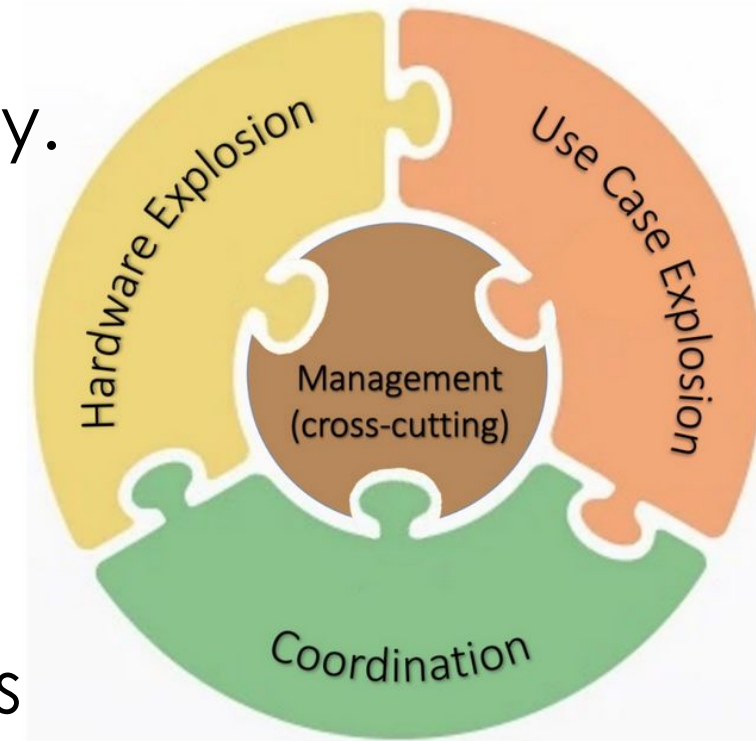# STEP
SUSTAINABLE TOOLS
ECOSYSTEM PROJECT

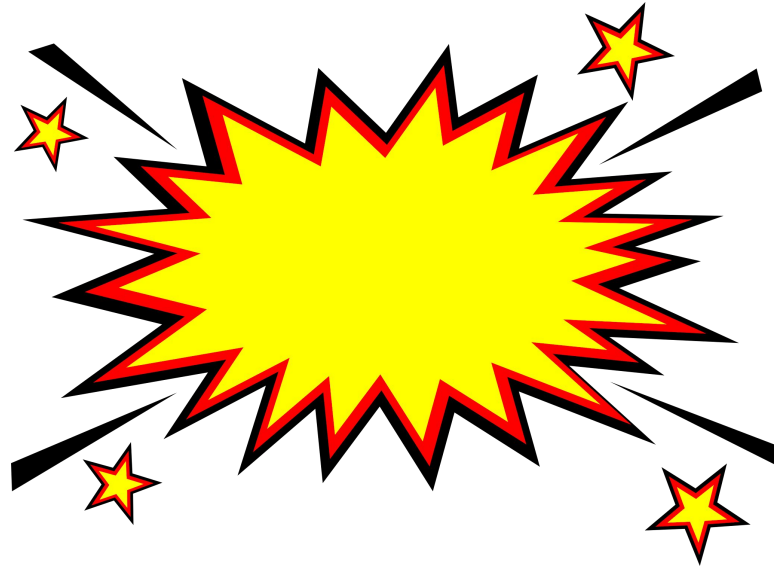# Provisional STEP Structure

August 16, 2023

Phil Carns (STEP deputy PI)
Argonne National Laboratory

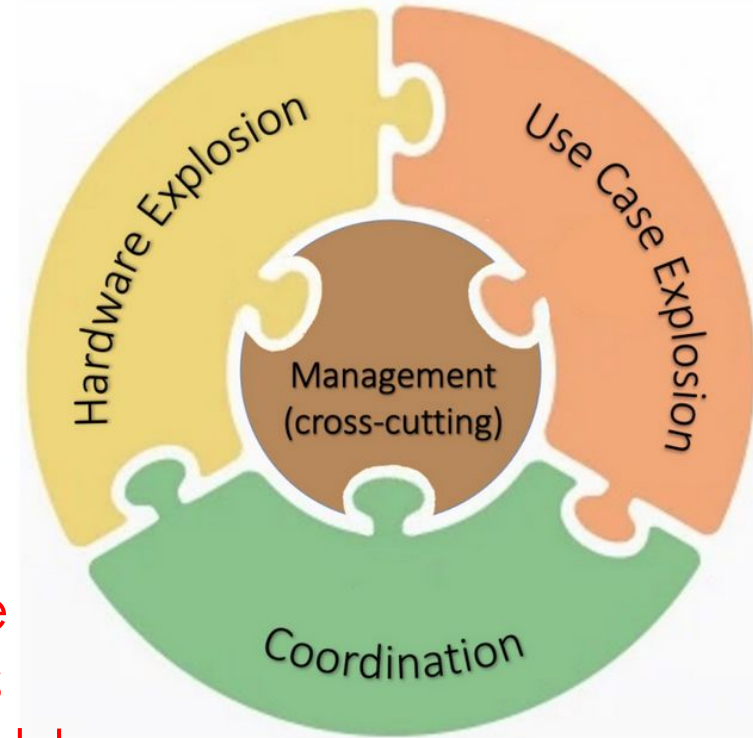# Addressing sustainability challenges in the HPC tools ecosystem

- Recall that the STEP project has identified four key challenges to HPC tool sustainability.

