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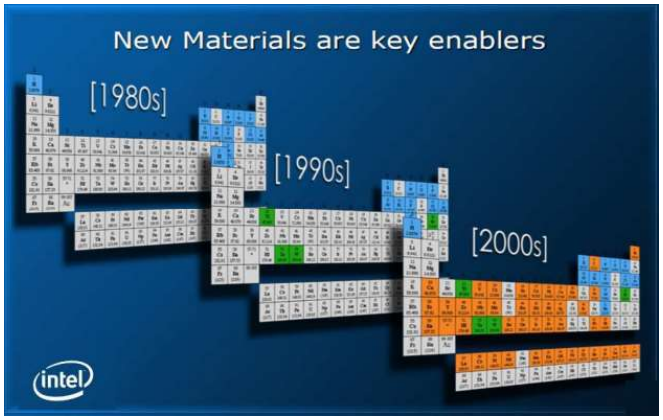
European **ECO**system for gree**N** **E**lectronics

Impact of electronic industry on mineral resources

- A **greater number** of elements used over the years



1980's 1990's 2000's

Source: Intel

- Comparison of estimated elementary material resources and expected consumption: a new **sustainable approach** is required

Hypothesis	Cobalt	Nickel	Copper	Lithium
2022 consumption (kton)	**170**	**2 700**	**21 000**	**100**
2022 estimated ressources	**7 600**	**95 000**	**880 000**	**22 000**
2030 needs (x times vs. 2022)	5.0	1.2	1.3	18
2050 needs (x times vs. 2022)	14	5.0	2.3	58

Sources:
(Top Left) Tilmann Vahle (Systemiq) et al., Critical Raw Materials for the energy transition in the EU, Oct. 2022 (www.systemiq.earth)
(Top Right) Bobba, S et al, Critical Raw Materials for Strategic Technologies and Sectors in the EU A Foresight Study, 2020 (rmis.jrc.ec.europa.eu)

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Current situation is not sustainable

“62 million tons of electronic waste has been generated in 2022 —almost 6702x Eiffel tower.”

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European ECOsystem for greeN Electronics

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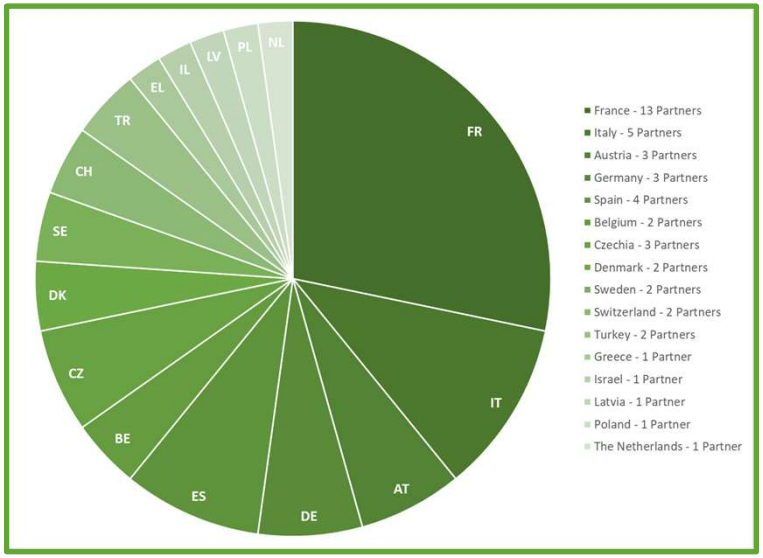
Who we are and what we do

