



# Multifunctional Integration

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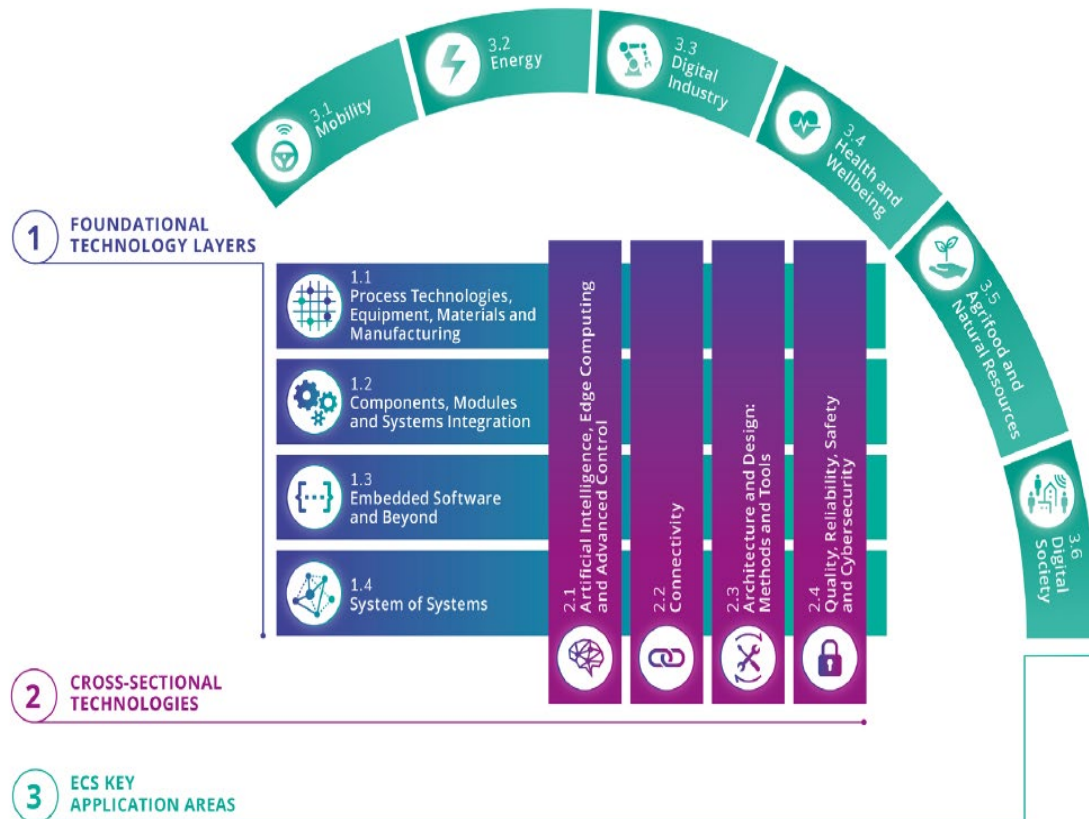
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*European Commission DG CONNECT*

