The Spaceport Command and Control System in development by NASA’s Ground Systems Development and Operations Program will operate, monitor and coordinate the ground equipment for launch of the Space Launch System rocket and Orion spacecraft. The SCCS will comprise a suite of complex software linking the launch team operators in Firing Room 1 inside the Launch Control Center at NASA’s Kennedy Space Center in Florida to the SLS rocket and Orion spacecraft in processing areas such as the Vehicle Assembly Building, Mobile Launcher and at Launch Complex 39B. It will also allow controllers at Kennedy to communicate with astronauts inside Orion, controllers at the Air Force Eastern Range and other NASA control centers.

The SCCS is the first new processing and launch software to be developed for NASA led human spaceflight missions launching from the Kennedy Space Center since the Space Shuttle Program fleet was retired in 2011. It is designed to take advantage of modern computers, servers and information technology to provide a faster, safer and more reliable network than any that have gone before. It also is designed to be upgraded and adaptable to the launcher and spacecraft as they are flown in different configurations and in increasingly advanced versions.

Once operational, the SCCS will offer a significant improvement over previous processing and launch software in that it will give controllers unprecedented insight into vehicle and systems testing throughout the processing of the SLS and Orion, and offer precise control over operations at the launch pad during the countdown and liftoff of the largest rocket ever built, along with the first spacecraft since Apollo designed to carry astronauts into deep space.

The SCCS represents a suite of advanced software tailored to the unique needs of the Space Launch System and Orion spacecraft. The major elements of the SCCS include the Ground and Control System, the Launch Control System and the Ground-to-Flight Application Software. To be installed throughout Firing Room 1, the SCCS will be the final element of a modernization effort that began with the removal from the firing room of outdated computer systems — some dating back to Apollo — and replacing them with updated computing hardware that offer controllers more flexibility and precision. The software system also will take advantage of a refurbishment of the cable and wiring networks inside the VAB and leading out to Launch Complex 39B.

The SCCS is being developed in conjunction with the advancement of the SLS and Orion designs. The three elements — SCCS software, SLS rocket and Orion spacecraft — will come together for the launch in 2018 of Exploration Mission-1, an uncrewed flight calling for the massive SLS rocket to lift Orion on an excursion to lunar orbit lasting about three weeks. Orion will return to Earth to end the mission with a descent through Earth’s atmosphere and parachute splashdown off the coast of California.