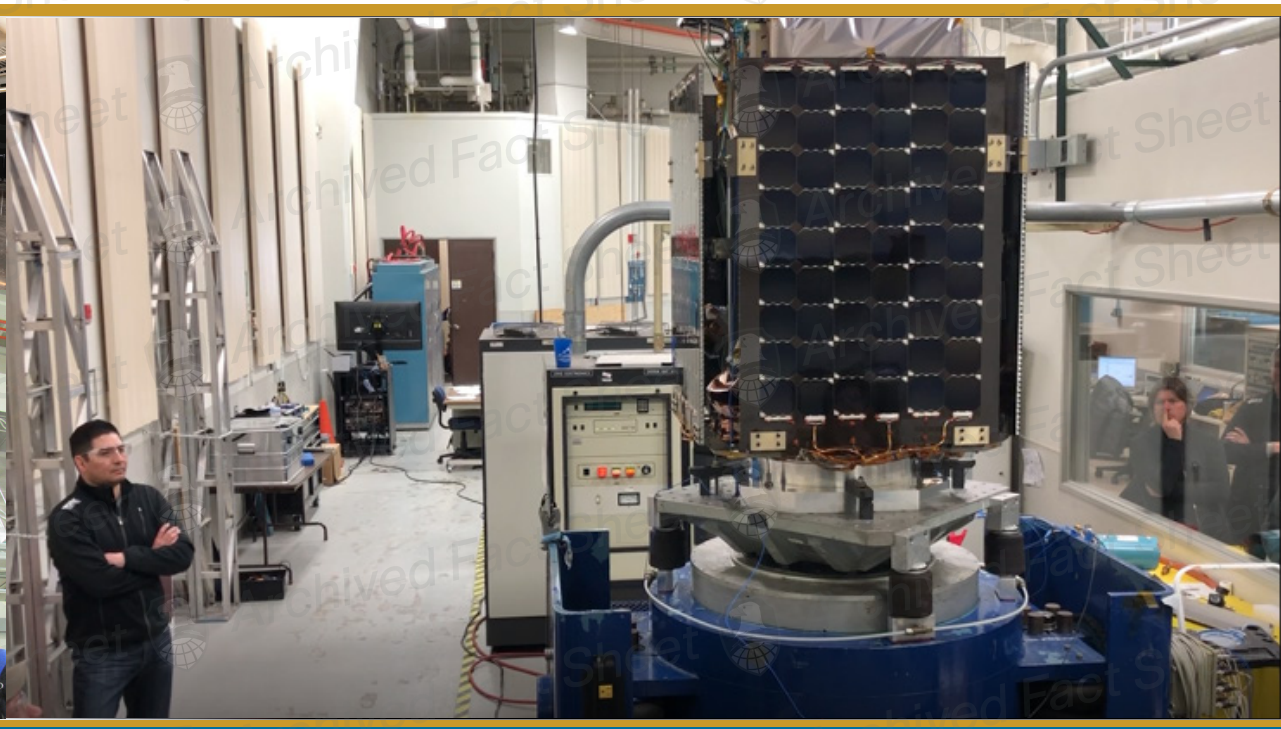
HARBINGER



A small, low-cost, commercial-off-the-shelf, imagery satellite providing images quickly to the tactical-level warfighter

The U.S. Army Space and Missile Defense Command's Technical Center is using research and development funding to design, develop and integrate satellites and associated payloads that may complement Army needs utilizing alternate manufacturing approaches. These approaches produce spacecraft with documented common interfaces that meet a wide variety of spacecraft missions while enabling potential rapid delivery and deployment timelines. The potential benefit for the warfighter is a low-cost and current state-of-the-art satellite/spacecraft with enhanced data collection and downlink capabilities, demonstrated rapid space hardware deployment capabilities and space-based acquisition of data sets not being provided by existing assets.

