Cluster 4 "Digital, Industry and Space" Focus: Digital Emerging Technologies

Diego Coglitore
NCP HE Cluster 4
APRE- Agency for the Promotion of European Research

APRE for all

APRE is a non-profit association.

APRE **serves the public** offering free-of-charge assistance to all actors of the Italian R&I system.

MISSION

Supporting and promoting the **Italian participation in the EU Framework Programmes** for Research and Innovation *through*

- **Information**
- **Training**
- **Assistance**

A NETWORK OF OPPORTUNITIES

APRE works to increase opportunities for collaboration between:

- Researchers and research organizations

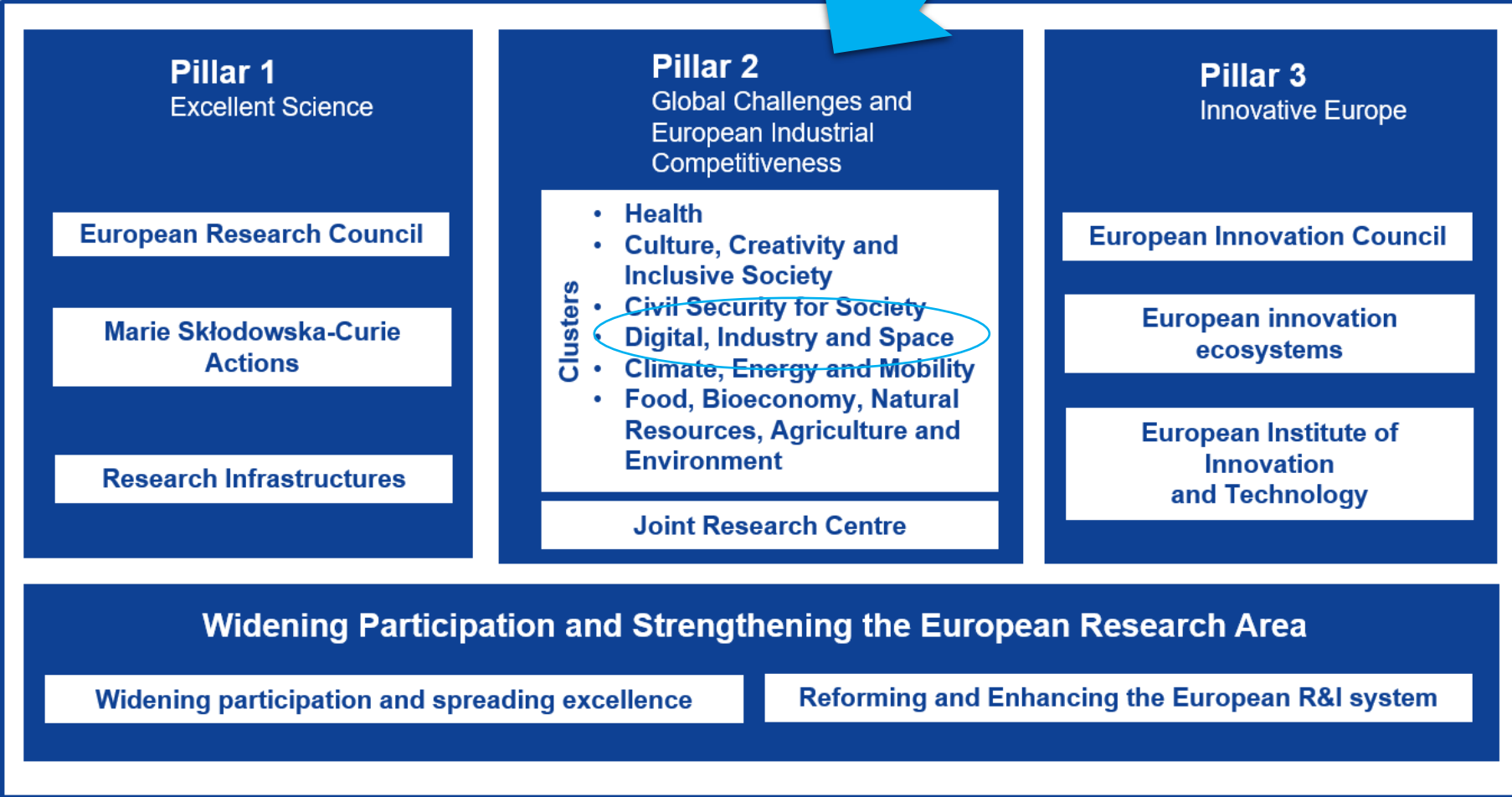- Italian innovators

- National institutions

- European partners

- Non-European partners

- Associated and non-Associated Countries to the Framework Programme

Digital, Industry and Space

CLUSTER 4 – AREAS OF INTERVENTION

DIGITAL	INDUSTRY	SPACE
Key Digital Technologies	Manufacturing	A globally competitive Space sector
AI and Robotics	Advanced materials	
NGI	Circular industry	New services from Space
Advanced Computing and Big Data	Low carbon and clean industry	

Emerging enabling technologies: Graphene, Quantum Technologies, spintronics, smart materials

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European Commission

Complementary opportunities: EU PARTNERSHIP | Why?

Tool used to delegate a portion of the implementation of the Framework Program.

- Contribute to the achievement of EU political priorities.

- Align sectoral priorities at the European level.

- Overcome fragmentation in the R&I landscape and avoid duplication of efforts.

- Achieve a critical mass of investments (important in Higher Education).

- Create European networks (self-sustaining in the long term).

STRENGTHEN THE EUROPEAN RESEARCH AREA

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Overview of 49 European Partnerships

HORIZON EUROPE PILLAR II - Global challenges & European industrial competitiveness

