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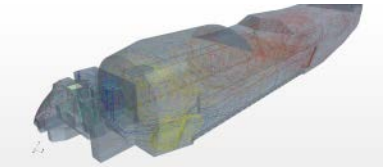
DoD High Performance Computing Modernization Support to the Fight Against COVID-19



VICKSBURG, Miss. – The Department of Defense High Performance Computing Modernization Program (HPCMP) is using its supercomputing resources to support the federal response to the COVID-19 pandemic.

For the Office of Science and Technology Policy High-Performance Computing COVID-19 Consortium, the HPCMP offers access and technical expert support for the program's open research system, a Cray supercomputer with 15,000 cores. The platform is set up outside of the sensitive "official use only" environment and can easily support academics on short notice.

DoD researchers have also completed significant work on supercomputers, particularly in support of a joint urgent operational request from the Commander, U.S. Transportation Command. The project examines methods for mitigating risk to aircrews and medical attendants during airlift of COVID-19 passengers. Air Force and program subject matter experts conducted computational fluid dynamics studies of airflow and droplets through the aircraft interior using high-performance computers. This work is being run on supercomputers at the Air Force Research Laboratory's DoD Supercomputing Resource Center at Wright-Patterson Air Force Base, Ohio and leverages efforts on software developed and procured by HPCMP.

A second effort underway is a task from the U.S. Army Medical Command and the Walter Reed Army Research Institute. WRAI is sponsoring a subject-matter expert at the Southwest

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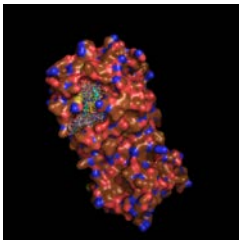
Research Institute to conduct virtual drug screening in support of COVID-19 vaccine candidates. HPCMP is providing high-performance computing resources at the Army Research Lab at the U.S. Army – Aberdeen Proving Ground, Maryland and the U.S. Army Engineer Research and Development Center's DoD Supercomputing Resource Centers to accelerate the computational chemistry investigations of target proteins.



The resources on hand at SWRI only allowed for two million candidates to be investigated over a three-week period. The desire is to assess 40 million target compounds – HPC assets will significant accelerate this process. The HPCMP has provide one million HPC hours, access and subject-matter experts to transfer the researchers' codes to HPC environments.

The U.S. Army ERDC, headquartered in Vicksburg, Mississippi, is the parent organization of the HPCMP and is supporting FEMA with COVID-19 modeling using its Susceptible, Exposed, Infectious, Recovered model and HPC equipment. ERDC is supporting the U.S. Army Corps of Engineers' Geospatial Task Force and the Pacific Ocean Division by providing model results and answers to questions related to the Guam modeling effort. Queries range from how the arrival of U.S.S. Theodore Roosevelt and an on-shore quarantine of the sailors might impact the spread of COVID-19, to providing more detailed information on the assumptions and scenarios used for the model. ERDC is also providing modeling support to FEMA Region 1 and has been requested to model the Northern Mariana Islands for POD. The SEIR model, modified by ERDC is running on Onyx in the ERDC DSRC. Workflows are being developed to optimize the modeling effort. This will also help support other modeling requests being received, including the development of spread curves for the top 12 to 15 metropolitan areas in the Nation. Additionally, program assets are now available to the DoD's COVID-19 Modeling and Simulation Synchronization Task Force to assist with modeling support to Office of the Secretary of Defense.

About the DoD High Performance Computing Modernization Program

The HPCMP provides the Department of Defense supercomputing capabilities, high-speed network communications and computational science expertise that enables DoD scientists and engineers to conduct a wide-range of focused research and development, test and evaluation and acquisition engineering activities. This partnership sends advanced technology to U.S. forces faster, less expensively and with a greater certainty of success. Today, the HPCMP provides a complete advanced computing environment for the DoD that includes unique expertise in software development and system design, powerful high-performance computing systems and a premier wide-area research network. The HPCMP is managed on behalf of the Department of Defense by the U.S. Army Engineer Research and Development Center.

For more information, please visit our website at: www.hpc.mil.

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