

## Fully Charged: Characterizing the Data Requirements of Services and Apps to Optimize the Use of Energy

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### Motivation

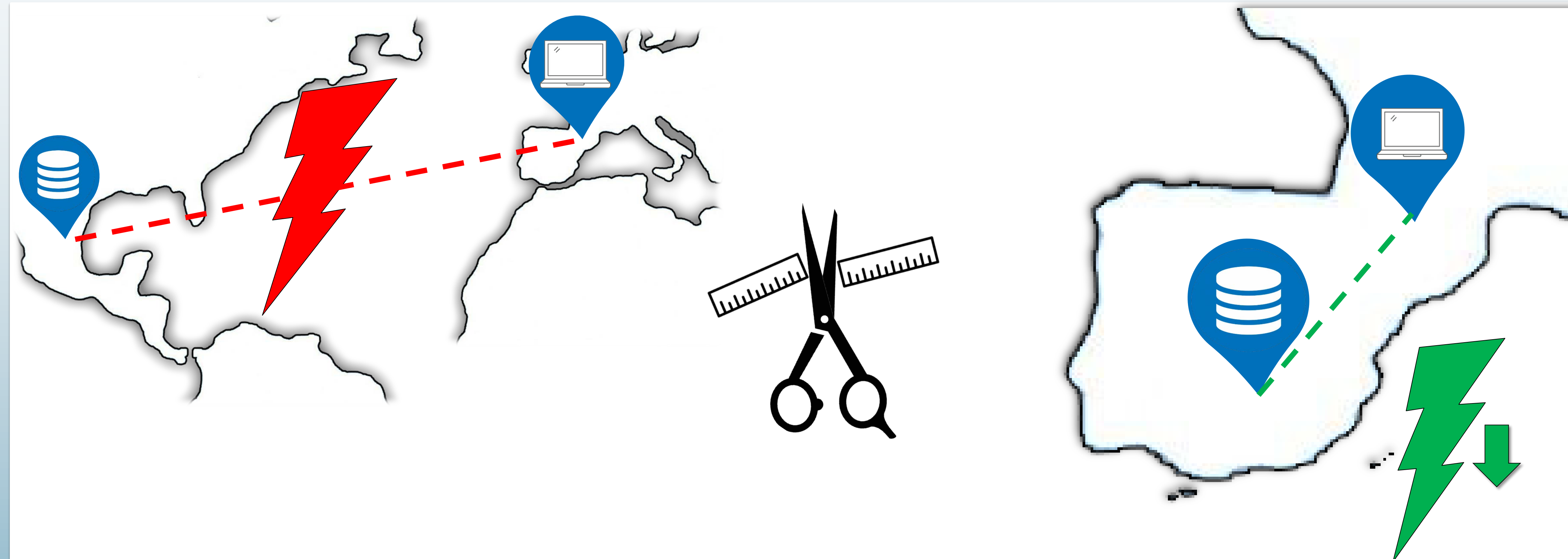
- A. Heterogeneous devices present different energy consumptions
- B. Software hosted on devices consumes energy differently
- C. Data exchange between devices has a high energy consumption

### Apps and data (re-)deployment for global energy savings

Energy consumption differs according to the type of application (Multimedia Streaming/Scientific Computation, Office, etc.).

- A taxonomy based on app architecture helps to provide suitable deployment according to application type

**Our objective :** Provide a taxonomy of applications, identify a function to model main energy consumption and finally provide contextual algorithms in order to (re-)deploy apps and save global energy by, for example, reducing the distance between the data and processes.



Reduce the gap between the data and the process to save global energy

### References

Hindle , A., 2016. Green Software Engineering : The Curse of Methodology . 2016 IEEE 23rd International Conference on Software Analysis, Evolution, and Reengineering (SANER). S.l.: s.n., pp. 46-55. DOI 10.1109/SANER.2016.60.

Peltonen , E., Lagerspetz , E., Nurmi , P. y Tarkoma , S., 2015. Energy modeling of system settings : A crowdsourced approach . 2015 IEEE International Conference on Pervasive Computing and Communications (PerCom ). S.l.: s.n., pp. 37-45. DOI 10.1109/PERCOM.2015.7146507.

Schien , D., Preist , C., Yearworth , M. y Shabajee , P., 2012. Impact of location on the energy footprint of digital media . 2012 IEEE International Symposium on Sustainable Systems and Technology (ISSST) S.l.: s.n., pp. 1-6. DOI 10.1109/ISSST.2012.6228017.

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