

The HPC Certification Forum – Activity Update 2020



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<https://hpc-certification.org>

HETET20 Workshop

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Goals

- Fine-grained standardizing HPC knowledge representation
 - ▶ What competences exist, how are they defined?
 - ▶ Puzzle of competences for everyone (practitioners, students, admins)
 - ▶ Supporting navigation and role-specific knowledge maps
- Establishing international certificates attesting knowledge
- Supporting an ecosystem around the HPC competences

Scope of the forum

- Central authority for competence representation, certification, and support
- Purposeful limitations of the forum:
 - ▶ We do not compete with content providers (we do link their content though)
 - ▶ We do not create a curriculum (university/centers responsibility)

Organization Details

- An independent international body
- Organized into
 - ▶ Steering board (elected)
 - ▶ Full members (with voting rights)
 - Contributors to the project (e.g., 1-2 hours per month)
 - ▶ Associate members (anyone and any institution)
 - ▶ Collaboration with e.g., SIGHPC Education Chapter

Responsibilities

- Curating and maintaining the skill tree and certificates
- Providing tools and ecosystem around the competences

Organization of the members

- Webpage is the central hub (<https://www.hpc-certification.org>)
- Mailinglists (news, members, board)
- Monthly public meetings on our Slack channel
- Annual general assembly (form of a BoF at ISC or workshop)

Data handling

- Everything* is developed/available in the open
GitHub (<https://github.com/HPC-certification-forum>)
- Exception are examination questions (later talk)

Outline

Classification of Competences == Skills

- A **skill** defines background, objectives, learning outcomes
- The **skill tree** organizes the competences as hierarchical skills
- Certificates bundle several skills into attestable unit

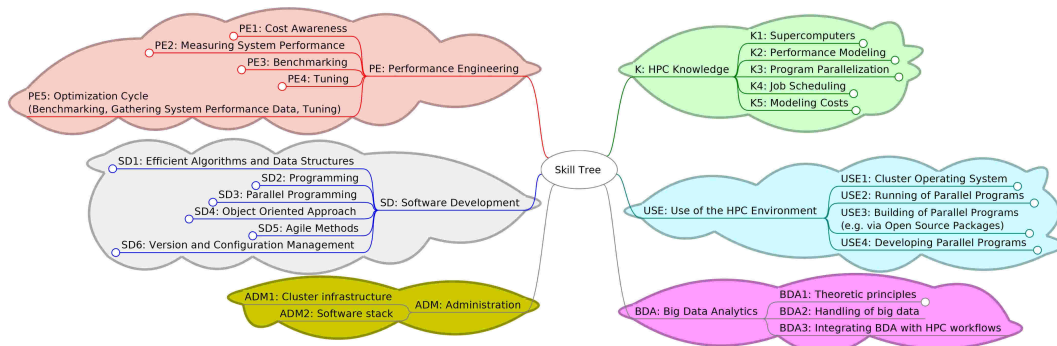


Figure: Top-levels of the skill tree (Initial ADM and BDA branches)

Example High-Level Skill (Excerpt)

- Name: SLURM Workload manager
- Id: USE4.2.2-B
- Background: SLURM is a widely used open-source workload manager providing various advanced features.
- Aim:
 - ▶ comprehend and describe the basic architecture of SLURM and its tools
 - ▶ use relevant tools to run and monitor (parallel) applications

Learning outcomes (these must be examinable)

- run interactive jobs with salloc, a batch job with sbatch
- explain the architecture of SLURM, i.e., the role of slurmd, srun
- explain the function of the tools: sacct, sbatch, salloc, ...
- explain time limits and the benefit of a backfill scheduler
- see <https://www.hpc-certification.org/wiki/>

Outline

Status

- We have been working on processes, tools, content (**webpage**)

Processes

- Contribution of content (skills, exam questions)
- Examination/Certification process
- Versioning of the skill tree
- Endorsment of training material
- Governance rules (coarse grained)
- Roadmap development

Content

- A subtree of the skill tree is considered ready for release
- Created small set of demo content for tools/processes

Tools (prototypes exist)

- Markdown version of skill definition
 - ▶ Version controlled on GitHub
 - ▶ Synchronized with a (Doku)Wiki for simple access
 - ▶ Tool for synchronization with FreePlane MindMap
- JavaScript for user-visualized skill tree (demo)
 - ▶ Adjustable/embedable in your webpage, blend in your data to the skill tree
 - ▶ Example, add links to own material, show relevant skills to users
- Online test execution
 - ▶ Registration till certificate
 - ▶ Exam itself: multiple choice, other question types will follow
- RESTful service to query information about skills
 - ▶ Allow to add supplementary information such as existing teaching material

HPC Certification Program

- Effort to standardize representation/certification of relevant HPC skills
 - ▶ Hierarchical definition of skills for practitioners
 - ▶ Building blocks that can be cherry-picked for different tasks
 - ▶ It's goal is **NOT** to provide content or a linear curriculum
- We are on track with the effort but need support of the community
- Visit us and join our Slack/ mailing lists: <https://hpc-certification.org>