AMTC
Aachen
12 – 14 October 2021

Jürgen TIEDJE, Head of Unit

"Industrial Transformation"
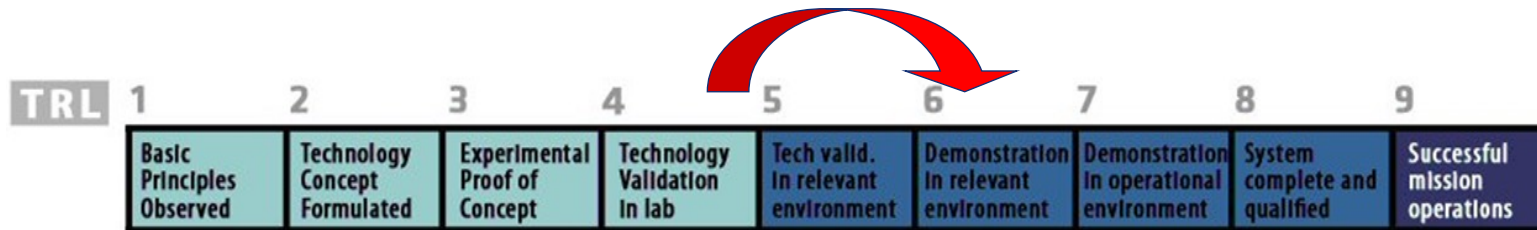
DG Research & Innovation

Overview

- Short recap of Horizon 2020 – where does the EU come from?

- Work Programme under Horizon Europe, Cluster « Digital, Industry, Space

- European Partnerships – Example of Made in Europe

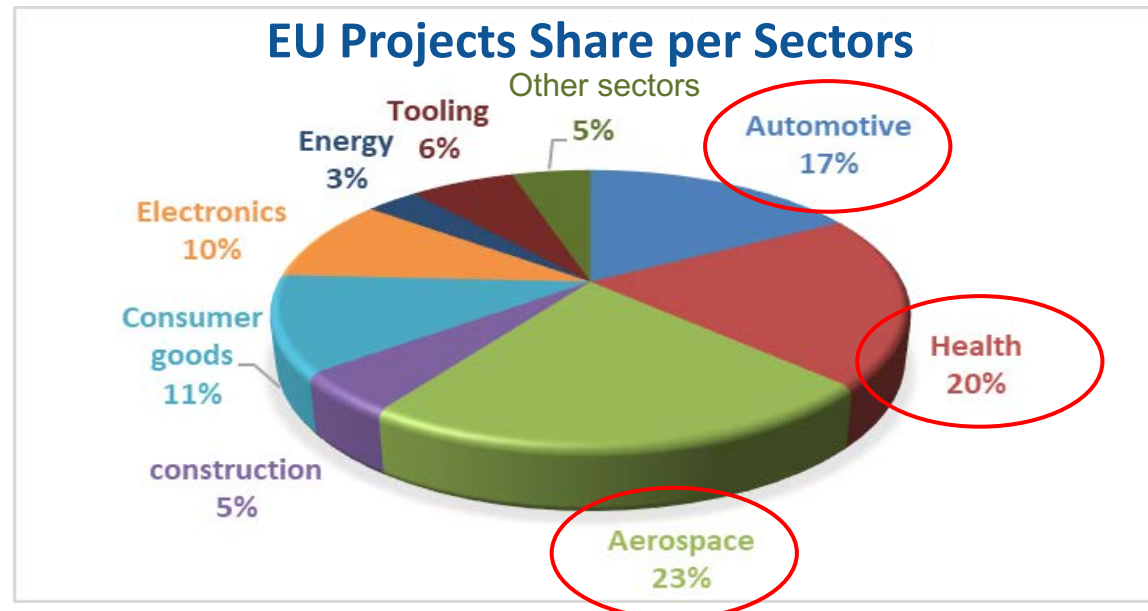# Short recap – where does the EU come from?

