

HPC CF Board Meeting

Kevin Lüdemann, Julian Kunkel



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- 7 Discuss the release of current Skill Tree version
- 8 Start the Vote - AOG

Current Board members

- Welcome to this year's Board meeting
- Thank you to all current board member from the chair (Julian Kunkel)
 - ▶ Anja Gerbes
 - ▶ Kai Himstedt
 - ▶ Lev Lafayette
 - ▶ Marc-Andre Hermanns
 - ▶ Weronika Filinger
- Funding so far and ongoing:
 - ▶ PECO: Initial funding
 - ▶ HPC SPECTRA (01.2024-12.2025): Updating the Skill Tree, examination framework, certificates
 - ▶ EVITA (04.2025-03.2029): Updating Skill Tree, deploying and running examination framework with certificates
 - ▶ Several years unfunded

Past and Present activities

- 2018 announced at ISC + first version of Skill Tree on GitHub
- 2019 BoF at ISC and new Board elected
- 2020 Virtual Workshop: Toward a globally acknowledged and free HPC Certification
- 2021 Certification and examination Hackathon
- 2022 and 2023 BoF at ISC and SC
- 2024 Major update to Skill Tree
- Every current board member report on current activities regarding HPC CF

Julian Kunkel

- Professor at University of Göttingen
- One of the founders of the HPC CF in 2018
- Current chair of the HPC CF
- Promoting and growing the HPC CF community
- Lead/supported BoF at ISC and SC in 2018, 2019, online BoF in 2020
- Designed and provided the initial prototype of the Examination framework
- Designed and implemented the HPC Driving License
- Main reviewer and merger of Skill Tree updates
- Currently webhosting the HPC CF webpage, wiki, and examination prototype
- Planned Activities: Promoting of HPC CF

Anja Gerbes

■ About me and work so far:

- ▶ Bachelor of Science, Master of Science in Computer Science from Goethe University of Frankfurt
- ▶ Member for 5 Years at the Competence Center for High Performance Computing in Hessen (HKHLR) at the Center for Scientific Computing (CSC) in Frankfurt
- ▶ 4 Years at National High Performance Computing Center at TU Dresden (NHR@TUD)
- ▶ 1 Year at National High Performance Computing Center at University of Göttingen - Community Manager
- ▶ Active in the HPCCF Board since the beginning of HPCCF - Mapping of Skill Trees to the NHR Training Courses at NHR@TUD

■ Future work:

- ▶ Continue to map the skill trees to the GWDG Academy Courses at GWDG

Lev Lafayette

- Senior HPC DevOps Engineer
- Team Lead HPC Services
- Lecturer in Cluster Computing

Marc-Andre Hermanns

- Working in HPC in 2004
 - ▶ Focus: Performance Analysis of Parallel Applications
- Part of MPI Forum since 2008 (current Tool WG lead)
- Joined RWTH Aachen University in 2019 as part of HPC.NRW state-level HPC competence network
 - ▶ Working in User Support and Training
- Involvement in HPC-CF since 2021

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New board members

- Current members can elect to stay board members
- New potential board members introduce themselves
- Elected for one year
- Elected into specific roles:
 - ▶ General Chair
 - ▶ Skill-Tree curator (STC)
 - ▶ Topic Curator (TC)
 - ▶ Examination curator (EC)
 - ▶ Publicity chair (PC)

Kevin Lüdemann

■ About me and work so far:

- ▶ Bachelor of Science, Master of Science, and Ph.D. in Physics in Göttingen
- ▶ Started work at GWDG in 2024 as HPC Trainer and working for HPC SPECTRA
- ▶ Working on promoting Skill Tree and growing community
- ▶ Updating skills, particularly the USE branch
- ▶ Performing Train the Trainers session to educate Training Providers

■ Future work:

- ▶ Continue to update skills
- ▶ Continue to promote the Skill Tree and HPC CF
- ▶ Set up certifications

Jaison Lewis

■ About me and work so far:

- ▶ Started working at GWDG in 2023 as an HPC trainer and on HPC SPECTRA.
- ▶ I have been working on the skill tree for the last two years.
- ▶ Added AI and updated the BDA branches of the Skill tree.
- ▶ Created two AI tools to help with editing the Skill tree.
- ▶ Worked with the team to formulate and document the procedures needed to improve and standardize systematic filling of the skill tree.
- ▶ Built an updated prototype for the examination framework with the team.
- ▶ Designed the certificates for HPCCF Certification.

■ Future work:

- ▶ Continue work on the examination framework.
- ▶ Build open source versions of AI tools.
- ▶ Continue to help people update the skill tree.