- We will review and refine how to address these challenges in the upcoming plenaries and breakouts.

- We also need an organizational structure to help us reason about the actual activities that will address these challenges.

Hardware Explosion

Use Case Explosion

Management (cross-cutting)

Coordination

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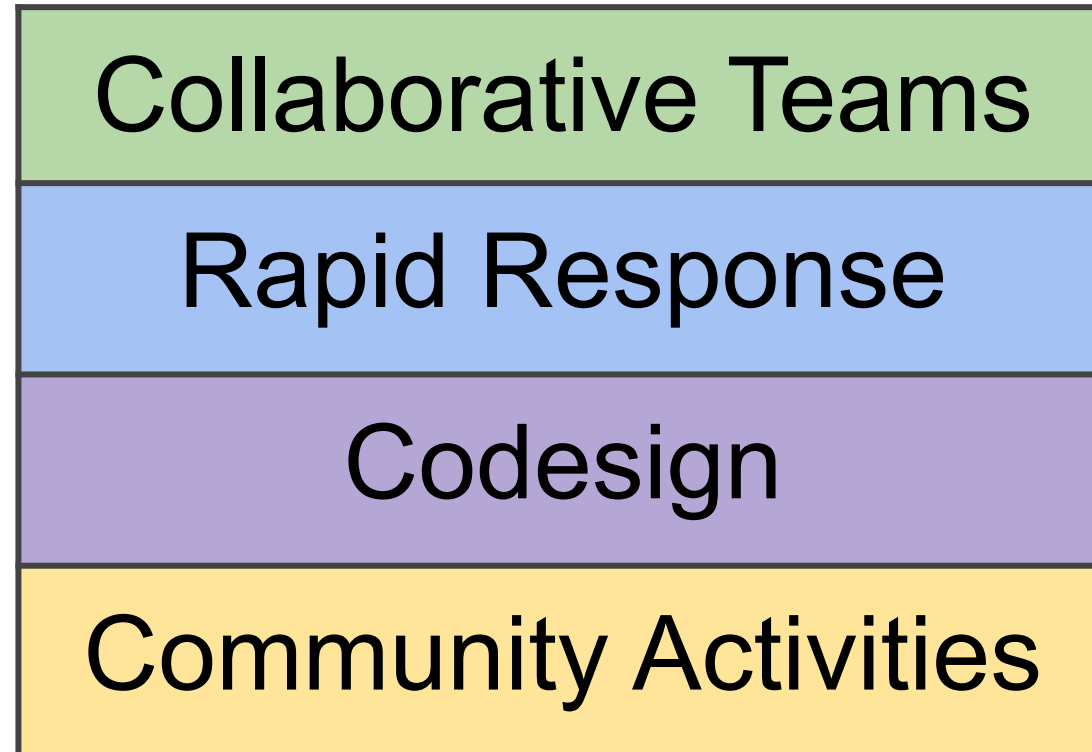# Addressing sustainability challenges in the HPC tools ecosystem

