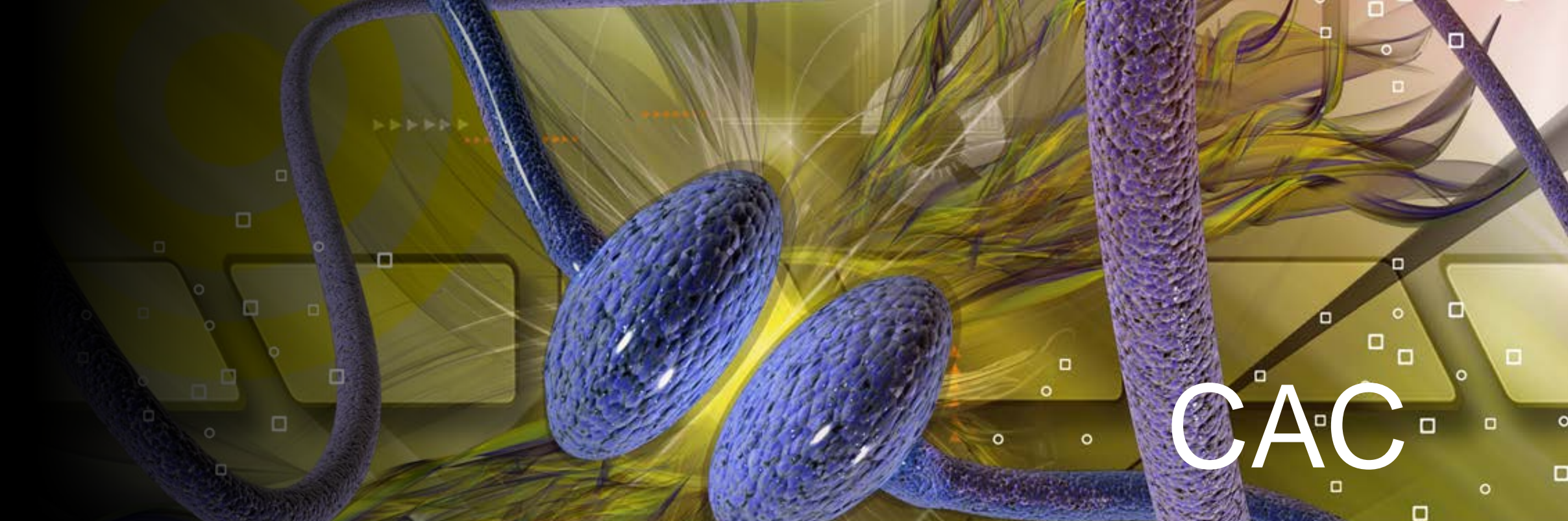


# Cornell University Center for Advanced Computing



Research Computing | Consulting | Training & Education

www.cac.cornell.edu

## Accelerate Discovery

Do you need to achieve your research goals faster and more efficiently?

## Research Computing & Consulting

CAC provides Cornell faculty and staff with research computing and consulting services that accelerate discovery and broaden impact. Our PhD scientists, computational, and data analysis experts offer a wide range of services from HPC cluster maintenance and storage to database design, programming, and visualization. Our goal is to help you get your results faster and broaden your engagement with research colleagues, citizen scientists, the public and your supporters.

The 80-plus Cornell faculty who use CAC resources have over \$100 million in sponsored program research awards from NSF, NIH, USDA, DOE, NASA, and other funding agencies.

## Innovation Leader

Historic center firsts include: first of 5 US supercomputing centers, first IBM SP supercomputer deployment, first Dell supercomputer deployment, largest Web server in the world deployed at the US Olympics, and IDC HPC Innovation Excellence Award for breakthrough research in hepatitis C. Center successes resulted in a NYS grant which drove the construction of Frank H.T. Rhodes Hall.

Today, we continue to innovate as PI on a \$5-million NSF award to build a federated cloud and tools that encourage institutions to share data analysis resources and reduce time to science.

## Cloud Platforms



### Red Cloud Secure

- Public data
- CPU cores & RAM not over subscribed
- Subscription-based
- Consulting available
- HPE Helion Eucalyptus software
- AWS compatible
- Dell servers/storage in Ithaca & NYC

- Non-public data
- Weill Cornell Medicine use only
- Runs behind WCM firewall
- HPE Helion Eucalyptus software
- AWS compatible
- Dell servers/storage in NYC & Ithaca



- NSF federated cloud
- New accounting and cloud metric tools
- 7 initial use cases
- HPE Helion Eucalyptus software
- AWS compatible
- Dell servers/storage at partner locations: CU, UB, UCSB ...

## Core Services

Service	Capability
High Performance Computing	Design/Maintain Clusters & Storage
Red Cloud	Public Clouds in Ithaca & NYC
Red Cloud Secure	WCM Non-Public Data Cloud
Research Databases	Design, Optimize, Host, Manage
Programming & Code Improvement	Proficient in Many Languages
Web Sites/Science Gateways	Design/Host User Interfaces and HPC and Database Backends
Cornell Virtual Workshops	Design/Develop Online Training & Outreach Workshops (Any Subject)