Matthias Eulert

■ About me and work so far:

- ▶ Mathematician with focus on stochastic methods & scientific computing
- ▶ Joined GWDG in 2023: active on the HPC SPECTRA project, working for the EVITA project since April 2025
- ▶ Co-organiser of training programs at the GWDG Academy: design and delivery of introductory HPC and AI trainings, conducted "Train-the-Trainer" workshops to teach participants the application and extension of the Skill Tree
- ▶ Collaborated with the HPC CF team to develop the procedures required for enhancing and standardizing the competency framework

■ Future work:

- ▶ Contribute content to the Skill Tree and help others to contribute
- ▶ Refactor the data-structure and enhance the tooling that underpins the Skill Tree as well as the examination and the certification processes
- ▶ Integrate and map emerging topics (AI, Quantum Computing) into the competency framework, ensuring integration with existing HPC skill branches

Victoria Döllner

- Mathematician currently doing a PhD in CS at the University of Vienna
- Since 9/25 working in the EVITA project (TU Wien)
- My role: co-leader of WP2 on the definition of the CQF
- Currently deducing skills for the skill tree from courses specified in the CQF
- Future work:
 - ▶ Contribute to the Skill Tree & establish the foundation for the CQF
 - ▶ Act as a link between the HPC CF and the EVITA project
 - ▶ "Skill Tree and CQF are best friends!" (Claudia Blaas-Schenner, WP2 leader)

Xavier Martorell

■ Xavier Martorell (BSC) - About me and work so far:

- ▶ Licenciante/Master of Sc. / PhD on Computer Science (UPC Barcelona)
- ▶ Associate Professor at UPC - Computer Arch. Dept. 2001
- ▶ Teaching on Computer Fundamentals, Operating Systems and OS Administration
- ▶ Leading the Parallel Programming Models Team @BSC 2005
- ▶ Training on MPI/OpenMP/OmpSs@CUDA/FPGA, and around RISC-V emulation and OS
- ▶ Participating on EVITA and the EUMaster4HPC
- ▶ Contributed to the development of the European master program on HPC
- ▶ Working on the definition of teaching modules for the EVITA CQF - WP2

■ Future work:

- ▶ Can contribute to the Skills and its relationship to the EVITA modules

Jasper Seehofer

- Bachelor and Master of Science in Physics (Tübingen and Heidelberg)
- at HLRS since May 2025 (EVITA project and HPC Training)
- Future work in EVITA:
 - ▶ update the Skill Tree
 - ▶ set up certification (European Micro-Credentials)
 - ▶ promote Skill Tree usage in other EU projects for compatibility with EVITA

Selection procedure

- Names are proposed now including function
- Suggestions are also taken from the Slack channel
- The chair publishes a list on the Slack channel and all members can vote
- Suggested roles:
 - ▶ General Chair: Julian Kunkel
 - ▶ Skill-Tree curator (STC): Kevin Lüdemann
 - ▶ Topic Curator (TC): Lev Lafayette, Anja Gerbes, Marc-Andre Hermanns, Victoria Döller, Jasper Seehofer, Xavier Martorell
 - ▶ Examination curator (EC): Jaison Lewis
 - ▶ Publicity chair (PC): Kevin Lüdemann (with help from Weronika Filingner)
 - ▶ Advisory position: Weronika Filingner
- New role Technical chair (tools and webpage): Matthias Eulert

Switch from Slack to Matrix

- Slack in free version removed messages after 90 days
- Slack is not European company
- Matrix protocol is open Source - same philosophy as HPC CF
- Many switch to Matrix for internal communication
- Example Matrix space: <https://matrix.to/#/#hpc-cf-general:gwdg.de>

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Full Tree update

- Last year (mid of 2025), the full tree was updated
- Levels (Basic/intermediate/advanced) are gone in favor of requirements
- Many skills were moved into learning outcomes
- The ID is now much more visible in the name of the Skill
- Please check if your skills are still present

Current Skill Tree updates

- Add new branch AI
- Update BDA with ML and DL
- Update USE with more fine-tunes CLI skills
- Add Snakemake skills to USE, SD, ADM

Future updates to Skill Tree

- Working on SD shared memory skills
- Working on SD Distributed memory skills
- Working on QC Skills in both SD and K
- Working on Hardware accelerator skills in SD and K

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Examination framework

- Examinations acknowledge the ability of a student to perform a skill
- Two types of examinations are used: multiple choice and scenarios
- Multiple choice question have a pool of questions per skill
- Scenarios have a smaller pool, but are more hands-on
- Results are combined and a score higher than 50% results in a pass

