



# HPSF

HIGH PERFORMANCE  
SOFTWARE FOUNDATION

FOSDEM 2025

# The world is investing billions in open source software for supercomputers

- ECP alone has built 80+ software projects that run portably across GPUs
  - Programming models
  - Tools
  - Math libraries
  - Applications
  - Data visualization
  - Packaging
- Europe and Japan are beginning their own major software efforts
- Industry has vast AI software stacks



EXASCALE COMPUTING PROJECT



**EuroHPC**  
Joint Undertaking



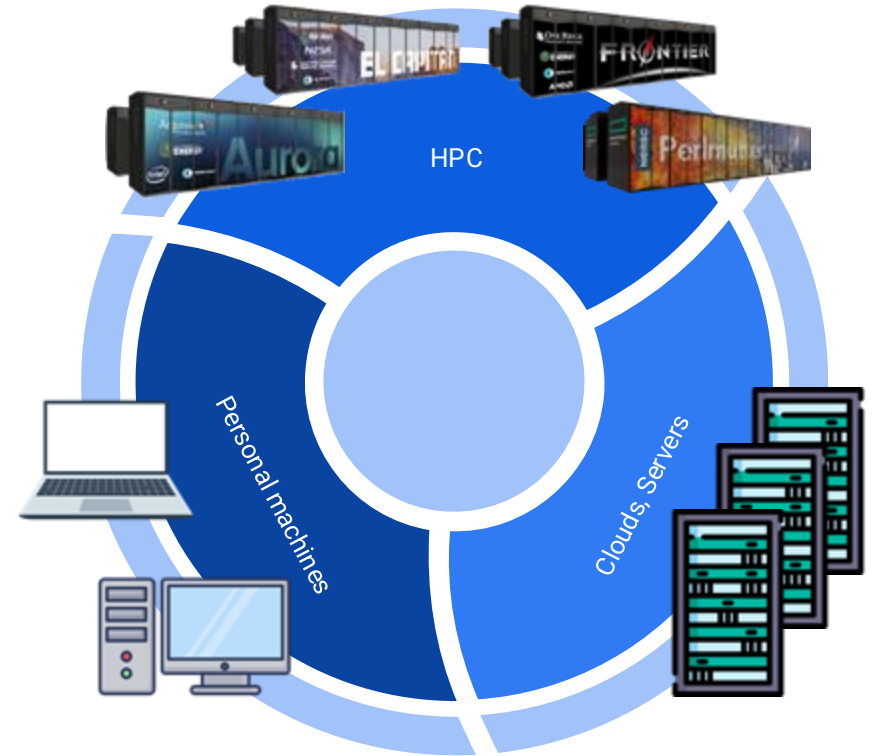
F u g a k u



PROGRAMME  
DE RECHERCHE  
NUMÉRIQUE  
POUR L'EXASCALE

# We want to bring HPC software to the world

- Today's HPC accelerators will quickly make their way to clouds and personal computers
- The impact of supercomputer software isn't limited to supercomputers
- Leverage know-how developed on flagship HPC systems in industry
- We need to lower barriers to use



# What is HPSF?



Performance



Portability



Productivity

1. A neutral hub for open source, high performance software
2. HPSF supports projects that advance portable software for diverse hardware by:
  - Advocating for best practices
  - Increasing adoption
  - Aiding community growth
  - Enabling development efforts
3. Lowering barriers to productive use of today's and future high performance computing systems

