

Commission proposal for **Horizon Europe**

THE NEXT EU RESEARCH & INNOVATION
PROGRAMME (2021 – 2027)

Cluster 4 ‘Digital, Industry and Space’

#HorizonEU

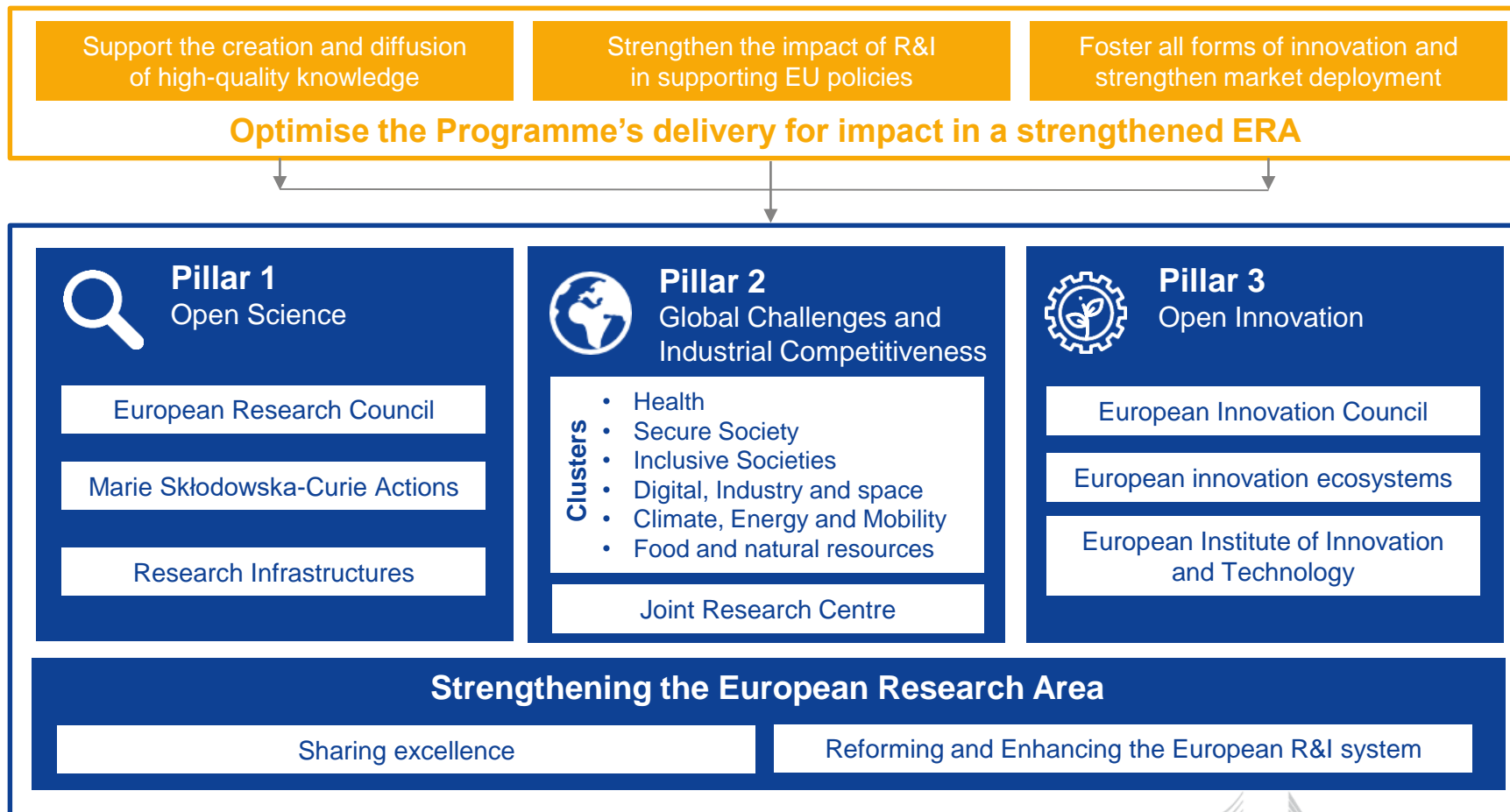
Carmine Marzano
Directorate ‘Prosperity’
DG Research & Innovation
European Commission



