CRC Center for Research Computing

The Center for Research Computing (CRC) is one of more than 20 core facilities and research resources at Notre Dame. Available to on-campus and external users, the CRC is supported by Notre Dame Research and the Colleges of Arts and Letters, Science, and Engineering.

Mission & Vision

MISSION The Notre Dame Center for Research Computing facilitates multidisciplinary discoveries through advanced computation, software engineering, artificial intelligence, and other digital research tools.

VISION To accelerate discovery through innovative cyberinfrastructure and world class multidisciplinary research.

Organization

The CRC is comprised of three main groups with complementary expertise:

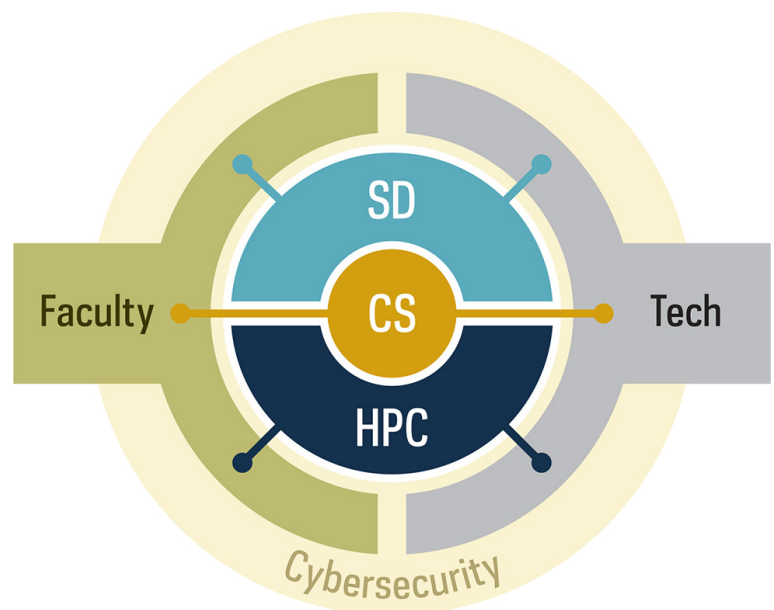**CS: Computational Scientists**
Primary initiators of collaboration between CRC groups and external researchers. Act as principal investigators alongside faculty and industry partners to develop innovative research environments that support advanced data and information processing services.

SD: Software Development
Agile, security-oriented, programming teams that empower research through innovative solutions for sharing, processing, analyzing, and visualizing data.

HPC: High Performance Computing
Engineers design, deploy and operate state of the art computational infrastructure, with comprehensive user support for associated hardware and software. Provide scientific workflow and performance optimization expertise to ND researchers and collaborators on both ND hosted and national computational resources.

Domains in which CRC Operates and Serves

	CS	SD	HPC	
Computational Research *In all Colleges*	○		●	
Non-comp. Research/Scholarship *Requiring software dev. and/or data mgmt.*	●	●	○	
Cyberinfrastructure Development *Across campus and nationally*	●	●	●	
Remote Sensing & Data Management	●	●	●	
Help & Training	○	○	●	

● Major Involvement
○ Minor Involvement

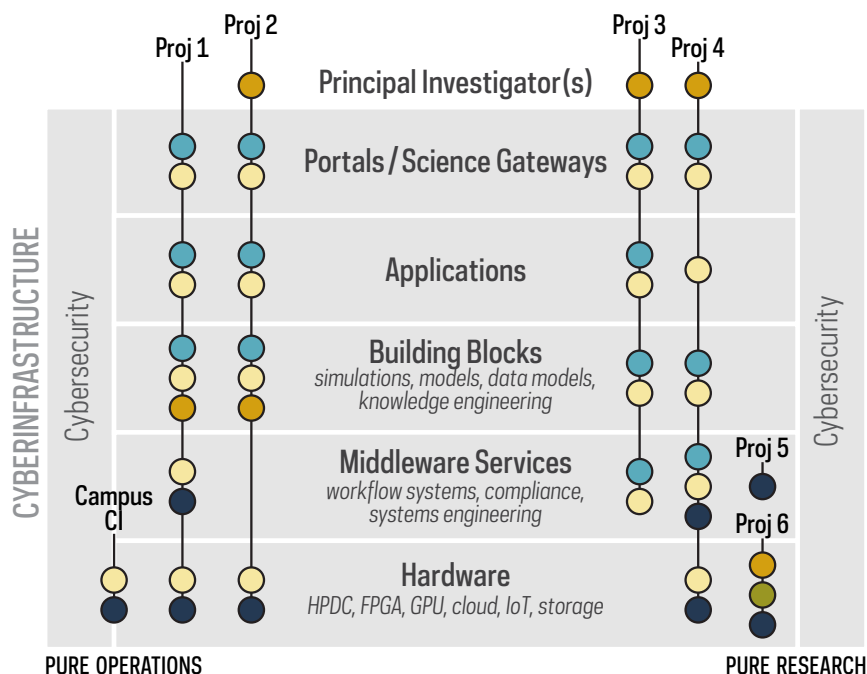The CRC includes experts in cybersecurity and visualization, as well as a Business Office.

Science Team Approach

Modern cyberinfrastructure— research environments connecting advanced instruments, laboratories, data, computers, and people—involves multi-layered integration of services and resources (gray boxes). CRC personnel from different groups with different expertise form **multi-disciplinary science teams** spanning the layers of cyberinfrastructure required for a project.

Some projects may focus on one or two layers, while others span them all.

CRC People
- Computational Scientists
- Software Development
- Security Experts
- Sensor Systems
- HPC

CYBERINFRASTRUCTURE

Cybersecurity

Proj 1 Proj 2 Proj 3 Proj 4

Principal Investigator(s)

Portals / Science Gateways

Applications

Building Blocks
simulations, models, data models, knowledge engineering

Middleware Services
workflow systems, compliance, systems engineering

Proj 5

Proj 6

Campus CI

Hardware
HPDC, FPGA, GPU, cloud, IoT, storage

Cybersecurity

PURE OPERATIONS

PURE RESEARCH

Core Values

Building on ND and NDR's missions, visions, and values, the CRC strives for a well-defined, pervasive culture that supports the Center's work, people, and place in the University.

INNOVATIVE
The Center encourages new ideas, and individuals are able to move ideas through the organization.

AGILE
The Center's flexible structure responds and adapts to opportunities.

SECURITY CONSCIOUS
The Center is mindful of cybersecurity needs and how fulfilling those needs enables research and makes the Center more competitive.

ORGANIZATIONALLY LEAN
De-emphasize bureaucracy; emphasize efficiency. Dedicated, accountable staff own their jobs and have independence to make decisions regarding their work without micromanagement.

COLLABORATIVE
Team members are open and willing to cooperate, share, respect, and work well together.

COMMUNICATIVE
As a Center, we strive to send, receive, and understand the information necessary to work effectively. We encourage candor.

PEOPLE FOCUSED
The Center is a supportive workplace where people have the resources and guidance to be effective in their work, as well as resources to support wellness and maintain physical and mental health.

PERFORMANCE ORIENTED
People know what determines success in their roles, and achievements are recognized. Leaders are actively engaged in positioning people for growth at the intersection of their passions and the needs of the organization.

PURPOSE DRIVEN
Strong team players understand the wider impact of their work and are motivated through progress toward individual and collective goals.

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