# What kind of software is in HPSF so far?

## Build and deployment tools



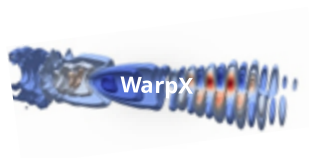
## Visualization tools

Viskores

## Solvers and HPC frameworks



## HPC Applications



## Performance tools



## Parallel programming models



\*in progress

# HPSF Members

Premier



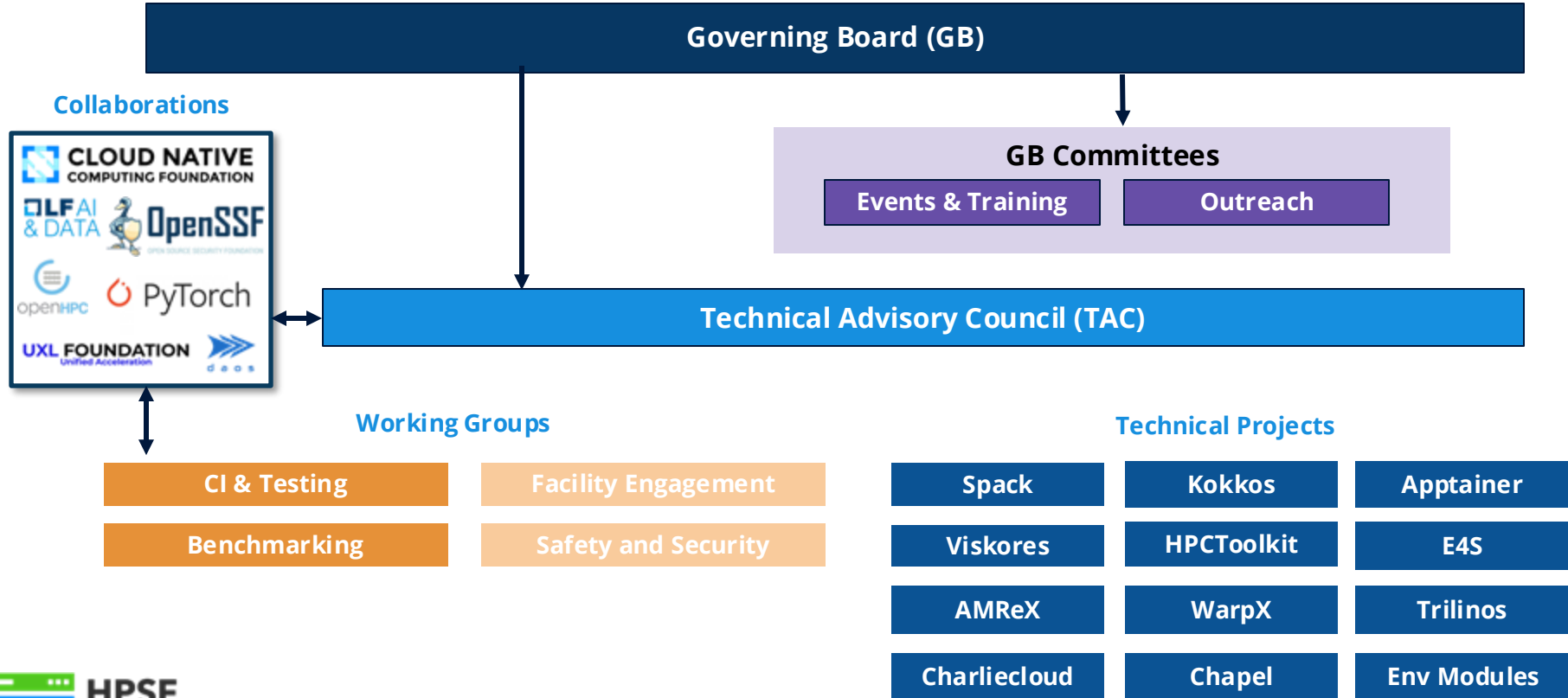
General



Associate



# Governance



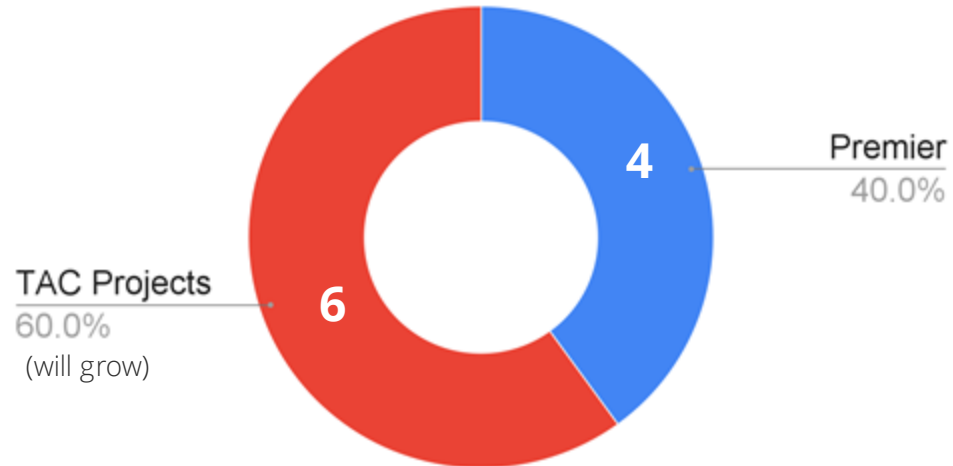
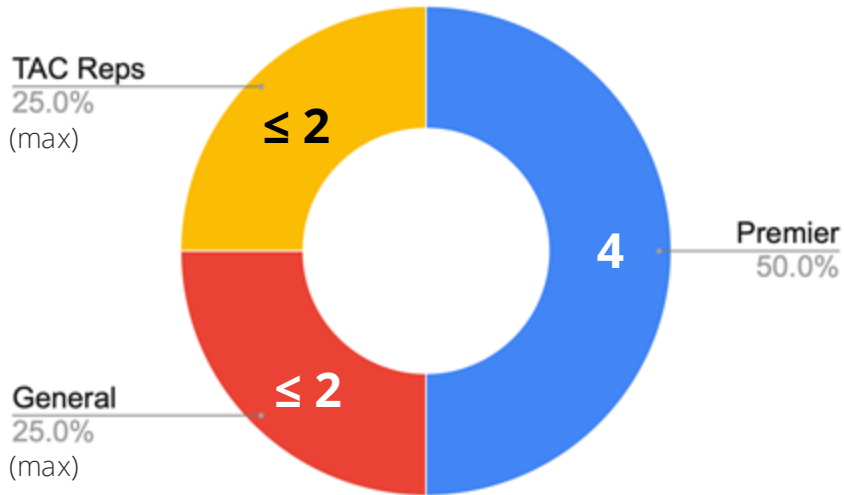
# Representation in Governance