Create an effective European ecosystem for sustainable electronics

16 countries



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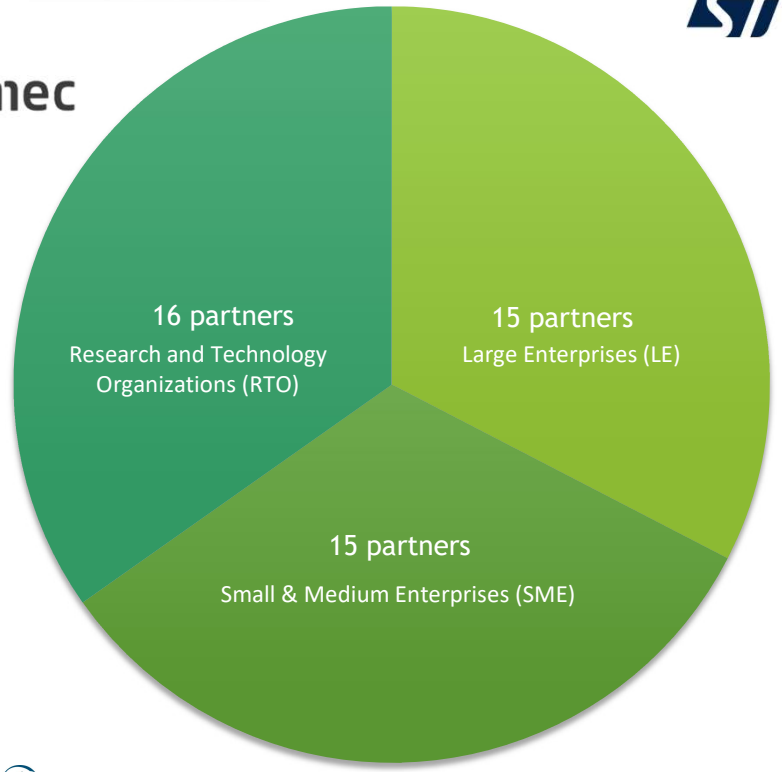
48 partners



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EECONE – WPs

WP 1
Governance (project management)

WP2
Management of existing electronic waste

More metal recycling
Better recovery

WP 5
Building an ecosystem

- KPI
- Standards and regulations
- Economic transformation
- Pedagogy, education, dissemination of knowledge
- Database of key players ("Green ECS DB")
- Link and synergies with other initiatives

ECS = Electronic Components & Systems

WP3
« Green ECS by design »
Tools & techniques

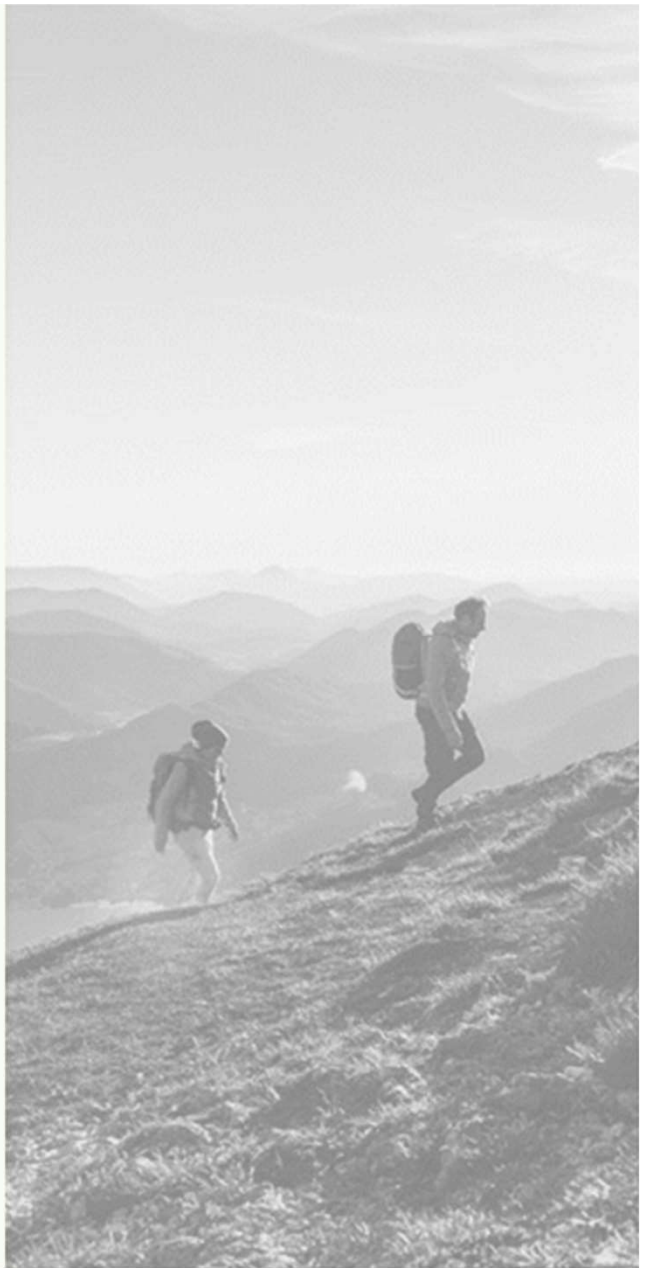
Design/LCA tooling integrating environmental aspects across the entire value chain.

