University of Glasgow

Introduction to Green DiSC

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SOFTWARE SUSTAINABILITY INSTITUTE

GreenDiSC

MVLS ECO GROUP

MVLS SHARED RESEARCH FACILITIES

Introduction to Green DiSC

Motivation

- *"In the UK, UKRI released last year its roadmap for Net-Zero Digital Infrastructure and more recently, major funders and universities joined the Concordat for the Environmental Sustainability of Research and Innovation Practice. It is now key to give research groups and institutions a framework to achieve these ambitions."*

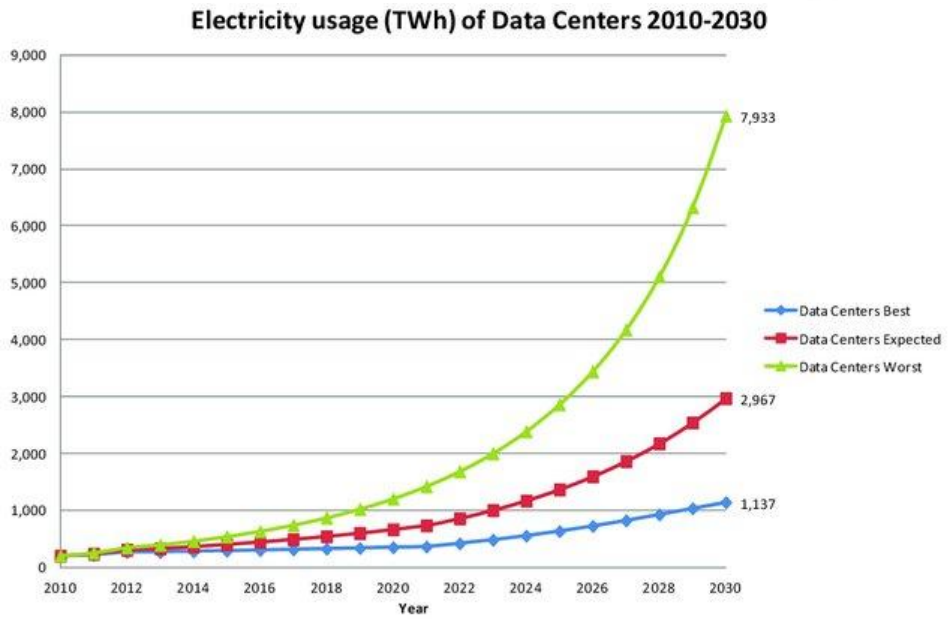
- https://www.software.ac.uk/GreenDiSC

- Funders (e.g. Wellcome, CRUK) now requiring LEAF certification to demonstrate wet-lab sustainability*. Can expect the same for dry-labs in future.

- Research data - often abandoned post-publication - contributes to exponential energy usage of **data centres**

- Preponderance of AI / machine learning technology in research –> heavy **computational resource** use = more electricity consumed.

- With ongoing **climate emergency**, drastic action is needed.



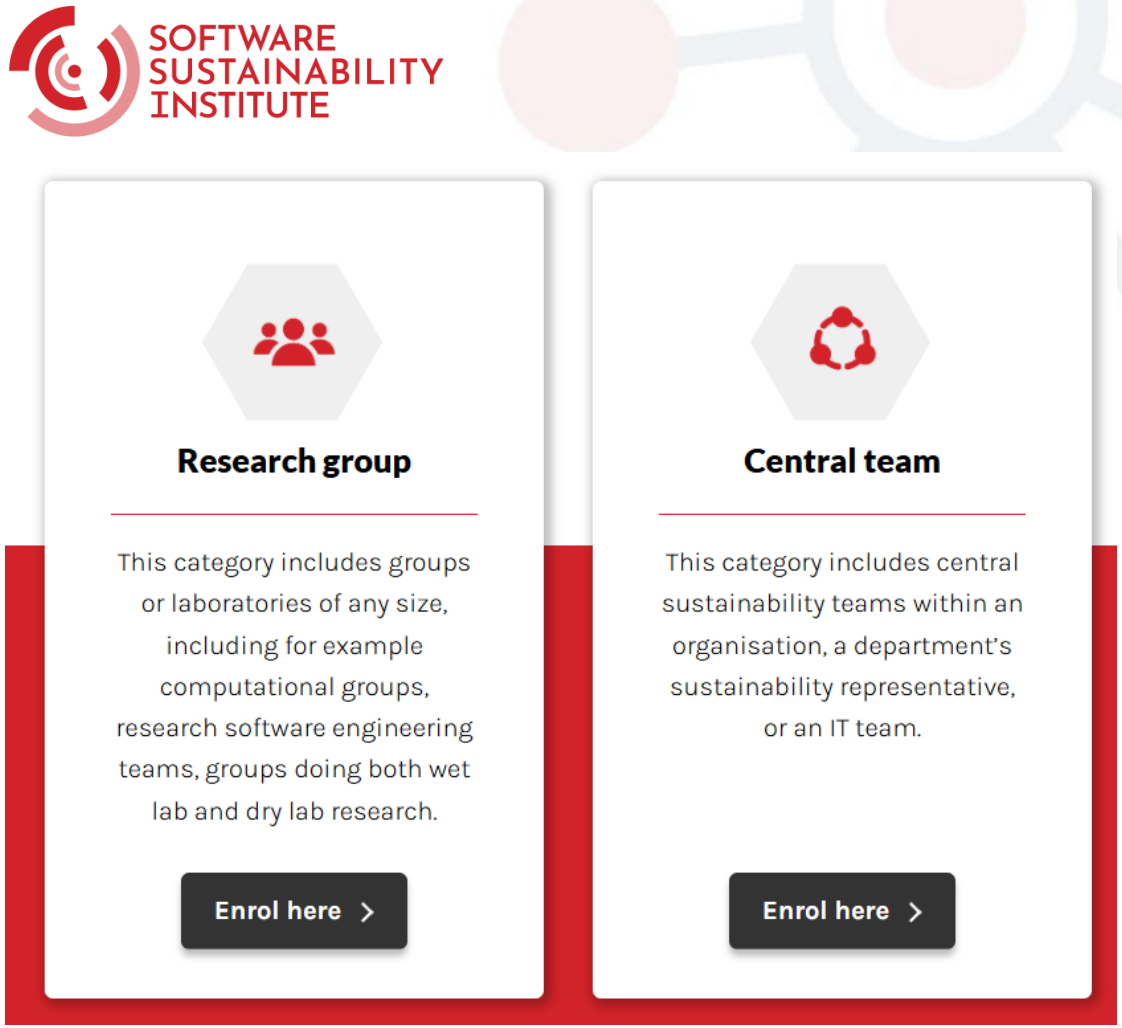
Andrae, Anders & Edler, Tomas. (2015). On Global Electricity Usage of Communication Technology: Trends to 2030. Challenges. 6. 117-157. 10.3390/challe6010117.