Horizon Europe: evolution not revolution

Budget proposed: ~€ 85.5 billion*

Specific objectives of the Programme



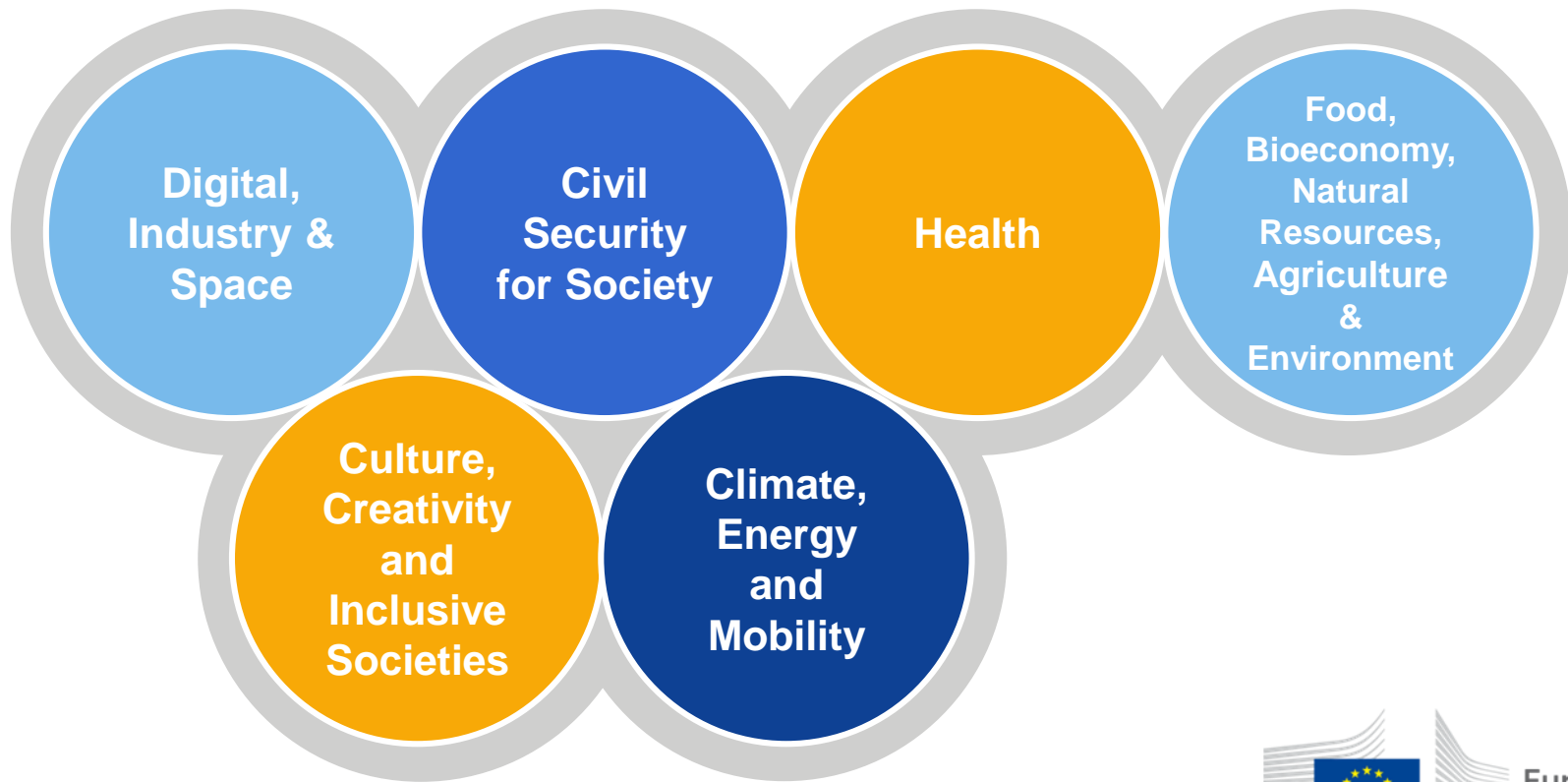
*Council position 29/09/2020

Pillar 2 - Clusters

Global Challenges & European Industrial

Competitiveness: boosting key technologies and solutions underpinning EU policies & Sustainable Development Goals