co-governance 3DS & CEA

WP4
New generation of electronics with low environmental impact

Increase in the lifespan of green electronics Easier recycling Supply chain

WP lead



Our ambition: 6R

1. **R**educe the use of materials
2. **R**eliable products
3. **R**euse materials
4. **R**epair electronic devices
5. **R**efurbish
6. **R**ecycle

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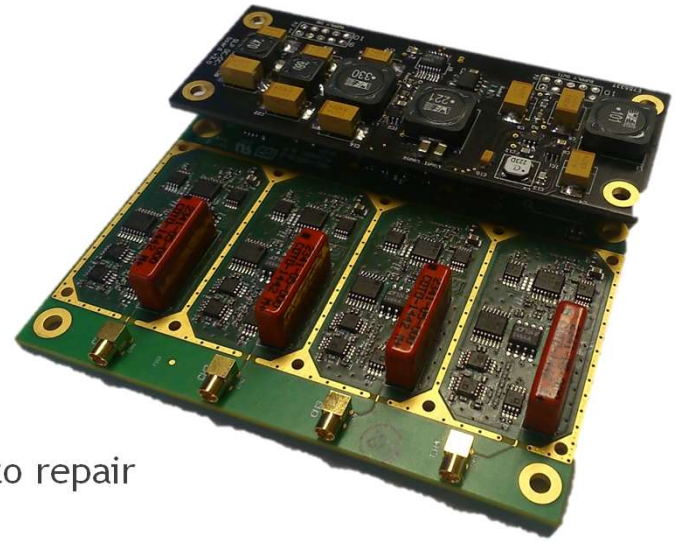
Concrete Actions for PCBs

- Printing Processes
  - Environmentally friendly substrates.
  - Carbon-based conductive inks using sustainable materials.
  - Thinner PCB
- Reliability and Lifetime Extension
  - Modular PCB design for extended lifespan.
  - Envisioning repair/replacement (Orbotech, IFAG, AT&S, INP).
  - Fewer components for area/cost optimization.
  - Diagnosing malfunctions at the board level with the capability to repair shorts and disconnections for fine lines (Orbotech).



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Concrete Actions for PCBs

- Repair
  - Components with desoldering and resoldering features for replacement (Bosch).
  - Reassemble and de-assemble PCBs (Bosch).
  - Material reduction solutions by using thinner PCBs (Bosch, AT&S).
- Reuse
  - Discarded substrates from electronic recycling suppliers.
- Innovation and Research
  - Low carbon footprint manufacturing.
  - Design for reliability and predictive technologies.
  - New semiconductor substrate technology to reduce carbon footprint by 70% (SmartSiC™ by Soitec).

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Use cases

- 10 « Green » use cases have been developed, which serve as real-world applications of our sustainable principles.
- These use cases are practical examples that demonstrate the effectiveness and benefits of our eco-friendly approaches.

Automotive | **Consumer electronics** | **Health** | **ICT** | **Aeronautics** | **Agriculture**






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ST’s Sustainability goals

- Be carbon neutral by 2027.
- Adopt 100% renewable energy sources by 2027.
- Reduce energy consumption per wafer by 20% in 2025 vs 2016.
- Recycle at least 50% of the water used each year.
- Reuse or recycle 95% of our waste by 2025.

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Conclusion

Europe has the assets to become industrial leaders in the electronics and semiconductor markets of the future while having a low environmental impact. EECONE will contribute by:

- Providing innovative and circular products
- Strengthening sustainable semiconductor technologies
- Promoting knowledge sharing

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