- EC has continuously funded Additive Manufacturing **research**

  - **FP7 (2007-2013):**   over **60** AM projects (~ €160 Mio)

  - **Horizon2020 (2014-2020)**:   over **35** AM projects (~ €170 Mio)

- AM technologies reached *demonstration in lab environment*

- They move to *demonstration in operational environment*

- EC supports also *technology transfer* in innovation hubs

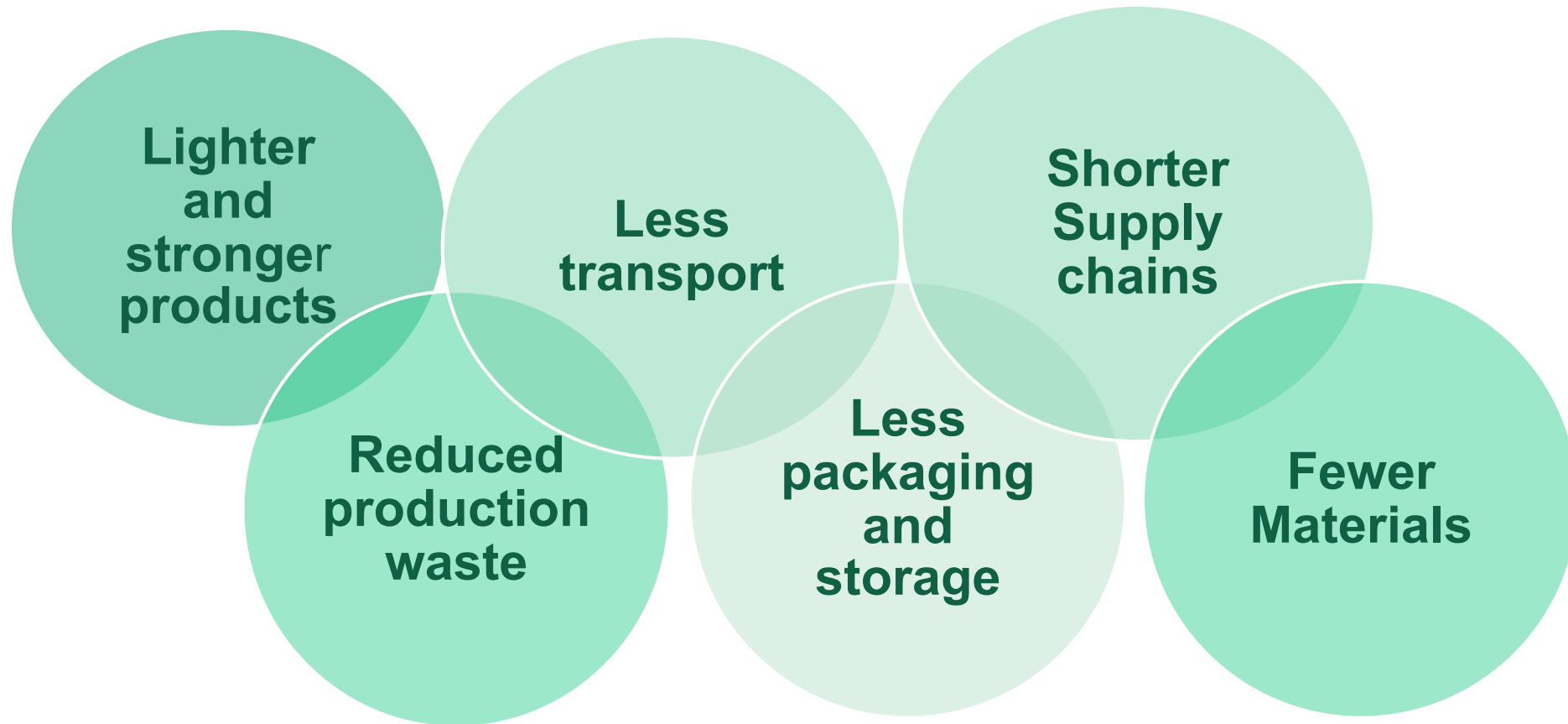 - *Example: innovation hub PULSATE reaching out to at least 60 SMEs*

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Pioneering role of Horizon 2020 to date

AM already reached TRL 4 and moving to TRL 5-7

TRL	1	2	3	4	5	6	7	8	9
	Basic Principles Observed	Technology Concept Formulated	Experimental Proof of Concept	Technology Validation In lab	Tech valid. In relevant environment	Demonstration In relevant environment	Demonstration In operational environment	System complete and qualified	Successful mission operations