Commission proposal for budget: € 47.1 billion



Cluster 4 – Digital, Industry & Space Political Priorities



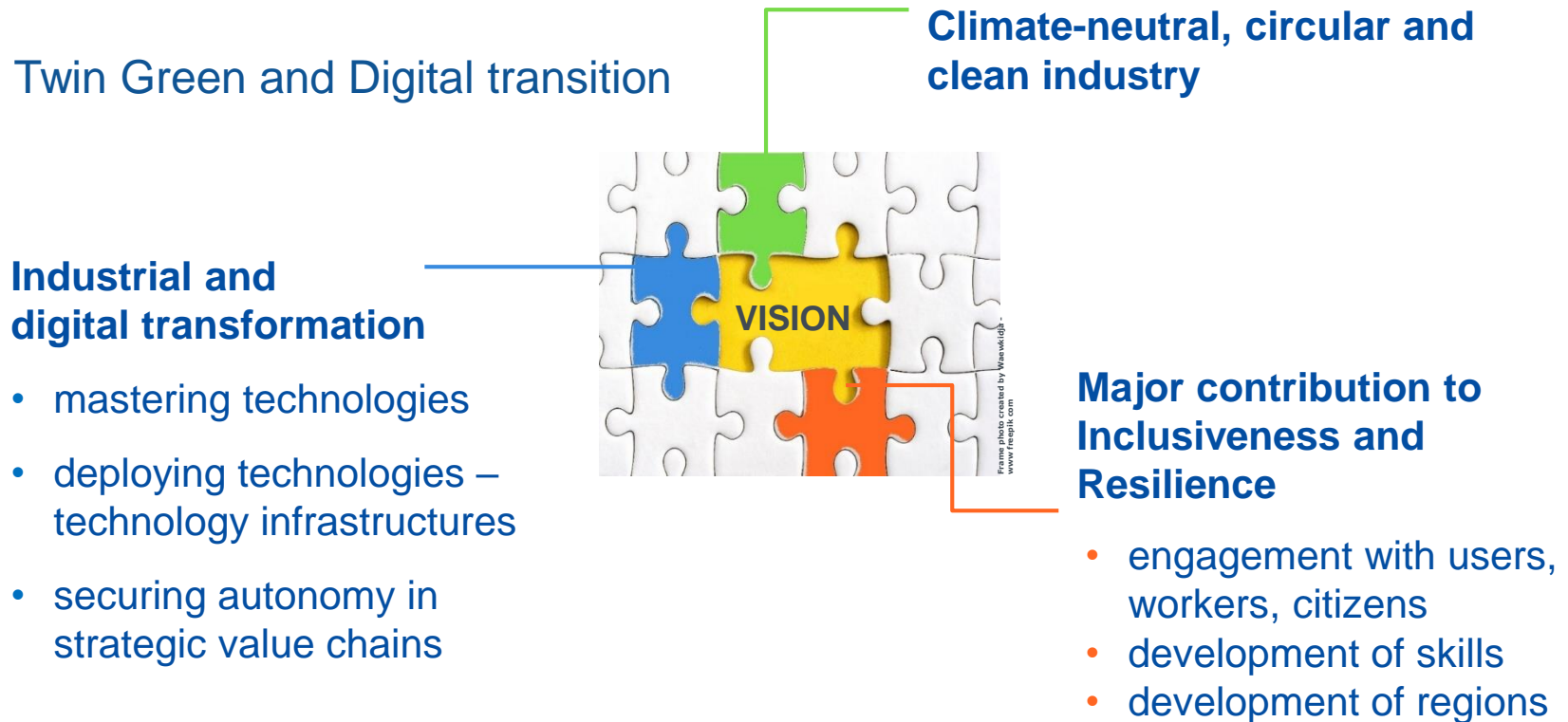
[European Space Strategy](#)

[Action Plan on critical raw materials](#)

Cluster 4 – Vision



Competitive technologies respecting the boundaries of our planet, and reflecting human needs





New approach to European Partnerships

New generation of objective-driven and more ambitious partnerships in support of agreed EU policy objectives

Key features

- Simple architecture and toolbox
- Coherent life-cycle approach
- Strategic orientation

Co-programmed

Based on Memoranda of Understanding / contractual arrangements; implemented independently by the partners and by Horizon Europe

Co-funded

Based on a joint programme agreed by partners; commitment of partners for financial and in-kind contributions & financial contribution by Horizon Europe

Institutionalised

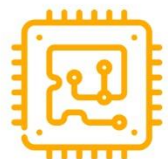
Based on long-term dimension and need for high integration; partnerships based on Articles 185 / 187 of TFEU and the EIT-Regulation supported by Horizon Europe

**Health
innovations**



**Sustainable
bio-based
solutions**

**Key digital
and enabling
technologies**



**Hydrogen
and
sustainable
energy
storage**

Metrology



**Clean,
connected
mobility**

**EU air
traffic,
aviation
and rail**



**Innovative
SMEs**

**Areas for
possible
Institutionalised
European
partnerships
(based on Article
185/7 TFEU)**



**European
Commission**

CLUSTER 4 Digital, Industry and Space: why combined in a cluster?

- **Digitisation, Key Enabling Technologies and Space** are major drivers and enablers for competitiveness and growth
- The Cluster will develop **technological and industrial capacities** for industrial competitiveness, European resilience and the means to address global challenges
- It will support the **twin green and digital transition**: a competitive digital, low-carbon and circular economy
- **European social and ethical values**, e.g. human element in manufacturing, sustainability, AI
- **Industry-oriented** but leveraging the contribution from all R&I players (Industry, academia, RTOs, etc.)