Technical solution

- Students who can register using Name and Email
- Examinations are requested via Link and opened on demand
- A timer starts for both examinations and both need to be completed
- Two containers run in the background serving the multiple choice questions and scenario via web frontends directly (Apache and ttyd)
- A student enters the answers and closes exam
- Both are checked automatically or checked by human examiner

Current version

- HPC SPECTRA had task to develop examination framework
- The current version is part of a deliverable
- It can only be used once the deliverable is published
- Current prototype is running on VM at GWDG

Screen shots of prototype

Student Dashboard

Student: kevin
 Student Number: kev124
 Email: kevin@kevin.com

[Change Password](#) [Delete Account](#) [Logout](#)

[Available Exams](#) [My Exams](#)

Available Exams

Select an exam to register and start

Search exams by name, code, or description...

HPC USE1.1 Command Line Interface — Practical Assessment

Code: HPC-USE1.1-CLI-2025

Duration: 75 minutes

Description: Hands-on assessment of essential Linux shell skills for HPC users, aligned with HPC CF skill USE1.1 (Command Line Interface). Candidates demonstrate navigation, file manipulation, shell variables, globbing/escaping, I/O redirection & pipes, process control, and safe editor exits.

ACTIVE

[View Details](#) [Register](#)

HPC USE1.1 jaison test

Code: HPC-USE1.1-CLI-2025-jaison

Duration: 75 minutes

Description: Hands-on assessment of essential Linux shell skills for HPC users, aligned with HPC CF skill USE1.1 (Command Line Interface). Candidates demonstrate navigation, file manipulation, shell variables, globbing/escaping, I/O redirection & pipes, process control, and safe editor exits.

ACTIVE

[View Details](#) [Register](#)

HPC USE2 — Running of Parallel Programs (Basic) — Practical Assessment

Code: HPC-USE2-BASIC-2025

Duration: 90 minutes

Description: Hands-on assessment of running parallel programs on HPC systems, aligned with HPC CF USE2 (Running of Parallel Programs). Focus on basic competencies: job scheduling and job scripts.

ACTIVE

test1

Code: test001

Duration: 15 minutes

Description: timing test

ACTIVE

[View Details](#) [Register](#)

Screen shots of prototype

Student Dashboard

Student: kevin
Student Number: kev124
Email: kevin@kevin.com

[Change Password](#) [Delete Account](#) [Logout](#)

Available Exams **My Exams**

My Exam Sessions

View your current and past exams

Exam	Code	Session Token	Status	Completed	Score	Retake Status	Action
Test2	test002	...DC24683A	COMPLETED	11/27/2025, 12:04:08 AM	Not graded	Ready to Retake	Retake Exam
Test2	test002	...04795389	GRADED	11/26/2025, 11:48:04 PM	50	Ready to Retake	Retake Exam
Test2	test002	...58867441	COMPLETED	11/26/2025, 11:40:57 PM	Not graded	Ready to Retake	Retake Exam
HPC USE1.1 jaison test	HPC-USE1.1-CLI-2025-jaison	...1A873386	COMPLETED	11/26/2025, 11:19:42 PM	Not graded	22h 45m Cooldown: 52s	Retake Exam (Locked)
HPC USE1.1 Command Line Interface — Practical Assessment	HPC-USE1.1-CLI-2025	...08739087	SCHEDULED	-	Not graded	-	Start Exam
test1	test001	...59FA8200	SCHEDULED	-	Not graded	-	Start Exam
Test2	test002	...31F74935	EXPIRED	-	Not graded	-	Completed

Screen shots of prototype

```
Test2
Student: kevin | ID: kev124 | Email: kevin@kevin.com
00:11:20

Practical Exam
Theory Exam

=====
EXAM: Test2
STUDENT: kevin@kevin.com
DURATION: 12 minutes
=====

timer test

=====
EXAM TASKS:
=====

Task 1:
wait

Task 2:
type timer

Task 3:
thats it

=====
TO END YOUR EXAM AND SUBMIT YOUR WORK:
Type: end-exam

This command will:
- Save all your work
- Submit your exam for grading
- Close your exam session

DO NOT close the browser tab until you see the confirmation message!
=====

Note: This exam session is being recorded for integrity purposes.

student@5073a3a2e833:~$
```

Screen shots of prototype

The screenshot displays a web-based exam interface. At the top, a purple header bar contains the text "Test2" and "Student: kevin | ID: kev124 | Email: kevin@kevin.com" on the left, and a yellow timer "00:10:37" on the right. Below the header, there are two tabs: "Practical Exam" (inactive) and "Theory Exam" (active). A yellow notification box in the center reads "10 minutes remaining!". The main content area shows "Question 1" with a progress indicator "k/1/3/1/1/1". The question text is "Which storage media is commonly used for portable data transfer?". There are five radio button options: "Solid State Drive (SSD)", "USB Flash Drive", "Magnetic Tape", "Hard Disk Drive (HDD)", and "Optical Disc". The "Solid State Drive (SSD)", "USB Flash Drive", and "Optical Disc" options are selected. At the bottom, there is a purple "Submit Theory Exam" button.

