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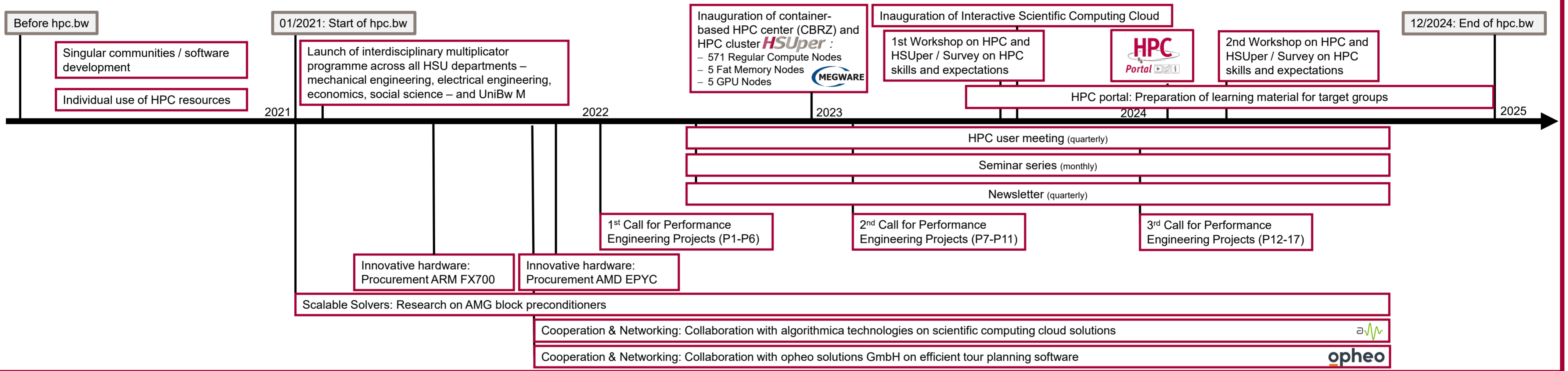
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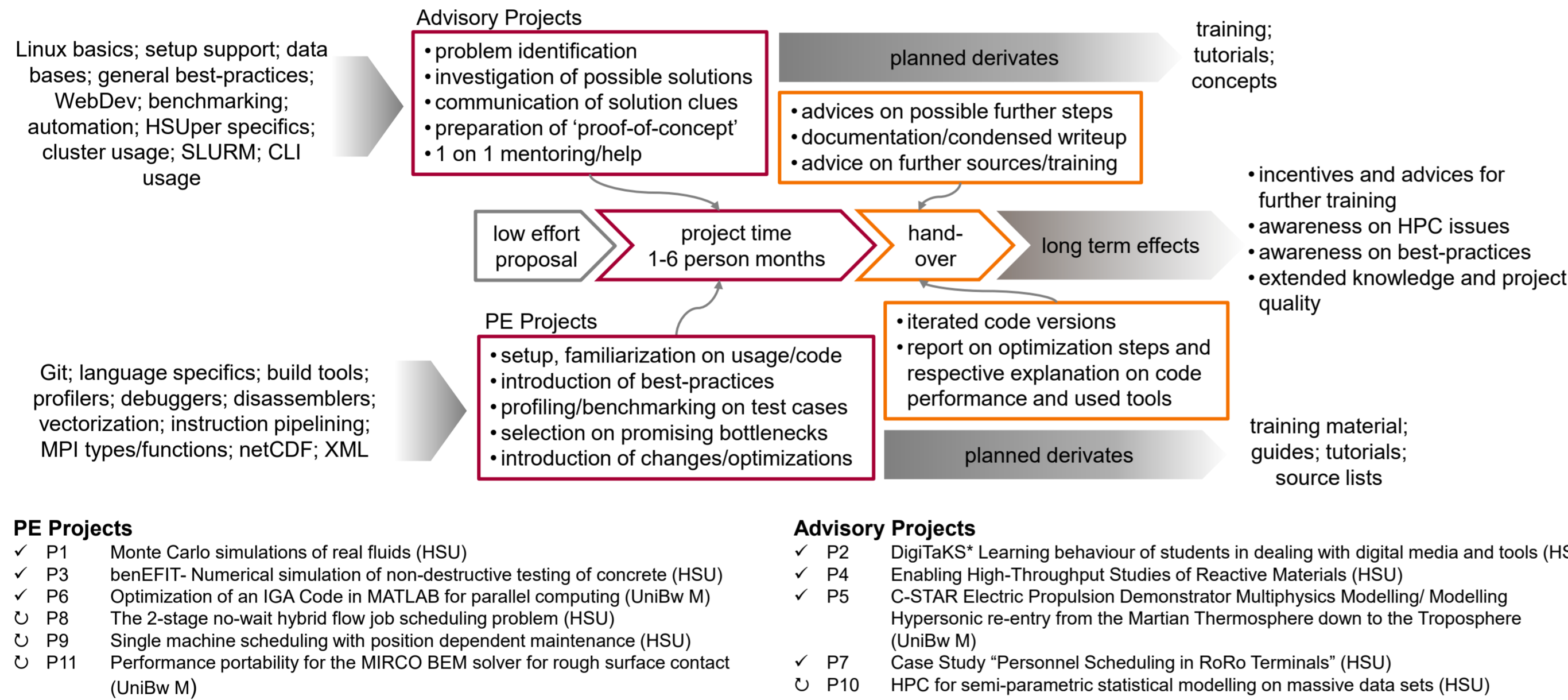
hpc.bw (dtec.bw) – Competence Platform for Software Efficiency and Supercomputing