CLUSTER 1: Health	CLUSTER 4: Digital, Industry & Space	CLUSTER 5: Climate, Energy & Mobility	CLUSTER 6: Food, Bioeconomy, Agriculture, …
Innovative Health Initiative	Chips JU	Clean Hydrogen	Circular Bio-based Europe
Global Health Partnership	Smart Networks & Services	Clean Aviation	Rescuing Biodiversity to Safeguard Life on Earth
Transformation of health systems	High Performance Computing	Single European Sky ATM Research 3	Climate Neutral, Sustainable & Productive Blue Economy
Chemicals risk assessment	European Metrology (Art. 185)	Europe's Rail	
ERA for Health	AI-Data-Robotics	Connected and Automated Mobility (CCAM)	Water4All
Rare diseases*	Photonics	Batteries	Animal Health & Welfare*
One-Health Anti Microbial Resistance*	Made in Europe	Zero-emission waterborne transport	Accelerating Farming Systems Transitions*
Personalised Medicine*	Clean steel – low-carbon steelmaking	Zero-emission road transport	Agriculture of Data*
Pandemic Preparedness* *Co-funded or co-programmed*	Processes4Planet	Built4People	Safe & Sustainable Food System*
	Global competitive space systems**	Clean Energy Transition	
		Driving Urban Transitions	

■ Institutionalised Partnerships (Art 185/7)
■ Institutionalised Partnerships / EIT KICs
■ Co-Programmed
■ Co-Funded

*　Calls with opening dates in 2023-24
**　Calls with opening dates not before 2022

European Commission

⊓ **CO-PROGRAMMED EUROPEAN PARTNERSHIPS**

- **Innovative Materials for EU**

- **Virtual Worlds**

- Solar Photovoltaics

- Textiles of the Future

⊓ **CO-FUNDED EUROPEAN PARTNERSHIPS**

- Resilient Cultural Heritage

- Social Transformations and Resilience

- Brain Health

- Forests and Forestry for a Sustainable Future

- Raw Materials for the Green and Digital Transition

Cluster 4 Complementarities - SNS JU

(Art.187, Public-Private)

The European partnership of Horizon Europe, Smart Networks and Services (SNS), is a public-private partnership aimed at ensuring European industrial leadership in 5G and 6G networks and services. It has a budget of 900 million euros for the period 2021-2027.