CLUSTER 4 Digital, Industry and Space: facts and figures

- EU industry provides 1 out of 5 jobs, 80% of EU exports, two thirds of private sector R&D.
- ICT sector: 5% of the EU economy, 25% of total business expenditure is ICT-related. Leading in next generation digital technologies is vital.
- The Circular Economy: 580,000 EU jobs and possibly € 600 billion in savings for EU businesses (8% of their annual turnover).
- Energy-intensive industries: 20% of global greenhouse gas emissions – Require new breakthrough technologies to meet climate action targets.
- The space sector: 230,000 EU jobs, ~ € 50 billion. Space technologies are key enablers.

Expected Impacts – Cluster 4



KEY STRATEGIC ORIENTATION	EXPECTED IMPACT
<p>Making Europe the first digitally led circular, climate-neutral and sustainable economy</p>	<p>Global leadership in clean and climate-neutral industrial value chains, circular economy and climate-neutral digital systems and infrastructures (networks, data centres), through innovative production and manufacturing processes and their digitisation, new business models, sustainable-by-design advanced materials and technologies enabling the switch to decarbonisation in all major emitting industrial sectors, including green digital technologies.</p>
<p>Promoting an open strategic autonomy by leading the development of key digital, and enabling and emerging technologies, sectors and value chains</p>	<p>Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials, achieved through breakthrough technologies in areas of industrial alliances, dynamic industrial innovation ecosystems and advanced solutions for substitution, resource and energy efficiency, effective reuse and recycling and clean primary production of raw materials, including critical raw materials.</p>
	<p>Sovereignty in digital technologies and in future emerging enabling technologies by strengthening European capacities in key parts of digital and future supply chains, allowing agile responses to urgent needs, and by investing in early discovery and industrial uptake of new technologies.</p>
	<p>Globally attractive, secure and dynamic data-agile economy by developing and enabling the uptake of the next-generation computing and data technologies and infrastructures (including space infrastructure and data), enabling the European single market for data with the corresponding data spaces and a trustworthy artificial intelligence ecosystem.</p>
<p>Creating a more resilient, inclusive and democratic European society</p>	<p>Strategic autonomy in developing, deploying and using global space-based infrastructures, services, applications and data, by reinforcing the EU's independent capacity to access space, and securing the autonomy of supply for critical technologies and equipment.</p>
	<p>A human-centred and ethical development of digital and industrial technologies, through a two-way engagement in the development of technologies, empowering end-users and workers, and supporting social innovation.</p>

Cluster 4 – Potential Partnerships

Digital Partnerships

SNS JU

KDT JU

HPC JU

AI, Data Robotics

Photonics

Green Partnerships

Process4Planet

Made in Europe

Clean Steel

Metrology

(cross-cutting)



3 New partnerships for Industry

- **Made in Europe - co-programmed European Partnership**
 - ✓ Wider set of stakeholders, incl. societal organisations
 - ✓ Relevant for cluster 4 (centre of gravity but also 5, 6 and 1)
 - ✓ Linked to Digitising industry, Robotics/AI, Electronics, Photonics, Internet of Things, Blockchain, Circular economy, Food, Transport
- **Climate Neutral and Circular Industry - co-programmed European Partnership**
 - ✓ Wider set of stakeholders, incl. materials' community, recycling industry and societal organisations
 - ✓ Relevant for cluster 4 (centre of gravity), but also 5 and 6
 - ✓ Linked to Raw Materials, Energy, Materials, Steel, Climate, Environment
- **Clean Steel Partnership – co-programmed European Partnership**
 - ✓ Breakthrough technologies required for high impact results are sectorial, particularly for steel.

Cluster 4 – Content

Main intervention areas:

- Advanced Manufacturing technologies
- Key digital technologies
- Emerging Enabling Technologies (e.g. Graphene)
- Advanced materials
- Artificial intelligence and robotics
- Next generation internet
- Advanced computing and big data
- Circular industries
- Low carbon and clean industries
- Space, including Earth observation

Potential ideas to be explored in Cluster 4 for 2021-22

- Circular by design manufacturing
- Electrification in industry
- AI-enhanced smart manufacturing
- Decarbonisation of industry (CO2 Utilisation and waste valorisation)
- Hubs 4 Circularity
- Robust, transparent, bias-free AI
- Trustworthy social networks
- Workforce skills for Industry 4.0

Conclusion

- *The preparation for HEU is advancing in parallel with the discussions on the MFF 2021-2027.*
- *HEU will provide strong momentum to R&I in Europe building on the success of Horizon 2020.*
- *Pillar II and Cluster 4 of HEU will have strong focus on Industry supporting major European Industry sector (Manufacturing, processing ,construction) providing momentum for the economic recovery.*
- *Partnerships will be major implementing instruments in Cluster 4 to realise the twin Green and Digital Transition.*
- *HEU will be instrumental for achieving the EU climate neutrality target and create a competitive Europe fit for the digital age.*



HORIZON 2020

**Thank you
for your attention!**

Find out more:

<http://ec.europa.eu/programmes/horizon2020/en/what-work-programme>

HORIZON 2020