From technology validated in lab to demonstrations in operational environment

EU Projects Share per Sectors

- Other sectors 5%
- Tooling 6%
- Energy 3%
- Electronics 10%
- Consumer goods 11%
- construction 5%
- Aerospace 23%
- Automotive 17%
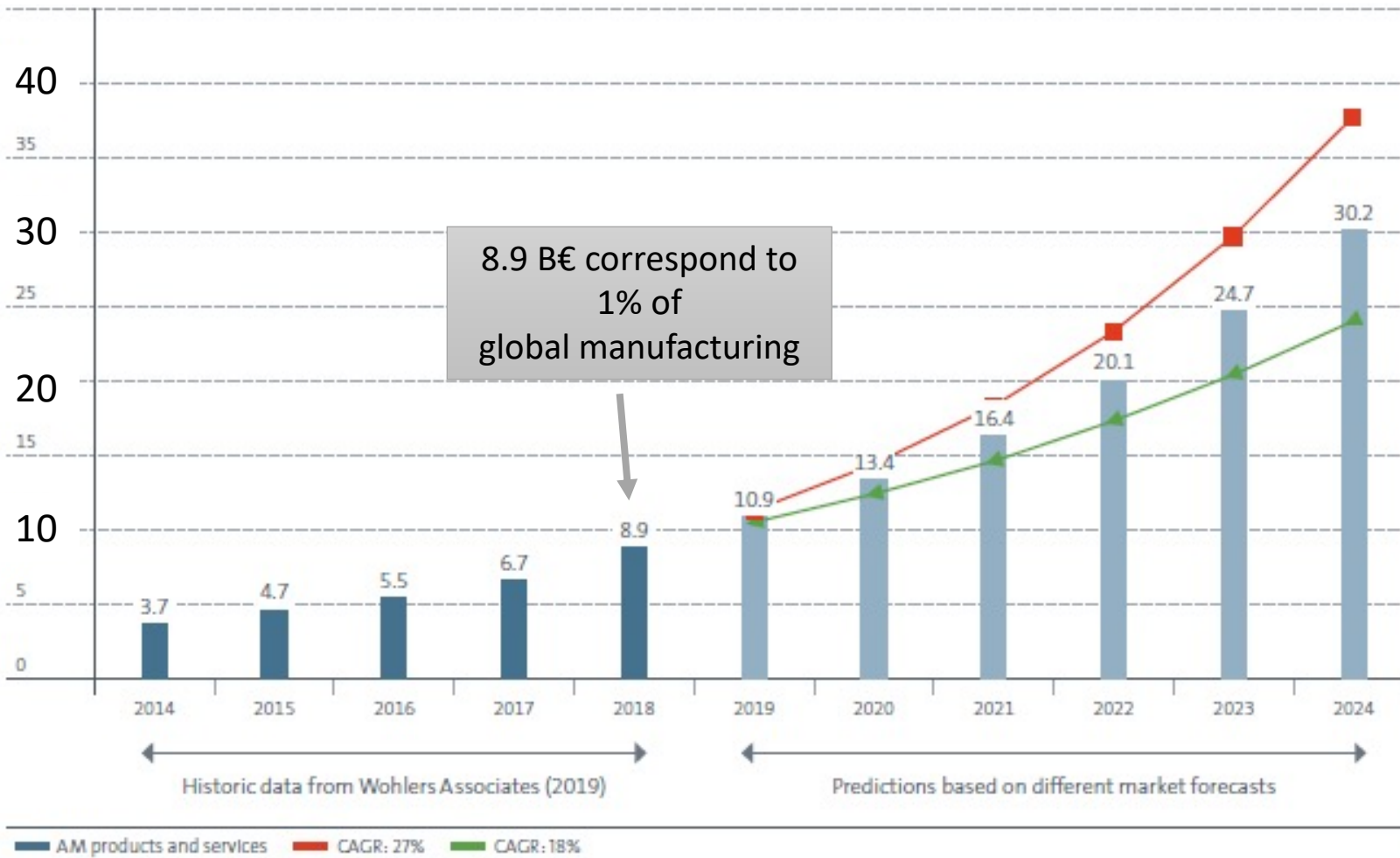- Health 20%

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AM and the Twin Green and Digital Transition–
Climate and Environment?

Market figures – AM products and services

Market size and forecast of AM products and services

Billion Euro

8.9 B€ correspond to 1% of global manufacturing

- 2014: 3.7
- 2015: 4.7
- 2016: 5.5
- 2017: 6.7
- 2018: 8.9
- 2019: 10.9
- 2020: 13.4
- 2021: 16.4
- 2022: 20.1
- 2023: 24.7
- 2024: 30.2

Historic data from Wohlers Associates (2019)

Predictions based on different market forecasts

AM products and services   CAGR: 27%   CAGR: 18%

27% growth – upper bound

18% growth – lower bound

Source: Wohlers Associates, 2019

EU programs particularly relevant to Additive Manufacturing 2021 - 2027

- Horizon Europe:

  - pillar 2 – Digital, Industry, Space

  - pillar 3 – European Innovation Council, EIT KIC Manufacturing

- Digital Europe Programme

- InvestEU – European Investment Bank

- ERASMUS: new skills

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Horizon Europe – Pillar 2
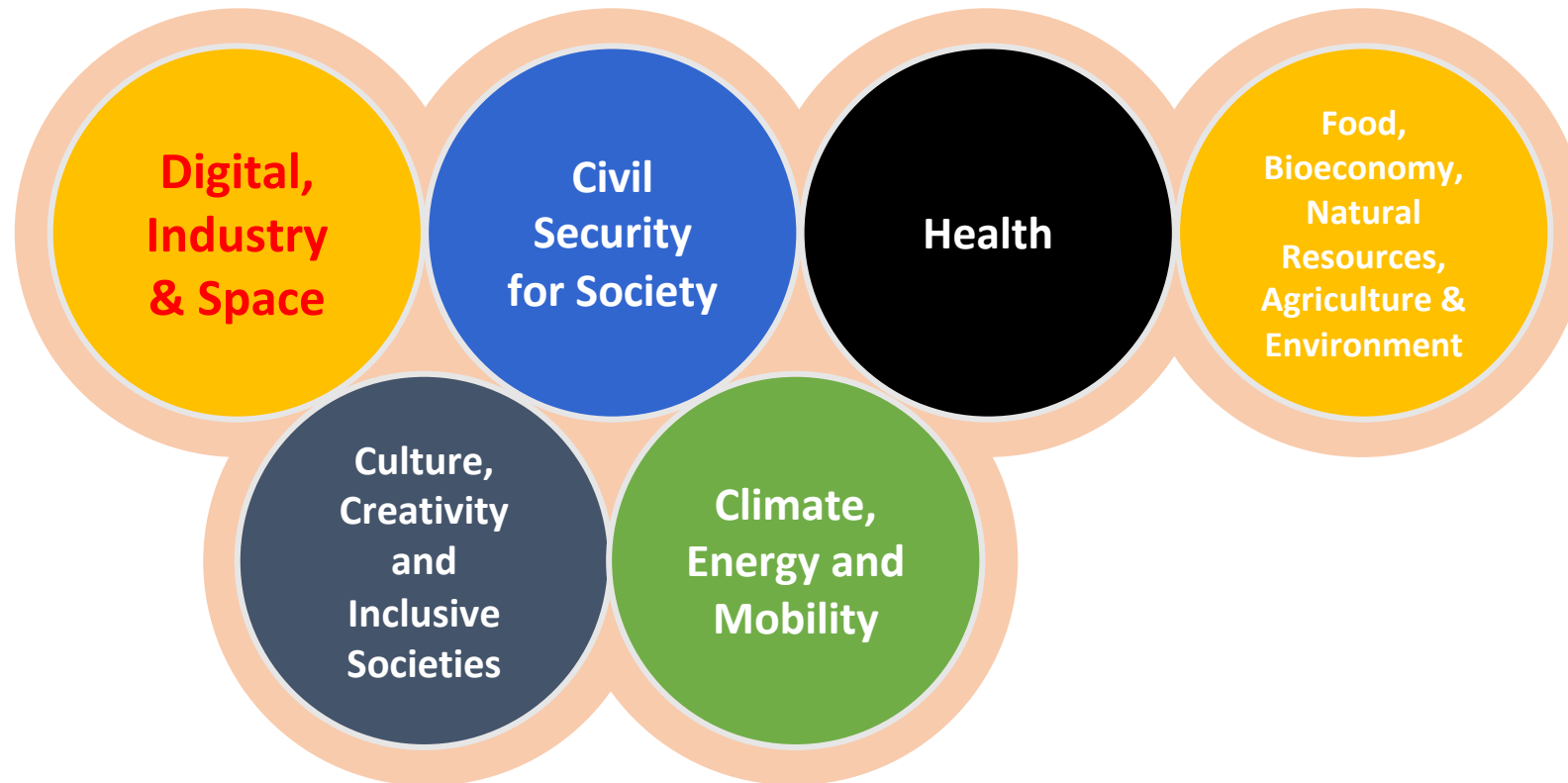
Horizon Europe - Cluster 4: strategic plan
Driven by impact - *Manufacturing*