The SNS partnership focuses on two main missions:

- Developing European technological sovereignty in 6G by implementing the corresponding research and innovation (R&I) program and achieving standardization and conception around 2025.
- Promoting the deployment of 5G in Europe to develop leading digital markets and enable the digital and green transition of the economy and society.

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Cluster 4 Complementarities - EuroHPC JU

Numbers indicate the amount of petaflops available.
Source data: EuroHPC JU

(Art.187, Public-Private)
The European EuroHPC (high-performance computing) partnership is a joint initiative among the EU, member countries, and private partners to develop a world-class high-performance computing ecosystem in Europe. The EuroHPC Joint Undertaking was refinanced (public-private joint funding) in 2021 with a budget of approximately 7 billion euros for the period 2021-2027.
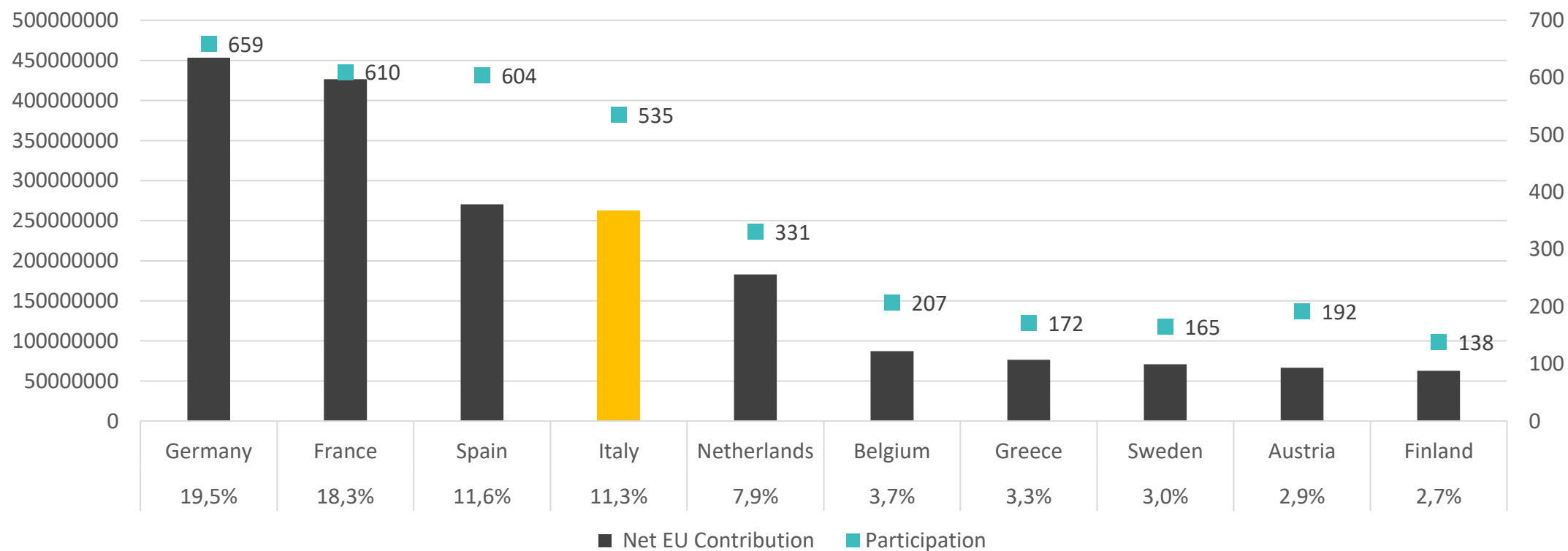
The goal of the EuroHPC Joint Undertaking is to:

- Provide European researchers and innovators with access to world-class high-performance computing resources.
- Promote research and innovation in the field of high-performance computing.
- Develop Europe's technological autonomy in the field of high-performance computing.