Aim of hpc.bw: to strengthen innovative cross-location research in the field of HPC and to promote the transfer of relevant expertise to a wide range of disciplines & low-threshold enabling of HPC Competences acquisition

Timeline of hpc.bw: Strengthening research and development by HPC in an interdisciplinary endeavor



Performance Engineering (PE) Projects: General overview



Conclusion on hpc.bw

Interim conclusions from Advisory Projects

- avoidance of programming/software design pitfalls by professional guidance
- significant reduction of 'time-to-solution' and, thus, 'time-to-research'
- design of 'proof-of-concept-solutions' and further advices

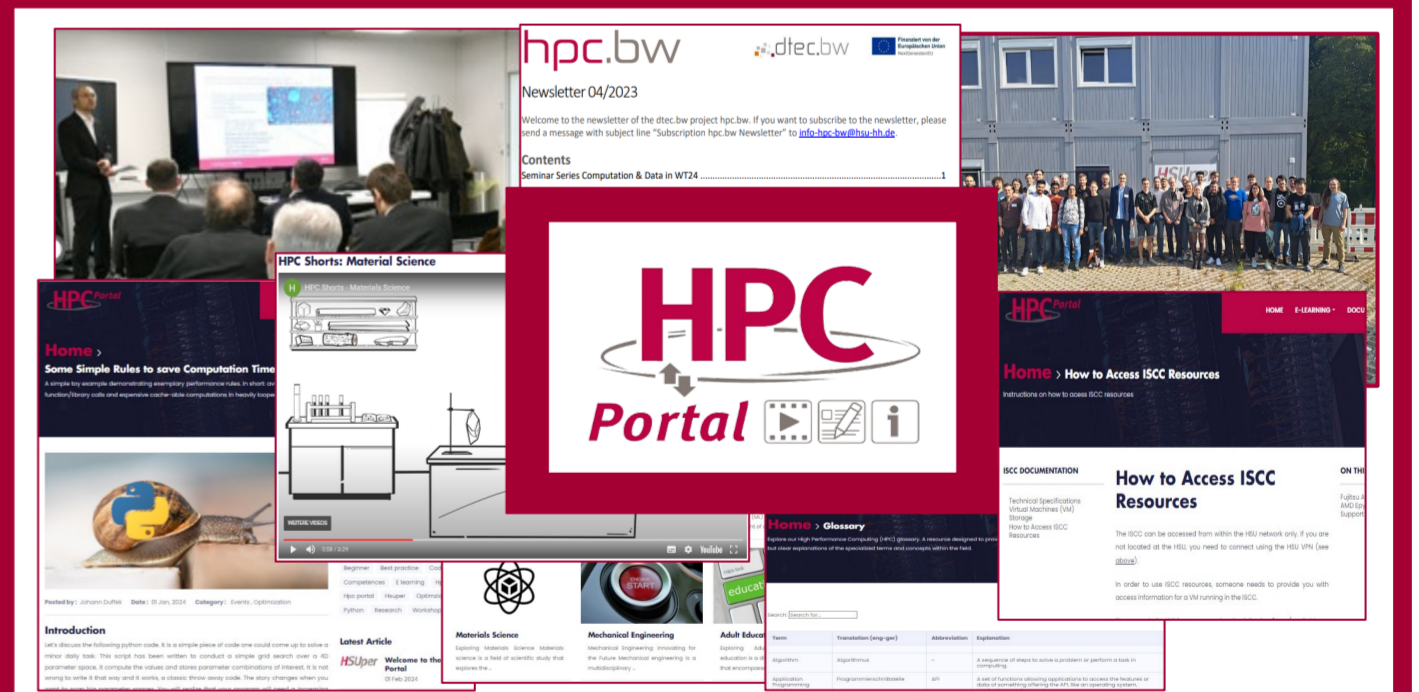
Interim conclusions from Performance Engineering Projects

summarised project experiences for projects P1-P11:

- avg. est. familiarization & preparation time: 70%
- avg. est. time for performance optimization: 20%
- avg. est. time for reporting and exchange with applicants: 10%
- project languages: Python/Matlab/Fortran/C++
- project sizes: 375 – 75k LoC
- achieved speedups: 1.05 – 2.3
- avg. number of person months per PE project: 3
- insight on usual problems and bottlenecks of applicants

Observed synergies with HPC Portal

Identification of frequent pitfalls and HPC/software challenges to feed into OERs/trainings/tutorials



Expansion of the HPC Portal

Provision of additional learning materials, exchange opportunities and support options (digital, hybrid, on-site)

Outcome of HPC Competences Acquisition of Future Skills [EH2]

- **digital and design competence:** knowing and using rigorous metrics and promoting value
- **ethical and initiative competence:** sustainability of HPC resources
- **reflection-, decision-making and system competence:** Understanding, weighing up and managing risks in relation to hardware and software
- **ambiguity and innovation competence:** dealing with complexity, uncertainty of HPC knowledge

HPC Portal: HPC Competences Platform

Interdisciplinary cooperation – Continuing Education and Lifelong Learning & HPC

“Culture of Digitalization” [ST3] & Computer Science

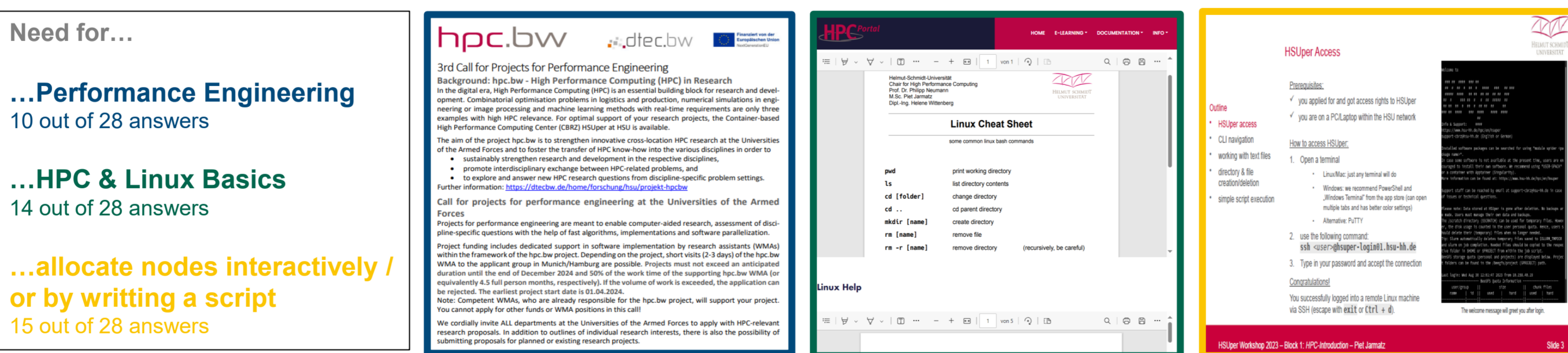
- **“Data as the raw material of the future” [DA1]**
- **algorithmicity:** Automated decision-making processes that generate Information and become the basis for collective behaviour
- **referentiality:** processes that enable references on the basis of data and thus have a meaningful and formative effect on knowledge
- **collectivity:** frames of reference that stabilise meanings, generate options for action and accessible resources

Behaviour

- construct knowledge on the basis of data
- Open Educational Resources and Open Access regarding HPC competencies
- profiling HPC discipline
- overcoming boundaries



Selection of survey results on needs & requirements as well as related offers of HPC Portal (multiple answers possible; N=28)



Project-related publication:

Neumann, P./Duffek, J./Kleinschmidt, J./Leinen, W./Breuer, M./Schmidt-Lauff, S./Fink, A./Mayr, M./Firmbach, M./Popp, A. & Auweter, A. (2022): hpc.bw: A Supercomputer with Competence Platform for the Universities of the Federal Armed Forces. In: Schulz, D./Fay, A./Matiaska, W. and Schulz, M. (eds.): dtec.bw-Beiträge der Helmut-Schmidt-Universität. Forschungsaktivitäten im Zentrum für Digitalisierungs- und Technologieforschung der Bundeswehr dtec.bw. Band 1. Hamburg: OpenHSU, pp. 305–310. https://openhsu.uh.hsu-hh.de/openHSU_14569

Mentioned publications in the poster:

[DA1] DARP (2020): Deutscher Aufbau- und Resilienzplan (DARP).
[EH2] Ehlers, U.-D. (2020): Future Skills. Lernen der Zukunft – Hochschule der Zukunft. Wiesbaden: Springer VS.
[ST3] Stalder, F. (2021): Kultur der Digitalität. Frankfurt am Main: Suhrkamp.



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HPC Portal



Website HPCCP



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