

Section on Research Computing for the UF Strategic Plan

Preface – Unlike the organization and infrastructure associated with other sections of the new strategic planning document, which include networking, instructional computing, and institutional data systems, no campus-level organization and infrastructure for High-Performance Computing (HPC) currently exists at the University of Florida. However, analysis and discussions within the HPC Committee have reached the conclusion that such an organization is needed in order for UF to be competitive in this pivotal realm of university research strength. Therefore, the focus of the institutional-level Research Computing (a.k.a. HPC) element of this strategic plan will emphasize the design and development of a new campus-level HPC organization with requisite facilities and support structure.

Focus Area

New organization on campus for high-performance computing (HPC). Implementing phase one of a three phase strategy for campus-wide HPC.

Description

Development of a university-level, faculty-led, research-driven HPC institute that will provide the human resources and infrastructure needed to enable faculty-led research teams to address the most challenging problems across a broad range of disciplines only possible through the advancement and exploitation of strategic computation and communications. The ultimate objective of this institute is to develop and showcase world-class leadership in utilization and deployment of new HPC technologies and in research and development of such technologies.

Implementation Strategies

The HPC committee of faculty experts shall be charged to do the following:

- 1) Investigate and analyze HPC organizations at peer institutions to help in determining high-level organizational options.
- 2) Develop a clear statement of mission for the institute, in terms of the emphases of research to be initially supported by this organization, as well as the scope of participation and support.
- 3) Develop the organizational structure needed for this institute, in terms of faculty governance, management, personnel, space, and recurring budgetary requirements, including a basis for oversight and industry involvement.
- 4) Develop the facilities structure needed for this institute, in terms of computing and networking equipment and other tools to support faculty-led research teams in HPC.
- 5) Develop a policy for allocating shared resources to faculty researchers and research teams.

- 6) Develop ideas for promoting and supporting collaborative research, particularly national and international projects of an interdisciplinary nature.
- 7) Develop ideas for incentives by which faculty researchers may consider collocating their HPC resources within the campus-level HPC organization.
- 8) Develop ideas for requisite technical services in HPC that should be provided by the institute to its faculty members.
- 9) Develop ideas for degree options for students that will leverage the strengths of the new organization, such as a graduate-level minor in HPC.
- 10) Develop ideas for assisting new faculty members, or existing faculty-led teams new to HPC, in their development of requisite HPC skills so they may readily exploit the benefits of the institute and its resources in their research.
- 11) Present a complete planning document for a period of faculty comment. Review and revise accordingly. Then present the revised document to the administration for review and response.
- 12) Revise the planning document based on feedback from the administration.
- 13) Implement the plan upon receipt of approval and funding.

Outcomes

- 1) Increased visibility for the university with respect to world-class leadership in utilization and deployment of new HPC technologies and in research and development of such technologies.
- 2) Improved quality of education for students across a broad spectrum of HPC-related disciplines on campus.
- 3) Increased competitiveness, visibility, and reputation in HPC-related disciplines versus peer institutions.
- 4) Improved quality of research on campus in addressing key challenges that significantly benefit from strategic computation and communications.
- 5) Increased breadth and depth of cross-disciplinary collaborative research and engineering involving participants within and outside the university.
- 6) Increased external funding in various HPC-related disciplines.
- 7) Increased competitiveness in the recruitment of high-quality faculty members in various HPC-related disciplines.
- 8) Increased competitiveness in the recruitment of high-quality students in various HPC-related disciplines.