GOES-R PROGRAM
TRANSFORMATIONAL CHANGE IN WEATHER INTELLIGENCE

Early and accurate detection of dangerous weather is essential to protecting our nation’s economy, security, and quality of life. As the next generation of the National Oceanic and Atmospheric Administration’s (NOAA’s) weather forecasting system, Geostationary Operational Environmental Satellite-R (GOES-R) will provide a significant increase in the quality, quantity, and timeliness of weather imagery and data available to forecasters. Harris provides critical imaging and ground system capabilities for the GOES-R system.

NEXT-GENERATION WEATHER SATELLITE INSTRUMENT

ADVANCED BASELINE IMAGER (ABI)
The ABI is the primary instrument on board GOES-R for imaging Earth’s weather, climate, oceans, and the environment. Its advanced capabilities reflect more than 40 years of Harris experience producing geostationary imaging radiometers. ABI will view the Earth with 16 spectral bands (compared to five on current GOES system) and will provide three times more spectral information, four times the spatial resolution, and more than five times faster coverage than the current system.

GROUND SEGMENT
The GOES-R Ground Segment – designed, developed, deployed, and operated by Harris – will receive and process satellite data, and generate and distribute weather data to more than 10,000 direct users. The service-based, open-architecture ground segment solution accommodates the anticipated ten times greater volume at six times the speed increase in data to be ingested, processed, and distributed. Harris also provides the command and control system, OS/COMET®, of the GOES-R operational satellites.

BENEFITS
- Protects public safety and national resources in the Western Hemisphere
- Saves billions of dollars in damage to property and agriculture
- Improves air traffic and maritime ship routing
- Reduces health impacts of poor air quality
- Warns of hazardous solar activity
A WEATHER-READY WORLD

The advanced capabilities delivered by the GOES-R series of weather satellites and ground system are vital to enhanced detection and forecasting of severe weather, improved climate monitoring, national defense, and virtually every economic and public service enterprise across the U.S.

HARRIS ENABLES GOES-R IN SPACE

The ABI, a next-generation remote sensor from Harris, represents a significant advancement in performance over the current generation of geostationary imagers in use by the National Weather Service. It will provide scientists and meteorologists with significantly improved image resolution and increase the rate of imagery coverage of Earth's surfaces:

- Visual and infrared images of the entire hemisphere provided every 5 minutes at resolutions starting at 0.5 km
- Coverage of severe weather events every 30 seconds with simultaneous full hemisphere imagery and data
- Atmospheric soundings over the Western Hemisphere
- Continuous detection and mapping of lightning activity

These improvements will allow tomorrow's meteorologists and climatologists to increase the accuracy of their products, both in forecasting and nowcasting.

ABI Status: Harris has tested and completed pre ship reviews for three ABIs. The ABI for the GOES-R satellite, scheduled for launch in October 2016, has been installed on the spacecraft.

HARRIS ENABLES GOES-R ON THE GROUND

Harris led a team of domain experts from Boeing, AER, Honeywell, Carr Astronautics, and Wyle Labs to design, develop, deploy, and sustain the advanced GOES-R Ground Segment.

The Harris team successfully delivered a flexible, scalable, modular ground system that will meet critical operational performance mission requirements today and as the mission evolves over its 20-year lifetime.

This enterprise wide network backbone will ingest, process, and distribute this additional volume and speed of data to the National Weather Service faster than current systems and to more than 10,000 other direct users. It also will provide command and control of the GOES-R constellation of satellites and their onboard instruments.

Ground Segment Status: The ground segment system is installed across three sites, and includes 2,100 servers, 214 racks of network equipment, 317 workstations and storage services totaling three petabytes.

Harris demonstrated the ability of the GOES-R Series ground system to generate weather products at all operational sites and has performed successful interface testing with the National Weather Service’s (NWS’s) Advanced Weather Interactive Processing System.

GOES-R PREPAREDNESS

Harris and General Dynamics developed and deployed the 16.4 meter tri-band antennas needed to support the GOES-R mission. The team performed electronic upgrades to the 9.1 meter antennas at NOAA’s Satellite Operations Facility in Suitland to enable the facility to receive the GOES-R Rebroadcast Signal. In preparation for the launch, the antennas are installed and functioning and in use, supporting current GOES satellites in operation.

For more information, contact weathersolutions@harris.com