Pillar 2
Global Challenges and European Industrial Competitiveness

Clusters
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre

KEY STRATEGIC ORIENTATION	EXPECTED IMPACT
Making Europe the first digitally led **circular, climate-neutral and sustainable** economy	**Global leadership** in clean and climate-neutral industrial value chains, circular economy and climate-neutral digital systems and infrastructures (networks, data centres)
Promoting an open strategic autonomy **by leading the development of key digital, and enabling and emerging technologies**, sectors and value chains	**Industrial leadership and increased autonomy** in key strategic value chains with security of supply in raw materials
	Sovereignty in digital technologies and in future emerging enabling technologies
	Globally attractive, secure and dynamic data-agile economy
	Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data
Creating a **more resilient, inclusive and democratic** European society	**A human-centred** and ethical development of digital and **industrial technologies**

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Cluster Digital, Industry, Space

2021-27 budget of 15.348 bn€ (including NGEU)
For the WP 2021-2022, the programmable budget is ~3.5 bn€:

DESTINATION	BUDGET 2021-2022
Destination 'Climate neutral, circular and digitised production'	737.5 M€
Destination 'Increased autonomy in key strategic value chains for resilient industry'	776.4 M€
Destination 'World leading data and computing technologies'	346.0 M€
Destination 'Digital and emerging technologies for competitiveness and fit for the green deal'	750.0 M€
Destination 'Open Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data' (incl. Other Actions)	517.6 M€
Destination 'A Human-centred and ethical development of digital and industrial technologies'	327.0 M€
Other Actions (other than Space-related)	36.0 M€

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European Partnerships in Cluster 4

Name	Type	Scope/Aim
Made in Europe	Co-programmed	Zero-waste, circular, digital manufacturing
Processes4Planet	Co-programmed	Climate-neutral, circular process industry
Clean Steel	Co-programmed	Carbon-neutral steel production
Photonics	Co-programmed	Maintain leadership in photonic technologies
AI, data and robotics	Co-programmed	Innovation and uptake of AI, data and robotics
Global Competitive Space Systems	Co-programmed	Reinforce EU capacity to access and use space
Metrology	Institutional	A world-class metrology system for EU
Key Digital Technologies	Institutional	Digital hardware and software development
Smart networks and Services	Institutional	Support European 5G and develop 6G
High Performance Computing	Institutional	Quantum/super-computing technologies

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Transformation of Manufacturing Industry

3D printing enables the Digital Thread
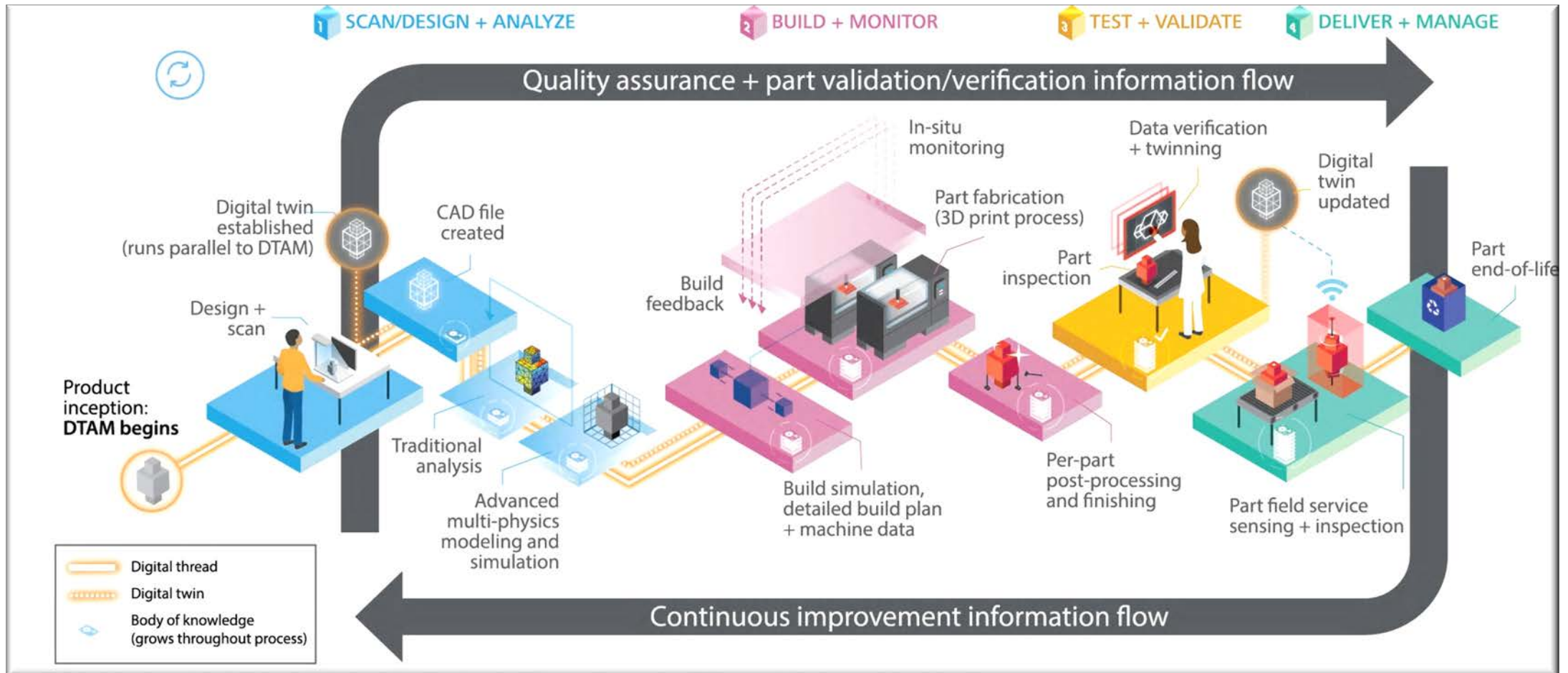
Source: Deloitte Development 2017