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Cluster di riferimento	Partnership	Progetti finanziati	€ Contributo EU assegnato	2021	2022
Cluster 1 Health	**EDCTP - Global Health Partnership**	206	103.040.624 €		HORIZON-JU-EDCTP3-2022-GH-Africa-IBA, HORIZON-JU-GH-EDCTP3-2022-01
	IHI - Innovative Health Initiative	131	84.662.768 €		HORIZON-JU-IHI-2022-01-single-stage, HORIZON-JU-IHI-2022-03-single-stage
Cluster4 Digital, Industry and Space	**HPC-High Performance Computing**	134	39.907.625 €	HORIZON-EUROHPC-JU-2021-COE-01	HORIZON-EUROHPC-JU-2022-ALG-02
	KDT - Key Digital Technologies	1217	345.801.421 €	HORIZON-KDT-JU-2021-1-IA, HORIZON-KDT-JU-2021-2-RIA, HORIZON-KDT-JU-2021-3-CSA	HORIZON-KDT-JU-2022-1-IA, HORIZON-KDT-JU-2022-1-IA, HORIZON-KDT-JU-2023-3-CSA-IA
	SNS - Smart Networks & Services	534	239.465.051 €		HORIZON-JU-SNS-2022
Cluster 5 Climate, Energy and Mobility	**Clean Aviation**	493	653.916.000 €		HORIZON-JU-Clean-Aviation-2022-01
	CLEANH2 - Clean Hydrogen	594	322.549.847 €		HORIZON-JTI-CLEANH2-2022-1, HORIZON-JTI-CLEANH2-2022-2
	ER - Europe's Rail	547	243.907.308 €		HORIZON-ER-JU-2022-01, HORIZON-ER-JU-2022-02
	SESAR - Single European Sky ATM Research 3	640	179.313.606 €		HORIZON-SESAR-2022-DES-ER-01, HORIZON-SESAR-2022-DES-IR-01
Cluster 6 Food, Bioeconomy Natural Resources, Agriculture and Environment	**CBE - Circular bio-based Europe**	293	116.257.141 €		HORIZON-JU-CBE-2022

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National Performance | *Participation*

	Germany	France	Spain	Italy	Netherlands	Belgium	Greece	Sweden	Austria	Finland
Participation	659	610	604	535	331	207	172	165	192	138
%	19,5%	18,3%	11,6%	11,3%	7,9%	3,7%	3,3%	3,0%	2,9%	2,7%

Net EU Contribution   Participation
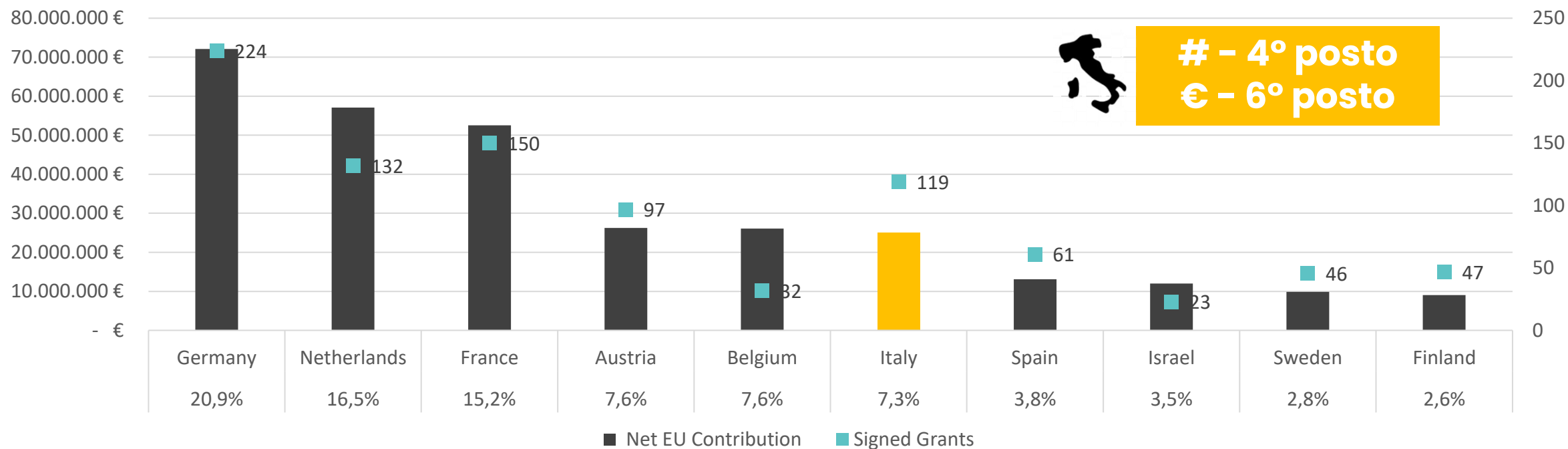
4° posto