(We mean exploding hardware **complexity.**) If your hardware is literally exploding, then you might need help from another agency entirely...)

Hardware Explosion

Use Case Explosion

Management (cross-cutting)

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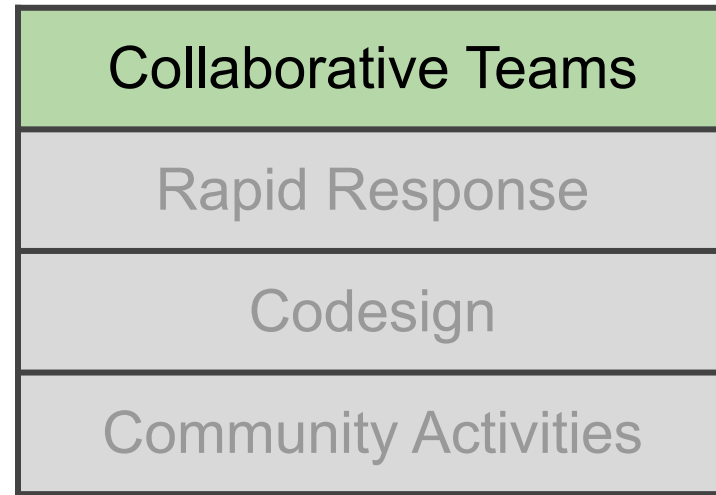ECOSYSTEM PROJECT

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STEP Center initiatives: an organizational structure

- **STEP Center initiatives** are *management structures* within STEP based on groupings of ongoing sustainability activities with common organizational needs.

- Each initiative may require different time scales, governance strategies, and interactions with external entities.

- Each initiative cuts across all four challenges to some degree.

- The concept was first presented and refined at the STEP Midwest Town Hall last month. It is still a work in progress!

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Introducing the 4 STEP Center initiatives

Collaborative Teams
Rapid Response
Codesign
Community Activities

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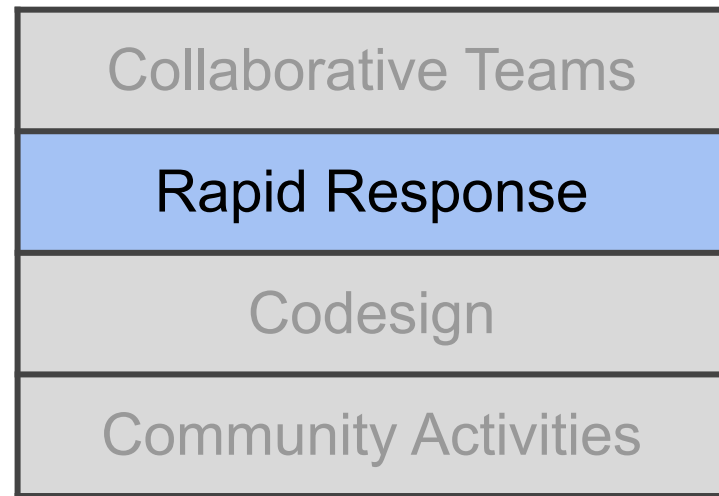ECOSYSTEM PROJECT

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Collaborative Teams initiative

- In many ways, this is the most conventional of the four initiatives: it is meant to support core activities that address long-term sustainability.

- The name "*Collaborative Teams*" reflects that most sustainability problems are better addressed through **ongoing collaborative effort to address a shared concern** rather than support for isolated tool projects.