* https://sustainability.admin.ox.ac.uk/article/leaf-readiness-to-meet-funder-requirements

Introduction to Green DiSC

What is Green DiSC certification?

- Initiative by the Software Sustainability Institute (SSI).
  "Green DiSC is a new certification scheme which provides a roadmap for research groups and institutions who want to tackle the environmental impacts of their computing activities."
  - https://www.software.ac.uk/GreenDiSC
- "Central teams" (CT) / "Research groups" (RG) within an institution can demonstrate their compliance with green software practices.
- Three levels of certification: Bronze, Silver and Gold
- Criteria are evidence-based, open access and iterative. Distinction between CT and RG criteria.
- Spreadsheet of criteria (and cover letter) is distributed in a shared Google Drive.
  Fill in and submit along with collated evidence to apply for certification.



Introduction to Green DiSC

Is Green DiSC for me?

The Green DiSC certification can help any group that uses computation in their research as well as central sustainability teams. For example:

Research Groups:

- A fully “dry lab” or computing research group (e.g. computational biology, astrophysics, statistics, machine learning, engineering, chemistry etc.).
- A research software engineering team.
- A group doing ***both wet lab and dry lab*** research.

Central teams

- Organisation’s central sustainability team.
- Department’s sustainability representative.
- IT team.

- https://www.software.ac.uk/GreenDiSC

Recent awardees

Bronze Certification awardees

- **Scientific Computing Team, The Institute of Cancer Research (UK)** – provides specialist digital services to researchers at ICR.
- **Green Labs Working Group, University of Groningen (Netherlands)** – started as a grassroots movement in 2021 to guide researchers on sustainable activity in laboratories.
- **Laboratory of Computational Genomics, University of Pavia (Italy)** – focused on modelling inflammation as a key predictor of phenotype trajectories.
- **Data Science Team, The Institute of Cancer Research (UK)** – works across informatics research including bioinformatics, computational biology, biostatistics, mathematical biology, in-silico medicinal chemistry, digital pathology, and computational physics.
- **Breast Cancer Research Data Science Team, The Institute of Cancer Research (UK)** – applies bioinformatics and statistical machine learning to identify therapeutic vulnerabilities and biomarkers of aggressive breast cancer.
- **Digital Lab, University of Groningen (Netherlands)** – modernises Computing Science teaching by designing and supporting tools that assist teachers with computer lab teaching.

- https://www.software.ac.uk/news/green-disc-helping-researchers-make-computational-research-more-sustainable

Research group criteria

Requirements for Bronze (as a research group)

Following slides outline criteria in various categories.

- **General** – Procedures to ensure information is shared and kept up-to-date.
- **Offices** – Inventories of equipment usage in office environment (laptops, etc).
- **Data storage** – Inventories of stored data, and procedures for cleaning
- **Compute** – Inventories of computing infrastructure in use (such as MARS), and training issued.
- **Others** – Any additional evidence that could support application.

Full Bronze criteria

https://www.software.ac.uk/GDC090724

Research group criteria - crossover with LEAF?

LEAF Category	Criteria	Green DiSC Code	Short title
Waste Management	The lab possesses required waste bins (possibly clinical, glass/sharps, hazardous etc.), as well as recycling/general waste bins with appropriate and clear signage.	**(RG) O2-B**	Identification of electronic waste processing streams
IT	There is a system in place to ensure critical data is backed up, which also ensures large files are not excessively stored and cleared where feasible.	**(RG) DS1-B**	Inventory of main data resources
People	There is an induction procedure for new lab members which includes sustainable practice.	**(RG) G2-B**	Computing sustainability is part of the induction procedure
	The lab has communicated with other groups/labs/departments about sustainable practices, and/or has taken part in a sustainability audit.	**(RG) G4-B**	Dissemination of this program in the institution
Equipment	There are processes in place to allow for excess equipment and materials to be shared, repaired or sold.	**(RG) O2-B**	Identification of electronic waste processing streams
Teaching	An awareness of resource use and associated environmental impacts is incorporated into practical laboratory learning and teaching.	**(RG) HPC3-B**	Training on (green) computing best practices is provided

Next steps?

- Application rounds every ~3-4 months (last one 31st July)
- Reach out on Teams (MVLS Eco Group 2025)

  Let us know if:

  - Pursuing Bronze and want to share approach
  - Have any other questions

Dedicated Green DiSC forum
https://forum.escs-community.org/c/green-disc/9