€ 4° posto

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Results – Participation

Cluster di riferimento	Partnership	Italia # Progetti finanziati	Italia # € Contributo EU assegnato	Italia # % Rientro	Italia € % Rientro
Cluster 1 Health	EDCTP - Global Health Partnership	2	2.130.150 €	1,0%	2,1%
	IHI - Innovative Health Initiative	4	2.480.234 €	3,1%	2,9%
Cluster4 Digital, Industry and Space	HPC-High Performance Computing	23	4.820.323 €	**17,2%**	**12,1%**
	KDT - Key Digital Technologies	119	25.108.473 €	9,8%	7,3%
	SNS - Smart Networks & Services	60	26.671.497 €	11,2%	11,1%
Cluster 5 Climate, Energy and Mobility	Clean Aviation	61	80.935.805 €	**12,4%**	**12,4%**
	CLEANH2 - Clean Hydrogen	84	44.537.332 €	**14,1%**	**13,8%**
	ER - Europe's Rail	62	41.840.724 €	**11,3%**	**17,2%**
	SESAR - Single European Sky ATM Research 3	87	25.300.207 €	**13,6%**	**14,1%**
Cluster 6 Food, Bioeconomy Natural Resources, Agriculture and Environment	CBE - Circular bio-based Europe	33	8.898.713 €	11,3%	7,7%

Rientro medio IT EP: #11,2%, €11,3%

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KEY DIGITAL TECHNOLOGIES

 # - 4° posto
€ - 6° posto

Tipologia	Signed Grants	Net EU Contribution	% tipologia sul totale #	% tipologia sul totale €
HES	43	9.412.287 €	36,1%	37,5%
PRC	70	14.615.682 €	58,8%	58,2%
REC	6	1.080.503 €	5,0%	4,3%
Totale complessivo	**119**	**25.108.473 €**		

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What will happen in 2025-2027
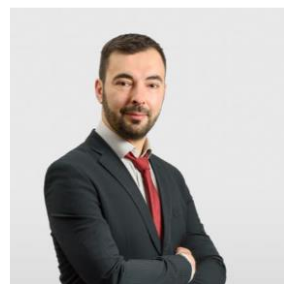
R&I projects in CLUSTER4 to:

- **Achieve open strategic autonomy in digital and emerging enabling technologies**
  - strengthen processes undertaken at critical stages in **the semiconductor and quantum chips value chain**, including chip design and manufacturing technologies, and
  - address **the use of new materials and green technologies**, energy efficiency and the integration of circularity and life-cycle assessment.
  - future needs in microelectronics (such as performance, size, cost, energy efficiency, environmental impact, new materials, concepts, architectures, integration) to make **sure Europe's microelectronics industry remains competitive**.
  - **Cluster 4** will also push for **chip-level integration of photonics and optoelectronics**

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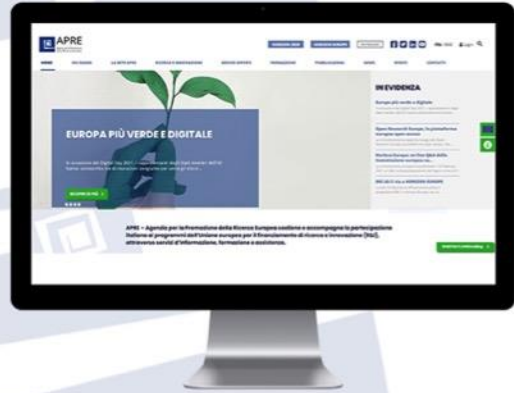Valentina Fioroni
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APRE.IT: a gateway to better guide the National community in exploring the Framework Programmes for Research and Innovation.