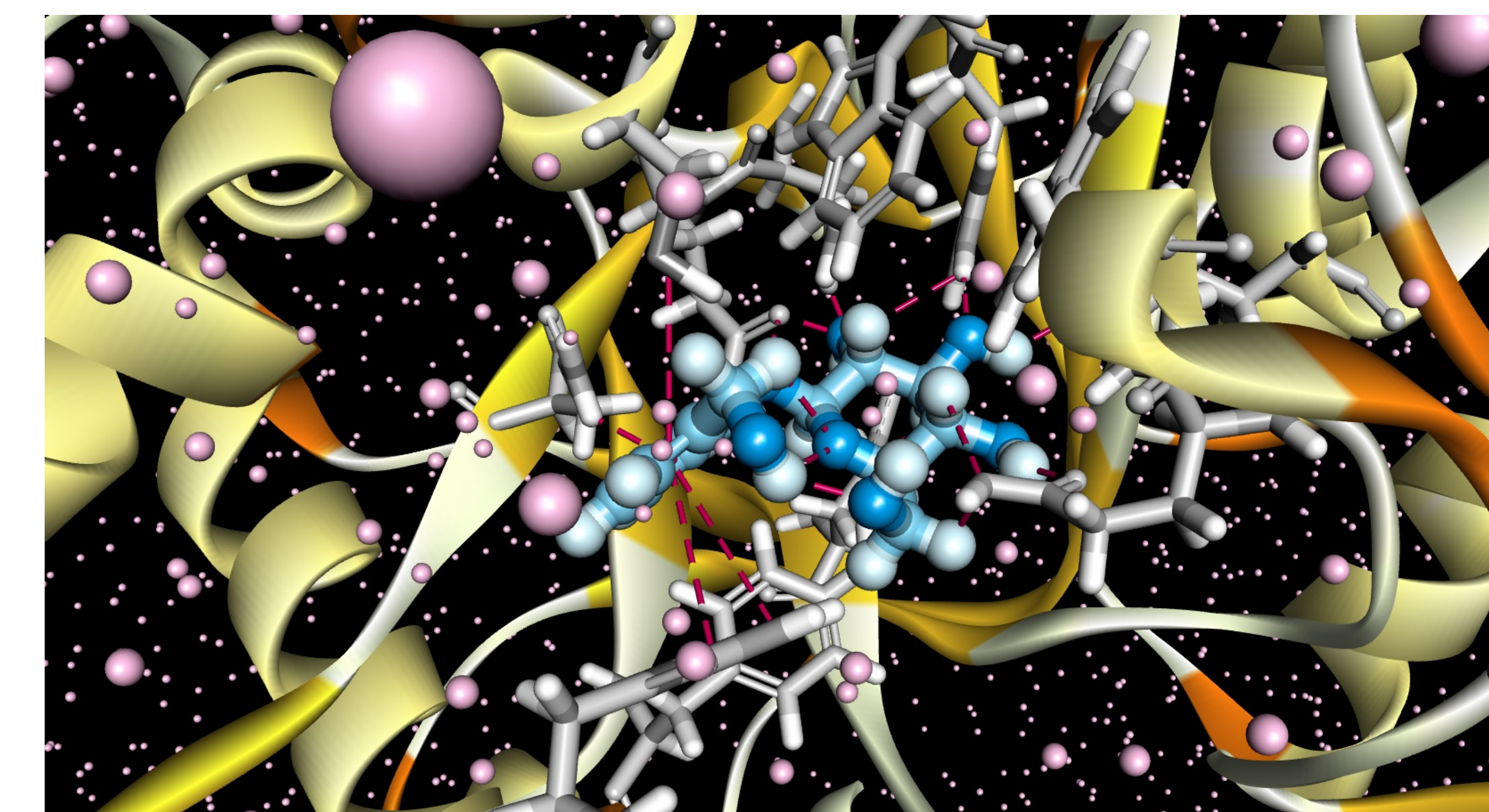
## Process

Analyze	Plan	Deliver	Maintain
CAC professionals work closely with Cornell faculty and research staff to analyze project requirements.	Faculty or research staff select levels of computing, storage, and/or hourly consulting services desired.	Services delivered. CAC consulting in regular contact with PI or research team. Accounting available online.	Quality, turnkey maintenance available for HPC clusters, storage systems, web sites, and databases.

## Rates

- Professional computing and consulting services are fee-based. A Cornell account is required for charge back.
- No fees required for initial requirements meeting; access to high-speed networks from CAC-supported services; and, up to 20 hours consulting to architect an HPC cluster or storage system.
- Researchers who wish to try out Red Cloud may request a free exploratory account.
- Weill Cornell Medicine researchers with non-public or HIPAA data should contact WCM ITS to access Red Cloud Secure.
- Industry, other colleges and universities, non-profits, and public agencies may access CAC services or partner with us through our Partner Program. Red Cloud subscriptions are available to external entities on demand.

## Sample Project



CAC created a Red Cloud image with BIOVIA Discovery Studio; resolved license, installation, and security issues; and, created job submission scripts and scaling tests for Ludmilla Aristilde, Dept. of Biological and Environmental Engineering. Simulations and data analyses were performed on Red Cloud and Stampede. Result: first fully-computational approach to evaluate how different environmental conditions disrupt the activity of carbon-cycling extracellular enzymes.

## National Awards

Awards	Role
Aristotle Cloud Federation	Build Federated Cloud, Portal & Tools
Jetstream	Develop Jetstream Virtual Workshops
NANOGrav PFC	Cyberinfrastructure Design, Software Design, Data Management
Physics at the Information Frontier	Optimize Parallel Code for Analysis of CERN Detector Data
Stampede 2	Develop Stampede Virtual Workshops
XSEDE 2	Workforce Development Training Lead, Develop Cornell Virtual Workshops
XSEDE 2	Community Infrastructure Lead, Build Software/Scripts, Maintain Repository

## Contact

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CIO & Vice President - Cornell Information Technologies

