

High Performance Computing Software Applications Institute for Space Situational Awareness (HSAI-SSA)

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This poster paper firstly provides a status of the Institute project team's work to date over the past year, starting with brief HSAI background from the Department of Defense (DOD) High Performance Computing Modernization Program (DOD HPCMP). HSAI-SSA is one of only nine DOD institute projects that have been selected by the Deputy Under Secretary of Defense (Science and Technology) to focus and use advanced computational science and high performance computing to accelerate solving the DOD's highest priority challenges and make important advances in research, development, test, and evaluation. HSAI-SSA is the only DOD institute project focused on Space. We next describe Space Situational Awareness (SSA), how its many challenges necessitate supercomputing, and identify the type of disciplines required to solve many SSA problems; and the role of the Institute, which is led by the Air Force Research Laboratory AFRL/RD Directorate and an Onsite Director located on Maui. We then follow with a short discussion of the vision, mission, and overview of the Institute's strategic goals and core competencies. HSAI-SSA core competencies include Image Enhancement, Astrodynamics, Non-Resolvable Satellite Characterization, Data Integration, and High Performance Computing. We then follow up with and most of the poster shows and discusses the technical status for several of our current software applications projects and show the high performance computing metrics we have been able to achieve to date. In closing, we quickly summarize HSAI-SSA challenges, members and partners, and technology transition payoffs for selected applications and users.