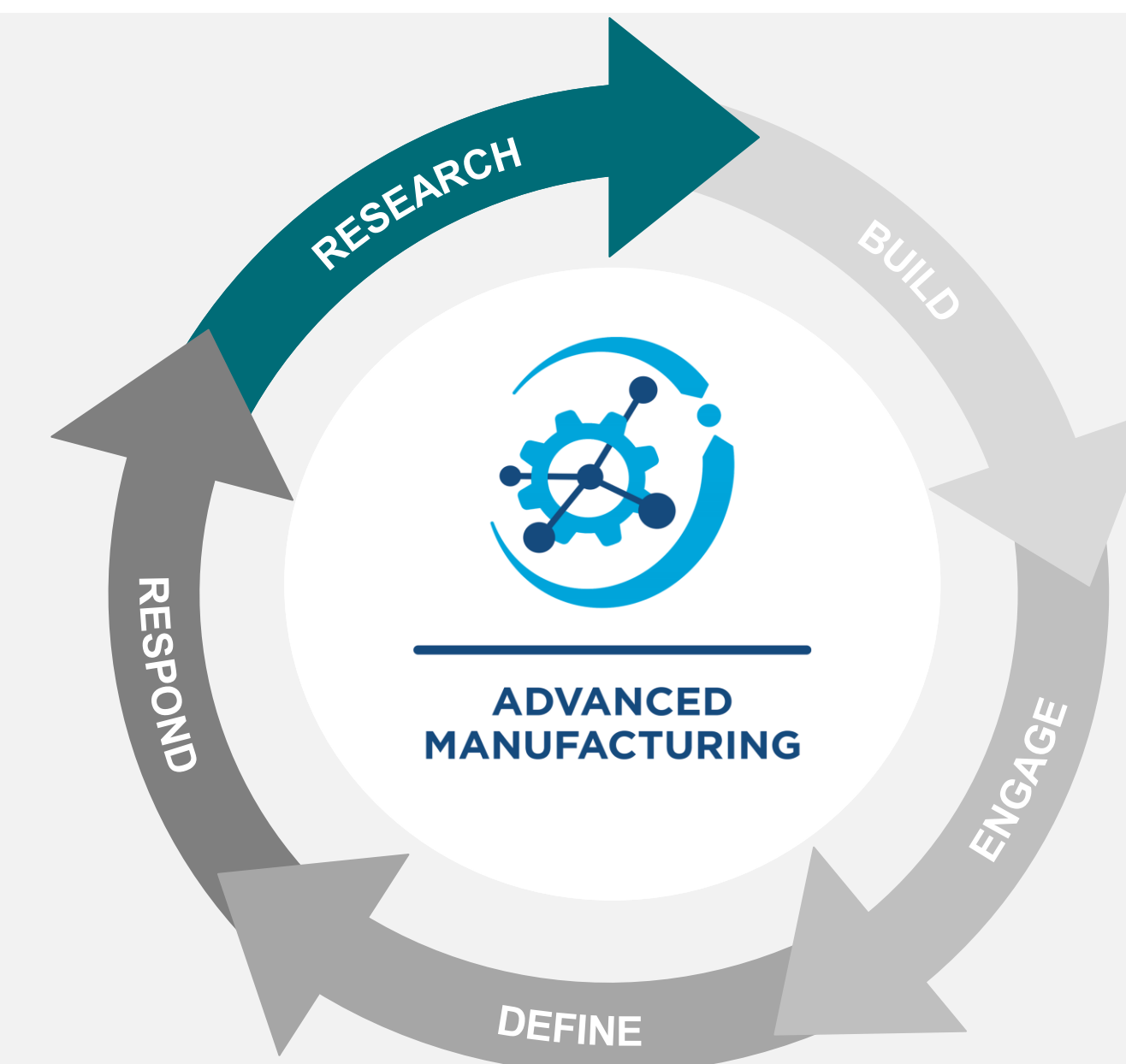


Figure 3: Cross-cutting topics of the manufacturing chain.



- SH mapping & prioritisation according to EMN's KIS
- SH engagement, needs & drivers
- identify and define SH needs
- respond to needs with SRA and roadmap
- collaborative research projects on metrology topics with high impact on European industry

Figure 4: EMN activities general approach by EMN for Climate and Ocean Observation.

## KEY INDUSTRY SECTORS

Ongoing stakeholder dialogue in all key industry sectors via frequently held **workshops** and **open consultation events** on special topics. An **online service desk** is in preparation and will be available soon.