Test2
Student: kevin | ID: kev124 | Email: kevin@kevin.com

00:10:37

Practical Exam Theory Exam

10 minutes remaining!

Question 1 k/1/3/1/1/1

Which storage media is commonly used for portable data transfer?

- Solid State Drive (SSD)
- USB Flash Drive
- Magnetic Tape
- Hard Disk Drive (HDD)
- Optical Disc

Submit Theory Exam

Screen shots of prototype

Examiner Dashboard admin (Administrator) [Change Password](#) [Admin Panel](#) [Logout](#) [← Back to Home](#)

[Create New Exam](#) [Manage Exams](#) [Registered Students](#) [Grading](#) [Contribute Questions](#) [System Admin](#)

Create New Exam

Upload Exam JSON (Optional)
Upload a JSON file to auto-fill the form

No file selected.

Exam Name *

Exam Code *

Author / Institution

Number of Theory Questions

Set to 0 for practical-only exams (no theory section).

Description

Skills (Optional)
Add HPCCF skill tree codes - Learning outcomes will be auto-fetched from the HPCCF API

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Current Certificates

- Currently only certificate is "HPC Driving License"
- <https://www.hpc-certification.org/processes/#exam-certificates>
- What is the current adoption of it?
- What do we need to do to make it usable?
- CASTIEL2 and EuroCC2 are interested to adopt it.

New Certificates

- HPC SPECTRA is working on programming based certificate
- Three levels of certification: Basic, intermediate, advanced
- Differences are the number of skills increase and contain the lower levels
 - ▶ Basic level: SD1.2.2, SD1.2.3, SD2, SD7, K3, K4, ...
 - ▶ Intermediate level: SD1.2.5, SD4, SD5, PE3, K2, BDA5.1, ...
 - ▶ Advanced level: PE1, PE2, PE4, ADM4, BDA1, BDA7
- Current design used light vs. dark theme, which is controversial
- Alternatives are seedling growing to tree, or transistor to CPU

Certificates

HPC Certification Forum
Certificate of achievement
awarded to
Jane Doe
for successfully completing the
HPC CF Torch certification.
Id number:
0000000
12th December 2025




Authorised by 
Dr. Julian Kunkel
HPC CF Board
Chairman
<http://hpc-certification.org>

HPC Certification Forum
Certificate of achievement
awarded to
Jane Doe
for successfully completing the
HPC CF Lantern certification.
Id number:
0000000
12th December 2025




Authorised by 
Dr. Julian Kunkel
HPC CF Board
Chairman
<http://hpc-certification.org>

HPC Certification Forum
Certificate of achievement
awarded to
Jane Doe
for successfully completing the
HPC CF Lighthouse certification.
Id number:0000000
Exam dated: 12th December 2025




Authorised by 
Dr. Julian Kunkel
HPC CF Board
Chairman
<http://hpc-certification.org>

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Current phrasing

- HPC CF uses Skill and Competency as almost synonyms
- See first page of <https://www.hpc-certification.org/>
- Skills is what the HPC SPECTRA and EVITA project uses as wording
- Something is needed if only the contents are taught not the full ability to perform something
- This is relevant for so-called "manager courses" - highly condensed version, which are basically TLDR

Overview Skills

- Solution would be introduction of Overview Skills
- Special Skill containing all the learning outcomes from the leaves attached to current node
- Every node has one and can be attached to courses that do not cover all the content of a skill
- Can easily be attached to ID using 0 marker, say USE1.0 is overview of USE1

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Current version of Skill Tree

- According to HPC CF guidelines, a new version is released yearly
- Last release was in 2023?
- Currently no releases or tags in GitHub
- Should we release in December (after voting)?

Updated versioning procedure

- There will be many updates to the Skill Tree due to EVITA
- A faster release scheme might be required
- Suggestion is to use monthly releases called: 2025.12 or 2026.01
- Tags attached to Markdown files too, making linking to older version easier
- Wiki needs a version switch to be consistent

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Voting procedure

- Voting is done in Slack channel using `:+1:` and `:-1:` by all members
- Voting on:
 - ▶ New board members
 - ▶ Releasing the Skill Tree
 - ▶ Moving from Slack to Matrix
 - ▶ Including Overview Skills in Skill Tree

AOB

- Anything else we need to discuss?