Do we need a partnership in manufacturing?

- **European Manufacturing businesses**
  - The manufacturing sector employed more than 28.5 million people in the EU in almost 2 million enterprises (99.2% are SMEs, mostly component suppliers, few integrators)

- **Economic and global trends**
  - GDP share of manufacturing has not reached pre-2008 levels
  - COVID 19 impacts EU manufacturers
  - Global competition (Made in China 2025, Manufacturing USA)
  - Technological dependence: raw materials, supply chains
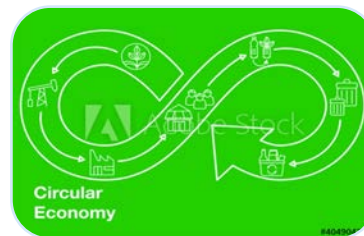 - Societal challenges: workforce aging, skills shortage, urbanization

GDP % Manufacturing

Industrial production (1 year)

-5.8   SEPT. 2020

Green, digital and flexible manufacturing

MADE IN EUROPE

DIGITALISATION & AUTOMATION

GREEN & CIRCULAR MANUFACTURING

BIO-BASED PRODUCTION

EU MANUFACTURING INDUSTRY

Gross Added Value	Employment	EU trade surplus
EUR 2076 billion	**30m jobs**	**EUR 421 billion**

Source: ESTAT 2019
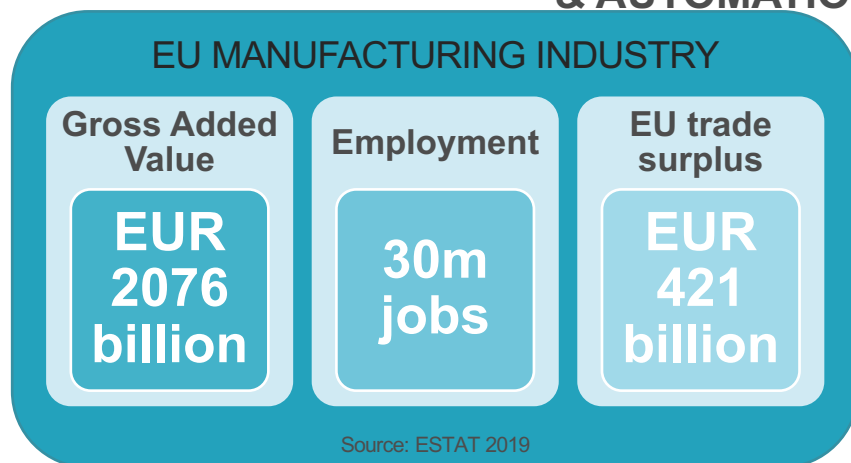
RESILIENT SUPPLY CHAIN & NEW BUSINESS MODELS

HUMAN-CENTER APPROACH

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Participants portal
Funding & tenders (europa.eu)

Information Days organised in Brussels in June (work programme for 2021 topics but calls are closed)
https://www.horizon-europe-infodays2021.eu

Information Days organised in Brussels – 30/11 and 1/12 to be confirmed (Work programme – topics 2022)

European Commission

Thank you
for your attention!

Jürgen Tiedje