Overview of preliminary content of Strategic Research Agenda (SRA) EMN for Advanced Manufacturing

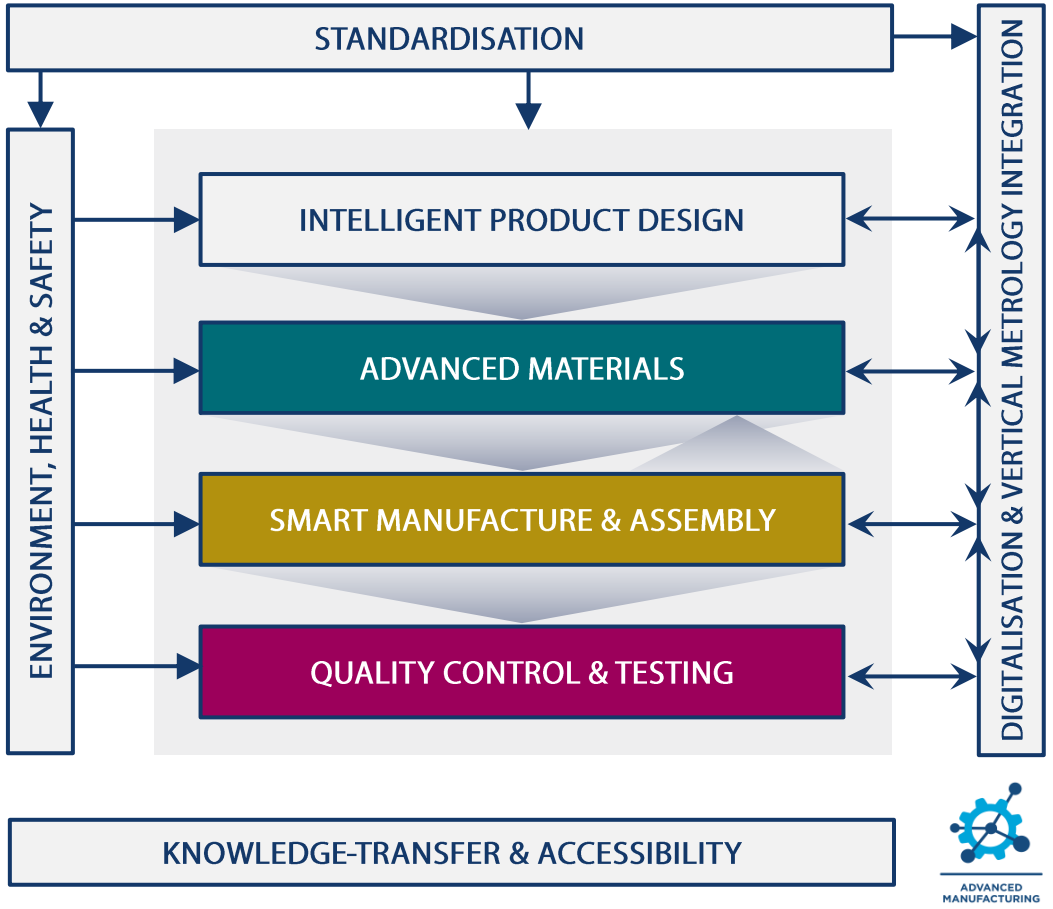
Open Strategic Research Agenda Workshop,
Hybrid meeting, hosted by NPL, Teddington, UK

Update November 2022

D O'Connor (NPL), EMN Vice-Chair

Contents

- Overall purpose of the Strategic Research Agenda (SRA)
- Current structure of the SRA
- Overview of Key Industrial Sectors
- Overview of Cross Cutting Topics
- Mapping of input from SC members

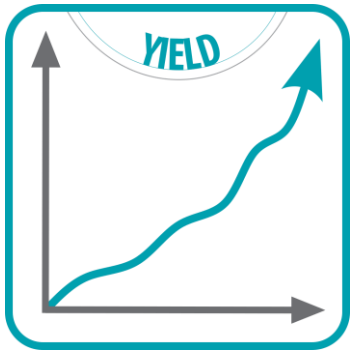


Further information about the EMN for Advanced Manufacturing can be found in the following publication https://iopscience.iop.org/article/10.1088/1361-6501/ac0d25

Overall purpose of SRA

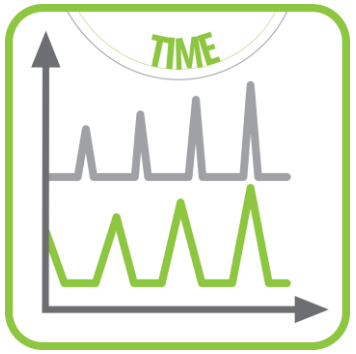
- It is **a living document** that will be maintained by the EMN
- It is a mechanism for obtaining, integrating and sharing **input from all stakeholders**
- It **guides the development of metrology** in support of advanced manufacturing
- It will help **steer the direction of funded research**
  - e.g. The European Partnership on Metrology (EPM) call 2023: Metrology for Industry
- It **acts as a key reference** for metrology needs in any proposed research (related to advanced manufacturing)
- It also **facilitates inputs in to other initiatives**, TCs and EMNs