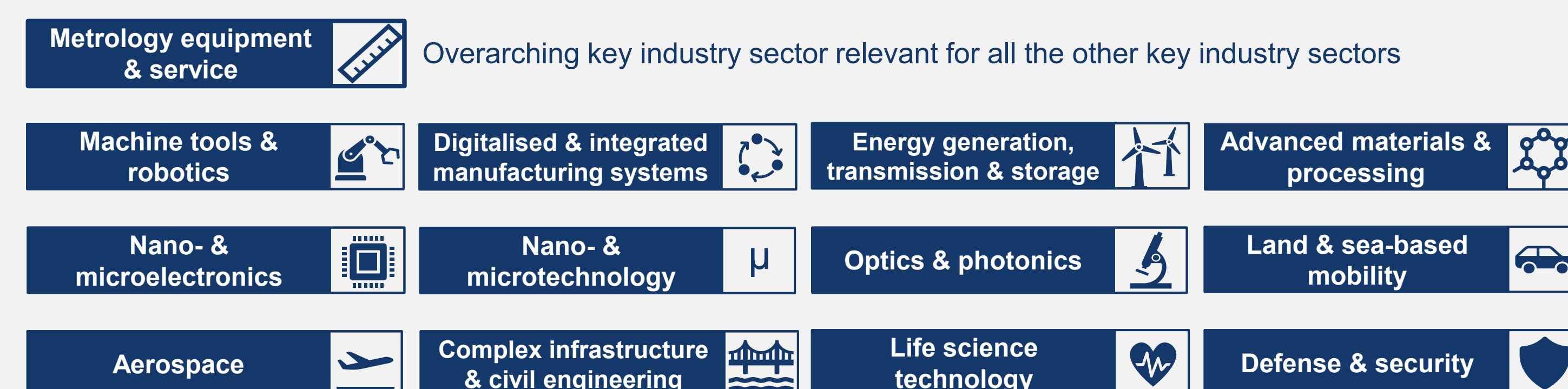
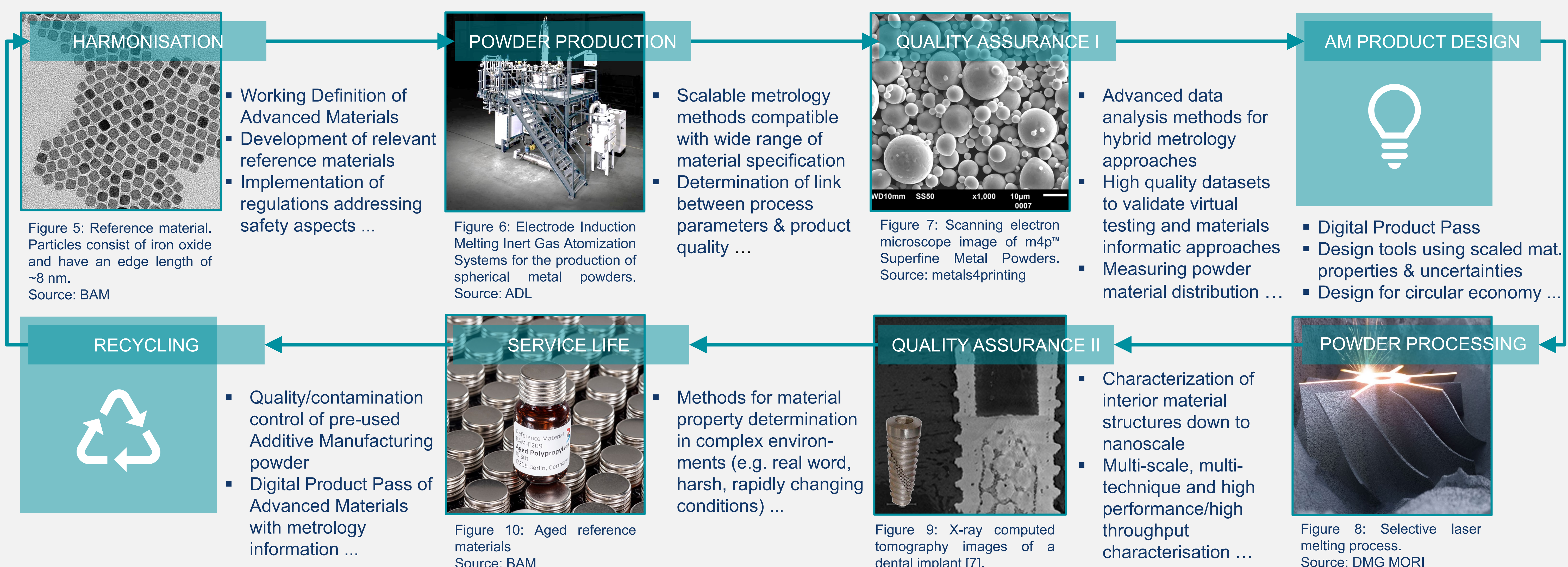


Figure 2: KIS of the EMN.

## METROLOGY NEEDS IN ADVANCED MATERIALS

Advanced Materials addresses metrology and characterisation methods that are required to fully exploit the innovation potential of advanced materials, while ensuring safety and environmental compatibility. This encompasses the whole life cycle of manufactured products.

### NEEDS ALONG THE ADVANCED MATERIALS LIFE CYCLE: EXAMPLE OF ADDITIVE MANUFACTURING



## EMN ACTIVITIES WITH RESPECT TO THE EUROPEAN PARTNERSHIP ON METROLOGY PROGRAMME



Figure 11: Timeline of EMN activities and European Partnership on Metrology programme. \*Potential Research Topic \*\*Selected Research Topic \*\*\* Joint Research Projects

## CONTACT & NEWSLETTER SUBSCRIPTION

Get in touch via email [advancemanu@euramet.org](mailto:advancemanu@euramet.org) and visit our website [www.euramet.org/advanced-manufacturing](http://www.euramet.org/advanced-manufacturing) or subscribe to our newsletter by using the QR code on the right.



## REFERENCES

- <http://www.manufuture.org/>
- <https://www.effra.eu/made-in-europe-state-play>
- <https://nanofabnet.net/>
- [www.euspen.eu](http://www.euspen.eu)
- <http://www.vamas.org/>
- <https://www.ami2030.eu/>
- Obaton A-F et al. In vivo XCT bone characterization of lattice structured implants fabricated by additive manufacturing. Heliyon. 2017



The EMPIR initiative is co-funded by the European Union's Horizon 2020 research and innovation programme and the EMPIR Participating States