

Green ICT White Paper



Goal

To articulate a shared European vision for Green ICT, grounded in state-of-the-art research and best practices, and to present a practical framework that serves as a blueprint for designing, developing, and governing sustainable digital systems in Europe. With the option of using it as a recommendation for the EU.

Sections

- 1.Introduction
- 2.A Framework for Green Accountability
 - 2.1.Green metrics
 - 2.2.Measuring and Carbon Emissions
 - 2.3.Programming Languages and framework choices
 - 2.4.AI and Machine Learning
 - 2.5.The Role of Clouds and Data Centers
 - 2.6. The Framework
3. Related Works
- 4.Threats to validity
 - 4.1.Virtualization and containerization
 - 4.2.Precise accounting
 - 4.3. Green-washing
5. Recommendation

Status

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2.A Framework for Green Accountability

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5. Recommendation

What Do We Mean by 'Framework'?

- A structured model connecting principles, methods, and measurable actions for sustainable ICT systems.
- It provides:
 1. A common language for researchers, policymakers, and industry.
 2. A reference structure to guide design, implementation, and evaluation.
 3. A basis for standards and certification.

PRINCIPLES

Conceptual
Layer

Lifecycle
Management

Data Minimalism

Transparency/
Traceability

Circular ICT
Economy

Resource
efficiency

DOMAINS

Structural
Layer

Governance
standards/
incentives

Data (transfer/
storage)

Software e-
aware design

Infrastructure
(cloud/edge)

ACTIONS

Operational
Layer

Sustainable
Data and SW
Lifecycle

Design Principles

Energy and
carbon Metrics

Governance

Certification and
Benchmarking

Synergy with
Governmental
Initiatives and
Regulations

Policies definition
and monitoring

Next Steps

Discussion