## Governing Board

- One for each Premier Member
- One for every 5 General Members – up to 25%
- One for every 5 Technical Projects – up to 25%

## Technical Advisory Board

- › One for each Premier Member
- › One for every Core or Established project
- › TAC projects: have moved beyond sandbox level





A wide-angle, low-perspective shot of a server room. The room is filled with rows of server racks on both sides, creating a long, narrow aisle. The lighting is dramatic, with a strong blue hue on the left side and a strong red hue on the right side, meeting in the center. The ceiling is visible, showing a grid of lights and various cables. The floor is a dark, reflective material. The overall atmosphere is futuristic and high-tech.

# HPSF Project Lifecycle

# Project Lifecycle Goals

## Signal project maturity

What does it mean to a user that a project is an HPSF project?

HPSF projects overall show a diversity of project maturity

Users can trust projects at each stage to meet certain criteria

## Provide growth path

Concrete best practices and goals

Provides a target for projects as they mature



# HPSF Project Stages

## Sandbox

Indicates to users that a project is committed to open governance and working towards best practices.

Projects which are, or have the potential to be, important to the ecosystem of High Performance Computing.

Low barrier of entry to the HPSF

## Established

Indicates to users that a project is proven in the user community and has robust development practices.

Projects which are major components of the High Performance Software ecosystem.

Projects are voting members of the HPSF Technical Advisory Committee (TAC).

## Core

Indicates to users that a project has a sustainable cycle of development, maintenance, and support.

Projects which are used commonly in production environments and have large, well-established project communities

Projects are voting members of the HPSF TAC

**Emeritus** Previously established or core projects that are no longer under development.

# Sandbox Project Criteria

- Meet all requirements to be a [Linux Foundation project](#)
- Have 2 TAC sponsors to champion the project & provide mentorship as needed
- Project must align with the goals of the HPSF mission
- Have a charter document [...] use of one or more licenses approved as “open” by the Open Source Initiative.
- Have a code of conduct
- Upon acceptance, projects must list their status prominently on their website/README

# Established Project Criteria

- Meet all Sandbox project criteria
- Document that it is being used successfully in production by at least three independent end users [...].
- Demonstrate development processes [...] that lower barriers to contribution and ensure software quality necessary for increased adoption.
- Demonstrate a substantial ongoing flow of commits and merged contributions.
- Receive a 2/3 majority vote of the TAC to move to the Established Stage.

# Core Project Criteria

- Meet all Established project criteria
- Have a defined governing body [...] no more than 1/2 of whom are affiliated with the same employer. No single institution may control a voting majority of the governing body.
- Have a documented and publicly accessible description of the project's governance, decision-making, and release processes.
- Have a healthy number of committers from at least two organizations [...].
- Explicitly defined security reporting and incident mitigation processes [...].
- Provide evidence of widespread adoption in the HPC ecosystem or in some important component thereof.
- Receive a 2/3 majority vote from the TAC to move to Core stage

# How to Join (for projects)

- Talk to TAC members and find two sponsors
- Submit a GitHub issue at <https://github.com/hpsfoundation/TAC>
- Prepare a presentation on how your project meets lifecycle criteria
- Work with TAC sponsors to schedule presentation to TAC

## Issue: New Project Proposal

This form is for new software projects that like to join HPSF. If this doesn't look right, [choose](#)





### Add a title

[Project Proposal]

### Add a description

Write

Preview

H B I  

# Project Proposal

1. Name of Project

2. Project Description

3. Statement on Alignment with High Performance Software Foundation's Mission

4. Project Website (please provide a link)

[Project Website](https://www.yoursite.org)

5. Code of Conduct (please provide a link)

[Code of Conduct](https://www.codeofconduct.org)

6. Governance Practices (please provide a link)

[Project Governance](https://www.projectgovernance.org)

# Announcing the first HPSF Conference!

- May 5 - 8 2025
- Embassy Suites Chicago Magnificent Mile
  - 45 minutes from O'Hare
  - Renovated in 2018
- Tentative program
  - **Monday + Tuesday:**
    - HPSF Plenary sessions
    - Presentations
    - Working group collaborations
  - **Wednesday + Thursday**
    - Project community meetings for individual projects



[bit.ly/hpsfcon](https://bit.ly/hpsfcon)





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[hpsf.io](https://hpsf.io)