KDT workshop 5

May 2021

# Key Digital Technologies – Extended Scope



- Photonics

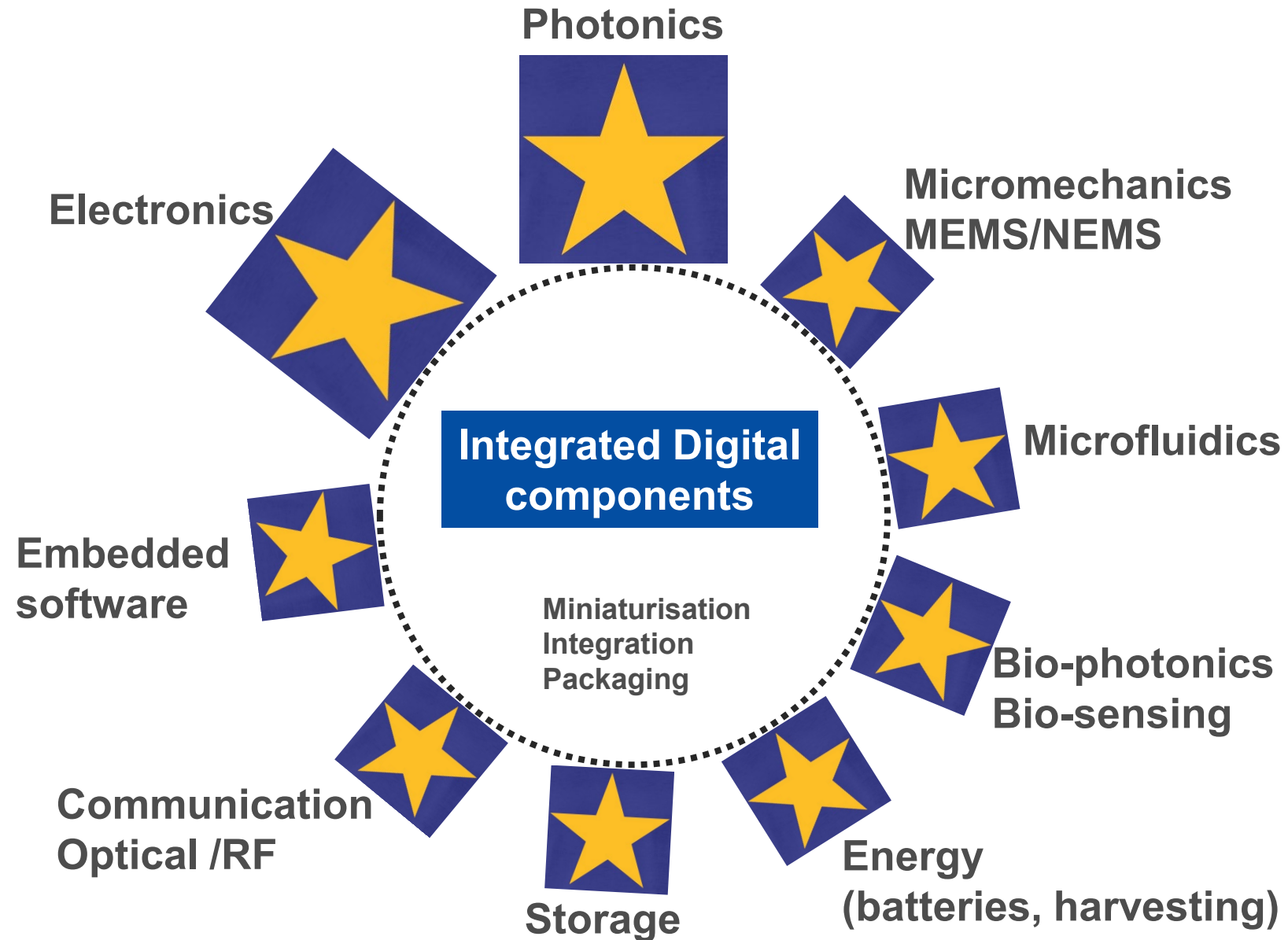
- Has been taken up in the ECS SRIA and appears at many occasions in many technology areas:

- Sensing, imaging, actuation
- Real-time, low-latency communications
- Manufacturing and integration processes incl. packaging
- Heterogeneous integration

- Flexible Electronics

- Displays, sensors

# Convergence - “*Integrated in Diversity*”



# Opportunities

- Sensing
- Components for communication (5G, micro wave, Thz)
- Electronic and Photonic co-integration - Silicon photonics
- Flexible Electronics
- Heterogeneous and Hybrid integration platforms

Driver: industrial applications

Cooperation with industry associations: Photonics21 and OE-A



# Horizon Europe - Cluster 4 - Digital, Industry and Space

## Destination

## Full name

## Topics include:

TWIN-TRANSITION

1. Climate neutral, circular and digitised **production**

Green, flexible, digital Manufacturing;  
Construction; Renewable resources, waste

RESILIENCE

2. A digitised, resource-efficient and **resilient industry**

Materials (raw, green, sustainable);  
Multi-functional materials, green electronic materials

DATA

3. World leading **data** and computing technologies

Data, platforms, Cloud to Edge computing,  
Internet infrastructures

DIGITAL-EMERGING

4. **Digital** and **emerging** technologies for competitiveness and fit for the green deal

Electronics, Photonics, low-power processors, AI,  
6G, Robotics, Quantum, Graphene

SPACE

5. Strategic autonomy in developing, deploying and using global **space**-based infrastructures, services, applications and data

Space, Satellite, Observation systems,  
space services

HUMAN

6. A **human**-centred and **ethical** development of digital and industrial technologies

Trustworthy AI, Ethics, Next Generation Internet,  
digital interaction, digital learning

# Electronics and Photonics – Topics in WP 21-22

HORIZON-CL4-2021-DIGITAL-EMERGING-01-01



Ultra-low-power, secure processors for edge computing (RIA)

HORIZON-CL4-2021-DIGITAL-EMERGING-01-05



Open Source Hardware for ultra-low-power, secure processors (CSA)

HORIZON-CL4-2021-DIGITAL-EMERGING-01-31



Functional electronics for green and circular economy (RIA)

HORIZON-CL4-2022-DIGITAL-EMERGING-01-26

Open source for cloud-based services (RIA)

HORIZON-CL4-2021-DIGITAL-EMERGING-01-06



Advanced optical communication components (IA)

HORIZON-CL4-2021-DIGITAL-EMERGING-01-07



Advanced Photonic Integrated Circuits (RIA)

HORIZON-CL4-2022-DIGITAL-EMERGING-01-03



Advanced multi-sensing systems (RIA)

# Considerations for KDT Work programme – multifunctional integration

- Explore opportunities through broader scope including photonics and flexible electronics
- Focus on technologies where industrial uptake is likely
- Develop technology platforms offering re-usable modules
- Take manufacturing aspects into account
- Further integration of SMEs and startups