- This initiative would support teams (not exclusive to tool developers) who propose to work together to address a long-term sustainability challenge.

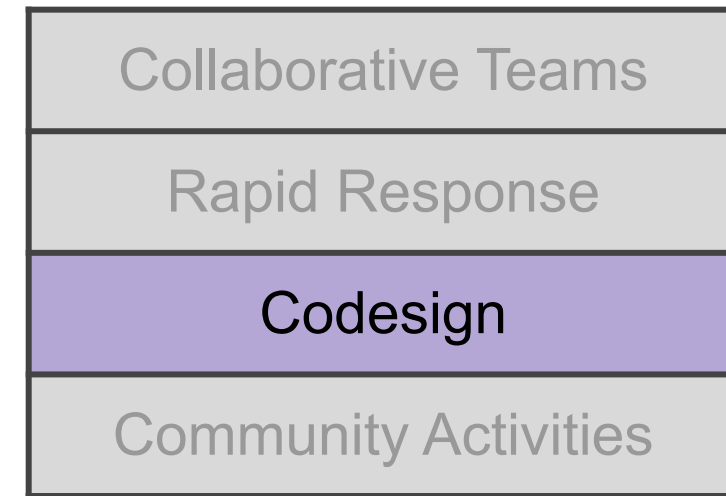**STEP** SUSTAINABLE TOOLS ECOSYSTEM PROJECT

Rapid Response initiative

- Driven by a recurring theme in sustainability discussions: technology needs often evolve faster than the tools that support them.

- We therefore need an **agile mechanism to address unanticipated needs** as they arise, independent of the conventional funding cycle.

- Distinguishing features: lightweight administration, short duration, on-ramps to longer term collaborative team work.

- Somewhat like "contingency funding", but as a first-class citizen with well-defined and transparent governance.

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Codesign initiative
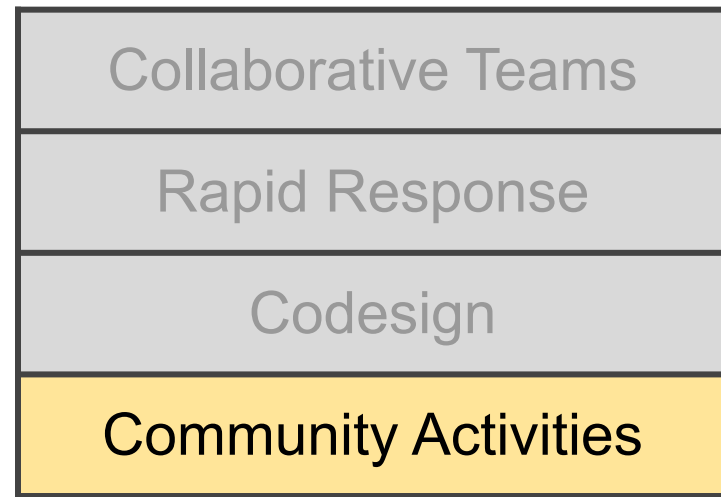
Codesign

- We must improve coordination across community stakeholders to truly address sustainability.

- This initiative consists of **explicit cross-ecosystem engagement for codesign to address sustainability problems that span the ecosystem**.

- Tool developers would work directly with applications, facilities, vendors, system software developers, and other parties for joint solutions that require ongoing multi-party contributions to achieve.

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Community Activities

- A Community Activity is any center-wide activity that benefits the community at large and is not well-served by implicit, ad-hoc manpower contributions from individual teams.

- Examples (not exhaustive): representation in standards bodies, hosting center-wide meetings, promoting workforce development, and hosting education events.

- **This initiative focuses on sustainability issues that transcend individual projects over long time horizons.**

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Some things to keep in mind as we explore the four sustainability challenges

Please consider how the actionable recommendations fit into the STEP initiative framework.

Is everything accounted for? Is there clear mapping between issues, recommendations, and the means to enact them?

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Thank you in advance for your valuable time and help!

Questions or comments?

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