Key characteristics of the Harbinger include

- Provides all weather, all lighting condition situational awareness for denied or difficult to access areas.
- Provides small satellite, all weather ultra-high data downlink rates.
- Provides standardized spacecraft platforms, operating procedures and rapid deployment to address emerging situations.

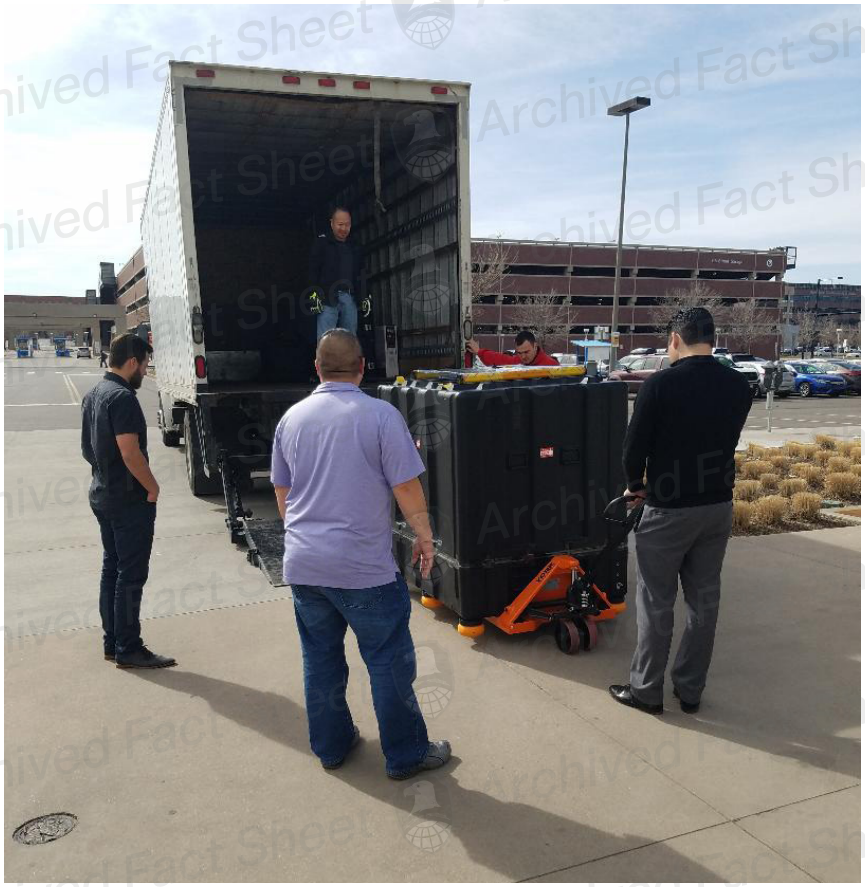
U.S.ARMY

Harbinger

This Joint Cooperative Research and Development Agreement (CRADA) allows the U. S. Army Space and Missile Defense Command (USASMDC) to explore low-cost satellite and space-based technology concepts on-orbit. The general areas of interest include exploration of cost-effective, rapid delivery standard satellite platforms; integrated advanced payload technology; and common ground and operation architecture concepts for use by the Army and DoD.

The objective of the Harbinger CRADA is to demonstrate the viability and utility of rapid satellite production techniques, standardized satellite busses, all weather ultra high-data rate downlinks through dual X-band/ laser communications, and all weather/all lighting situational awareness using synthetic aperture radar (SAR). Currently, Harbinger is scheduled to be launched in fiscal year 2019 as a payload on a Space Test Program (STP) mission.

The Harbinger SAR provides commercial access to timely and reliable Earth observation data and is capable of imaging any location on Earth at regular intervals, day or night, regardless of cloud cover. SAR is a form of radar that is used to create two-dimensional images or three-dimensional reconstruction of objects such as landscapes. SAR uses the motion of the radar antenna over a region of interest to provide finer spatial resolution than conventional beam-scanning radars. SAR is typically mounted on a moving platform, such as an aircraft or spacecraft, and has its origins in an advanced form of side looking airborne radar (SLAR).



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