



XIII JORNADA DE JÓVENES INVESTIGADORES/AS DEL I3A

SHIFTING TECHNIQUES AND MULTI-PLATFORM SERVICES FOR CARBON EFFICIENCY

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The impact of IT on climate change is growing rapidly. We aim to develop a data model to support the evaluation of the carbon footprint of digital services, along with a visualization tool to inform users.

Besides, we intend to propose new services to reduce carbon emissions when computing workload, adapting the moment, the location or the volume of processing.

Context

Adapted from "ACM TechBrief: Computing and Climate Change" (2021)

2031	approximate year when the +1.5°C threshold will be reached
1.8-3.9%	global carbon emissions attributable to the ICT sector
45%	reduction of the ICT sector by 2030 proposed by ITU standards
2050	year by which the European Commission has committed to net zero carbon emissions
35%	of global carbon emissions will come from the ICT sector in 2050 with stable global carbon emission

RQ1

How can we evaluate carbon emissions of digital services?

- Collect data on energy-related metrics
- Forecast usage and metrics
- Provide a data model to be used for relevant deployment techniques

RQ2

How can we apply shifting techniques to reduce carbon emissions?

- Bring instances or data closer to the computer
- Combine efficiency and sufficiency to anticipate the rebound effect
- Adapt the deployment of services to the renewable energies available

RQ3

How can we communicate info about the carbon footprint of digital services and involve people?

- Provide feedback to the user using understandable metrics
- Explain what needs to be done to reduce the user's impact
- Involve the user by giving him/her the opportunity to deploy a service differently

CONCLUSION

Carbon emissions from the ICT sector are a major issue to address. Our proposal is for all stakeholders in the ICT sector to adopt a net-zero target and implement a strategy to decrease emissions annually. To achieve this, we are developing a tool to evaluate the carbon footprint of digital services and to recommend additional methods to face this issue.

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