Zero Defect

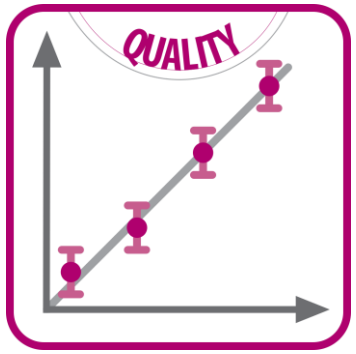


Zero Waste

Zero Delay

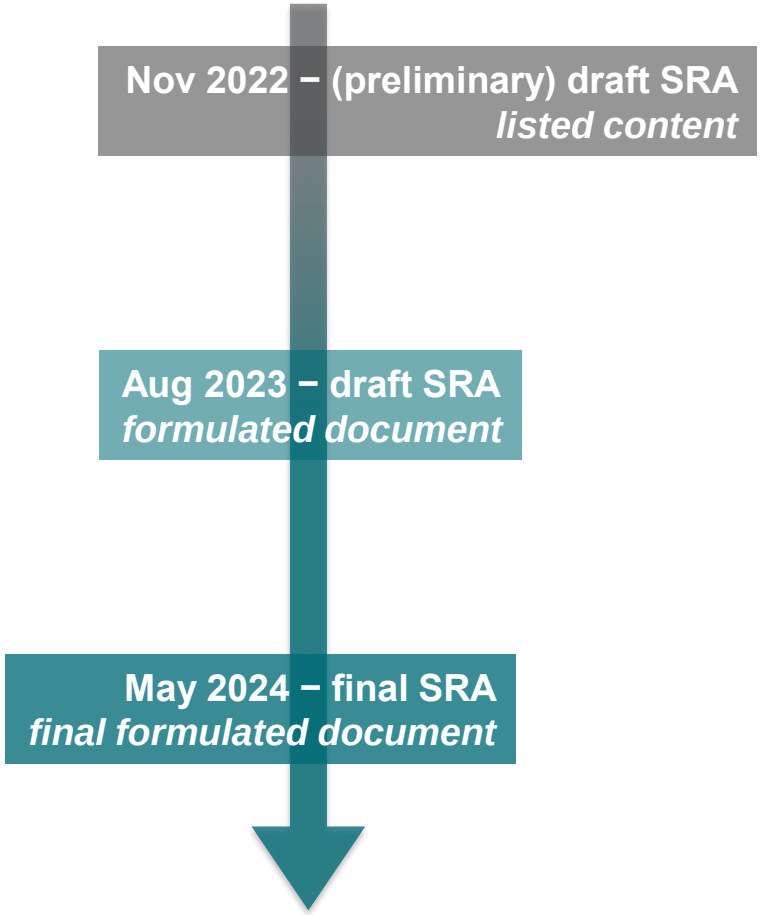


Zero Surprise



Approach for developing the SRA

- Analysis of existing strategy and technology roadmap documents
- Initial proposal of structure and content themes from EMN
- Brainstorming of EMN experts
- Questionnaires and other inputs from wider metrology community
- Key industrial sector inputs and cross cutting topics
- Open forums and discussion of content
- Cross cutting topics workshops
- Key industry sector specific workshops / open consultation
- Periodic Stakeholder Council input, review and guidance



