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Greener Future Digital Research Infrastructures (GREENDIGIT)

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ETSI and ITU Symposium on ICT Sustainability: Standards Driving Environmental Innovation

cniit



GreenDigit

The project

GreenDIGIT at glance

- Call: HORIZON-INFRA-2023-TECH-01
- Type of Action: HORIZON-RIA
- Budget: about 5 Million Euro
- 15 participants from 10 countries
- Start: 1 March 2024
- End: 28 February 2027



greendigit-project.eu



Coordinator

UNIVERSITY
OF AMSTERDAM



HUN
REN



EBRAINS

cesnet



Greenspector



CNR



CSIC

CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

MANDAT
INTERNATIONAL



SORBONNE
UNIVERSITÉ

cnit

Main topic



Reducing the environmental impact of **Research Infrastructures(RIs)** from the generic conceptual point of view by addressing all significant factors that define and influence the RI environmental and climate impact.



Four European Research Infrastructure (ESFRI-European Strategy Forum on Research Infrastructures) are directly involved in the project:



Open Ecosystem for Research and Innovation and Advanced Computing Services for Research.



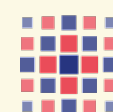
EBRAINS

A digital research infrastructure for brain science and brain-inspired technology.



slices RI

A distributed Research Infrastructure to support large-scale experimental research on Digital Technologies.



SOBIDATA

RESEARCH INFRASTRUCTURE

Pan-European Research Infrastructure aimed at social mining and Big Data to understand the complexity of our interconnected society

Specific objectives

- 
- An orange arrow pointing to the right, highlighting the first two objectives.
- **O1: Assess status and trends** to produce **recommendations and roadmaps** for providers during and beyond the project.
 - **O2: Provide reference architecture and design principles** and an actionable model for RIs about environmental impact assessment and monitoring, reflecting on the **whole RI lifecycle**.
 - **O3: Develop and validate new and innovative technologies, methods, and tools** to reduce Ris's energy consumption and overall environmental impact.
 - **O4: Develop and provide researchers with technical tools** that assist them in the design, execution, and sharing of environmental impact-aware digital applications with reproducibility.
 - **O5: Educate and support digital service providers and researchers** in the RI communities about good practices on environmental impact-conscious lifecycle management and operation of infrastructures and services.

01 - Assess status and trends: A survey

- GreenDIGIT conducted a survey to assess the status and to capture good practices in the low environmental covering, which has been resumed in the *deliverable named RIs Landscape review, best practices analysis, and identification of needs within the ESFRI RIs*.
- Several questions were included in the survey, which covers the subjects of addressing environmental sustainability and lowering impact within each RI by including:

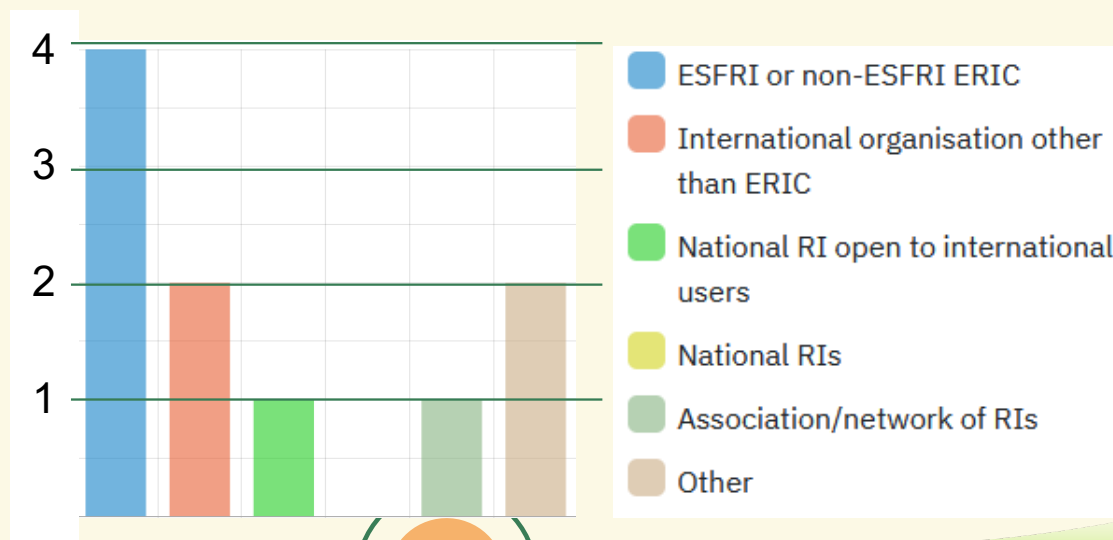
Energy
Efficiency

Impact of Digital
Technologies

Renewable
Energy Use

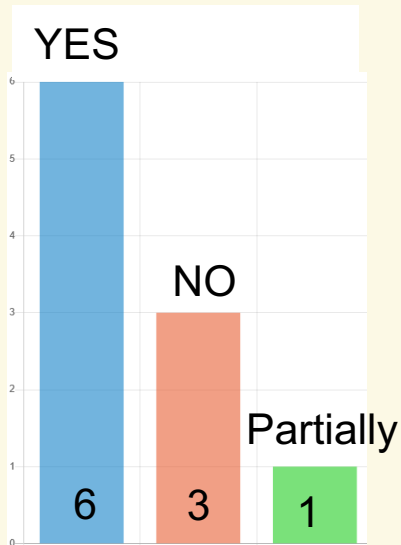
Waste Heat
Recovery

10 PARTICIPANT RIs

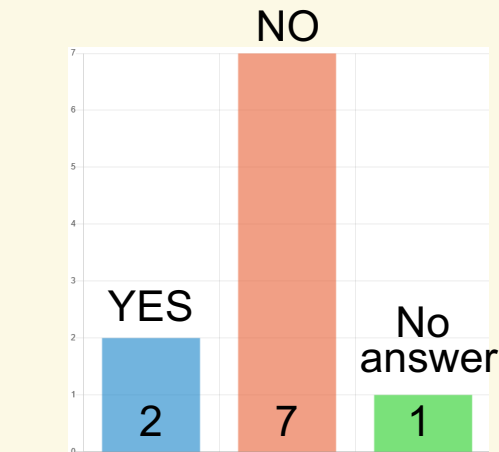


- CERN
- CLARIN
- ELI-BEAMS
- GÉANT.
- Switch Cloud
- University of Freiburg Compute Center

01 - Assess status and trends: A survey



**Energy
consumption
tracking**



Energy efficiency policies

What standards do you identify as relevant?

- ISO 9001, ISO 27001
- ISO/IEC 50001
- Tier data center standards
- Uptime Institute Tier Operation;
- EU directives and good practices

Utilization of renewable energy sources

- 50% already use them,
- while 80% are also exploring additional opportunities to increase the usage.



Waste Heat Recovery

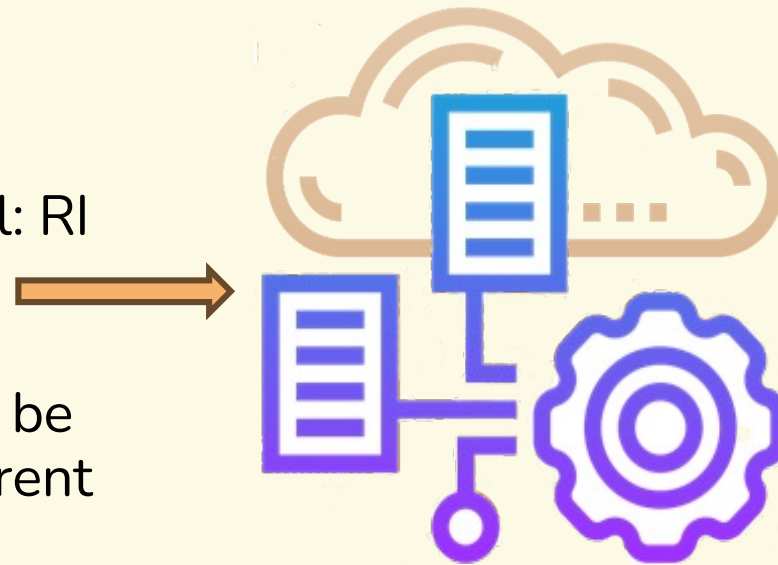
- 70% is aware
- Moreover:
- 30% reuse
 - 20% are in a state of initial evaluation
 - 50% does not consider any reuse



GreenDIGIT Architecture Definition Methodology

- Sustainable architecture design principles
 - As a basis for modeling and metrics for RI infrastructure operation and optimization
 - Shared Responsibility Model: RI provider/operator and Researchers/Projects
 - Sustainability by design – to be introduced, addressing different aspects and stages

Users responsible for sustainability **on** the RI



Providers responsible for the sustainability **of** the RI



Thank you!

Any questions ?
