OPEN OnDemand

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Remote Science

Challenge

Researchers seek to build an online portal that allows remote use of scientific instruments across the nation.

Approach

With its widespread usage, security measures and adaptability, Open OnDemand serves as a foundation for the project.

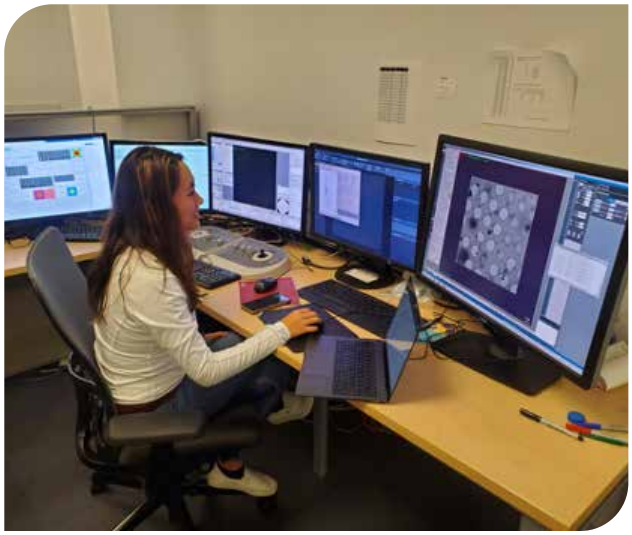
Solution

The team is collaborating with institutions to expand functionality and begin implementation of the portal within the research community.

Any Device, Anywhere

"Open OnDemand is an interface that a lot of researchers are familiar with, which made it an obvious choice for our interface."

— *J. Barr von Oehsen, Rutgers University*



Ecosystem for Research Networking develops portal for remote instruments

The Ecosystem for Research Networking (ERN), a team consisting of members from Rutgers University, MGHPCC, Omnibond, Virginia Tech, UMass Amherst, Penn State University and Pegasus, is developing a way to use scientific instruments remotely online. The project seeks to improve access to high-cost, specialized equipment to advance national research initiatives.

The ERN Cryo-EM Federated Instrument Pilot Project, in partnership with Rutgers University, is creating a portal, built upon Open OnDemand, that enables the remote control of cryo-electron microscopes and analysis of electron microscopy data.

Cryo-electron microscopy (Cryo-EM) is quickly gaining popularity within the biochemistry

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This project is maintained by the Ohio Supercomputer Center (OSC), a member of the Ohio Technology Consortium, the technology and information division of the Ohio Department of Higher Education. | This material is based upon work supported by the National Science Foundation under grant numbers 1534949, 1835725, 2138286, 2303692, and 2411375.

community as the method of choice for structural biology, due to its unique abilities and extreme resolution. Creating a portal for remote Cryo-EM operation and analysis will remove cost and geographic restrictions for more researchers around the world, connecting them to the tools they need to advance scientific knowledge.

Due to the enormous amounts of data collected by the instruments, much of the processing needs to be outsourced to high performance computing clusters. The new portal allows for this data to be processed in real time using a closed-loop system between remote operator, instrument and off-site HPC cluster. This real-time analysis allows for more accurate data extraction and increased efficiency.

Open OnDemand provided an efficient starting point for the portal's development because of its recognition within the research community, robust security measures and adaptability.

"Open OnDemand is an interface that a lot of researchers are familiar with, which made it an obvious choice for our interface," said J. Barr von Oehsen, associate vice president of the Office of Advanced Research Computing at Rutgers University.

Open OnDemand's reliance on security processes inherited from the underlying operating system also provided an easy starting point for the development of federated access, a method of secure authentication where the portal can incorporate institutions' native logins to identify users and grant them access. In addition, Open OnDemand's flexibility allowed the team to create a portal that is easily customizable, allowing other instruments to be swapped in with ease.

Many institutions have already expressed interest in developing and using the ERN portal within their research environments.

openondemand.org/ern

Try Open OnDemand

It is simple to set up a live demo of Open OnDemand for evaluation. Just follow the directions at **openondemand.org/demo**. Once the steps are complete, explore Open OnDemand's documentation and core applications—Files, Editor and Job Composer—for more information.

Compute Seamlessly

Accessible via any browser on any device with an internet connection, Open OnDemand requires zero client-side software installation. See it compute in some unusual places.

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