Timeline of SRA development stages

Current structure of the SRA

Scene setting

Cross cutting content

Sector specific content

Conclusion and Summary tables

Key Industry Sectors (KIS) – Overview

1. Metrology equipment & service

overarching KIS relevant for the other KISs

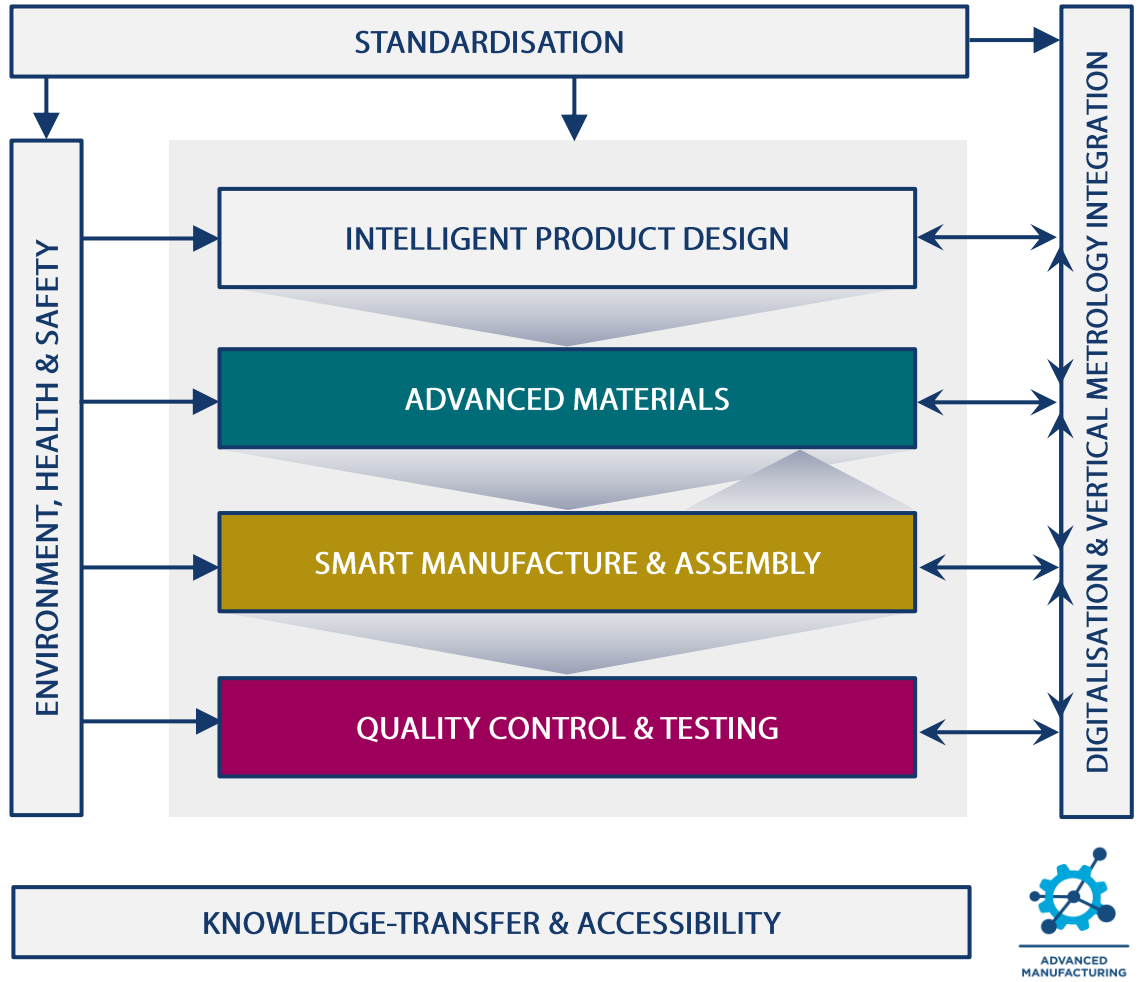
2. Machine tools & robotics
3. Digitalized & integrated manufacturing systems
4. Energy generation, transmission & storage
5. Advanced materials & processing
6. Nano- & microelectronics
7. Nano- & microtechnology
8. Optics & photonics
9. Land & sea-based mobility
10. Aerospace
11. Complex infrastructure & civil engineering
12. Life science technology
13. Defense & security

Status of Key Industrial Sector content

#	Key Industrial Sector	Initial EMN proposals	Trends and developments	Metrology Community	Open Consultation	SC final review
1	Metrology Equipment & Service	✓		✓		✓
2	Machine Tools & Robotics	✓	✓	✓		✓
3	Digitalized and integrated manufacturing systems	✓	✓	✓		✓
4	Energy generation, transmission & storage	✓	✓	✓		
5	Advanced Materials & Processing	✓	✓	✓		✓
6	Nano- & Microelectronics	✓	✓	✓✓	✓	
7	Nano- & Microtechnology	✓		✓		✓
8	Optics and photonics	✓	✓	✓		
9	Land and sea-based mobility	✓		✓		
10	Aerospace	✓		✓		
11	Complex Infrastructure & Civil Engineering	✓		✓		✓
12	Life Science Technology	✓		✓		
13	Defence & Security	✓		✓		

Cross Cutting Topics (CCT) - Overview

- The cross cutting topics broadly cover the key steps in manufacturing
- The content of cross cutting topics is broadly applicable and relevant to many Key Industry Sectors (KIS)



Boundary conditions/input for the advanced manufacturing process

Digital information exchange

Advanced manufacturing process

Advanced manufacturing process flow

Status of Cross Cutting Topic content

#	Cross Cutting Section	Initial EMN proposal	Trends and developments	Metrology Community	Focussed Workshop	SC final review
1	Intelligent product design	✓	✓	✓		✓
2	Advanced Materials	✓	✓	✓	✓	✓
3	Smart Manufacture & Assembly	✓	✓	✓	✓	
4	Quality control & Testing	✓		✓	✓	✓
5	Digitalisation & Vertical Integration of Metrology	✓		✓		✓
6	Standardisation	✓		✓		✓
7	Environment, Health & Safety	✓		✓		✓
8	Knowledge-Transfer & Accessibility	✓		✓		✓

Next steps

- Address feedback from Stakeholder Council and EMN members
- Finalise draft text
- Share draft document for review
- Finishing touches for publication
- 1st Draft SRA released in Dec 2022, to support EPM Call 2023: Metrology for Industry

⇒ Input from stakeholders and metrology community is still highly welcome **at any time!**

Acknowledgements

Thank you very much for your support and input as stakeholders!

The project JNP 19NET01 AdvManuNet has received funding from the EMPIR programme co-financed by the Participating States and from the European Union's Horizon 2020 research and innovation programme.

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