

ErUM-Data-Hub & DIG-UM present

Sustainability in the Digital Transformation of Basic Research on Universe & Matter

Second Program Committee Meeting

19.02.2025



GEFÖRDERT VOM

Bundesministerium
für Bildung
und Forschung



ERUM
DATA HUB

Agenda

- Short Recap & Overview
- Discussion:
 - **Goals**
 - **Focus, Contents (& Workshop Title)**
 - Timetable
 - Invitations
- AOB: Next Meeting



In-person Workshop in 2025: Sustainability (& Ethics) in ErUM-Data

2025:

- In-person Workshop
- 28 July - 1 August 2025, Aachen
- Timetable: <https://indico.desy.de/event/47133/>
- All planning info & contents: <https://wiki.erumdatahub.de/bin/view/Sustainability2Planning/>

Subgroups 2023: Footprint, Dynamic Energy Supply, Hardware Lifetime, Hardware & Algorithms, Smart Data, Cultural Change, Autonomization, Inquiries & Dynamics, Algorithms & Software, Machine Models, Injected Intelligence, Workflows & Stakeholders



Goals (up to discussion)

Goals		Author / Contact
Definition	What exactly is meant by “sustainability”	Achim S., Judith R.
Track Progress / Review	What is the concrete progress since the last workshop, what worked, what not.	Thomas K, Judith R.
Ideas / Ansätze	Based on input from referees I think one topic is whether we should collect data to effectively represent progress	
	What new ansatzes (approaches) exist, what should we try	Achim S.
Concrete Recommendation for Action	Konkrete Empfehlungen ans BMBF bzw. Projekte als einige white papers. (Concrete recommendations to the BMBF and projects in the form of white papers)	
	Formation of focus groups for the implementation of identified guidelines from multiple projects, beyond the workshop (e.g. Connect Workshop 2024)	
	Prüfsteine für einen dritten Workshop, der die Umsetzung der Fokusgruppen überprüfen kann.	
	Criteria for a third workshop that can assess the implementation of the focus groups.	
	A paper detailing how to combat the practicalities of tackling sustainability issues (in Germany)	

CO2 / Footprint with regards to hardware	How to handle CO2-budget of the production of the hardware (+1)	Achim Stahl, support by Markus Sch (may contact Öko Institut e.V.)
	Ethical implications of Life Cycle analysis (where machines are made - where they end up)	
Operation of Data Centres / Use of Energy (Continuity aspect, AI & Ethics (hardware & software) applicable in this topic)	Sustainable operation of compute and data centres	Markus Sch.
	How can we integrate datacentres/experiments with their environments	
	What metrics are we use to decide how clean energy is/ optimal time for greenest use of energy	
	Von Stromerzeugenden und Netzbetreibern Input bekommen, was wir eigentlich tun sollen. BnetzAgentur beiholen?	(Raum1)
Sustainable Programming & Implications / User	Sustainable programming is a topic frequently requested by the community. How can we drive this forward?	Angela Warkentin
	Ethical question: if software gets more efficient by factor n will then e.g. simulation run factor n more or will stop after initial goal reached?	Markus Schh.
	Wie managen mir die Wirkungen auf die Nutzenden, so dass diese mitgehen? Wie können wir für diese Motivation schaffen?	(Raum 1)
Motivation & Ethics	Wie managen mir die Wirkungen auf die Nutzenden, so dass diese mitgehen? Wie können wir für diese Motivation schaffen?	
	Introductions to Ethics and/in Sustainability; UN sustainability points and the impact to physics	
	Sustainability Communication: how to spread motivation among scientists	
Politics & Stakeholder	Mit BMBF-Leuten darüber reden, wie wir unsere Erkenntnisse umgesetzt bekommen; What does the BMBF expect? (Invite BMBF representative)	(Raum 1)
	Allgemeiner: Leitlinien für konkretes Handeln mit den Stakeholdern ausarbeiten.	(Raum 1)
	Umgang mit politischen Zwängen ("wir gehen nicht nach Polen, weil deren Strom so dreckig ist" bzw. die Zurückweisung so einer Erwägung aus politischen Gründen)? (Or: If we fund it here we also want to run it here and not in Norway, Iceland ,...)	
	Political barriers to sustainability (local laws/regulations)	
Teaching & Science	In view of abilities of Humans versus Machines (see table below): how will ErUM science change in future	Martin E.
	Knowledge transfer, education, what concepts will stay to be important, what will be new	Judith Reindl, Martin E.
	Wie managen mir die Wirkungen auf die Nutzenden, so dass diese mitgehen? Wie können wir für diese Motivation schaffen?	
	Sustainability Communication: how to spread motivation among scientists	

In-person Workshop 2025: Focus & Goals

“Framework conditions for future research in ErUM in view of ultra-fast AI developments and the urgent need for sustainability in the area of digital transformation”

- 2 Topic Workshop (Sustainability & Ethics)
- Following 1 narrative
- Meta thinking & concrete action (large target group)

Title Brainstorming:

- Integrate the 2 pillars in Title: be more specific
- ErUM-Data Think Tank Workshop (Role of Digitization for the Future of ErUM Research)
- Ethical and sustainability aspects in scientific computing for ErUM (& future)
- Idea: Merge the 2 approaches
- Hub will present idea in the next meeting



In-person Workshop 2025: Focus & Goals

Sustainability:

- The topic of **sustainability** has been initiated by the first workshop/paper; we can already hear about ongoing research projects and draw further consequences for progress.
 - Topics / (Parallel) sessions:
 - Future of Teaching
 - AI & Footprint
 - Sustainable ErUM research centres of the future and the ethics of how we run them.
 - Footprint, Full life cycle analysis
 - What do future data-centres look like and what informs this?
 - Review: are we on the right track?
 - Also: Hardware & Software
 - Political aspects (Discussion with Stakeholders)
 - Not main focus, but (try-out) discussion session
 - Base for next proposals (clear criteria, direction, complete picture, dongs and dos, integrate different point of views, BMBF & other Stakeholders) Get Stakeholders together (Not for talks, but to work together)



In-person Workshop 2025: Focus & Goals

Ethics:

- The topic of **ethics** deals with AI developments and their significance for ErUM researchers. The aim here is to compile concrete AI developments and to identify probable development possibilities.
 - Sessions and summary in Plenary discussion
 - Topics:
 - Status: AI Developments
 - Talks about current developments, stories, people
 - Best / worst case scenarios
 - Teaching: Using AI in Teaching
 - What is our contribution? Concrete results.
 - How will it be possible to realize predominantly human-performed research activities with the support of AI tools in the future?
 - Can we formulate a range (Korridor) for this?
 - Does AI replace human creativity in ErUM Research?
 - (Effect of AI on Sustainability)
 - (The ethics of sustainability in both the data-centres themselves, and the tools we use at them)



AOB

- Next Steps: Hub will create proposal of timetable to discuss next meeting
- Next Meeting after DPGs: Terminplaner to be sent around
 - Timetable
 - Invitations
 - Finishing touches to open registration
- How to integrate the paper writing process into the timetable?



Backup