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ISRO INITIATES ‘PROJECT NETRA’ TO SAFEGUARD INDIAN SPACE ASSETS FROM DEBRIS AND OTHER HARM

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In the middle of its two-month Chandrayaan-2 campaign, the Indian Space Research Organisation (ISRO) last month quietly initiated ‘Project NETRA’ – an early warning system in space to detect debris and other hazards to Indian satellites.

The project estimated to cost 400 crore, when in place, will give India its own capability in space situational awareness (SSA) like the other space powers — which is used to ‘predict’ threats from debris to Indian satellites. It also goes so far as to serve as an unstated warning against missile or space attack for the country, experts say.

The space agency says our SSA will first be for low-earth orbits or LEO which have remote-sensing spacecraft. Under NETRA, or Network for space object Tracking and Analysis, the ISRO plans to put up many observational facilities: connected radars, telescopes; data processing units and a control centre. They can, among others, spot, track and catalogue objects as small as 10 cm, up to a range of 3,400 km and equal to a space orbit of around 2,000 km.

With this the ISRO, which has placed satellites to track the earth from above, will also start training its eyes onspace from earth.

Space debris could be floating particles from dead satellites or rocket parts that stay in orbit for many years. Satellite agencies agonise over even a speck of paint or fragment floating towards their spacecraft: it disables on board electronics and cripples the satellite worth several hundred crore rupees besides many services that run on it. Agencies constantly look for debris at the time of a launch and through the life of a satellite.

ISRO Chairman K. Sivan had earlier told *The Hindu* that the NETRA effort would make India a part of international efforts towards tracking, warning about and mitigating space debris.

NETRA’s eventual goal is to capture the GEO, or geostationary orbit, scene at 36,000 km where communication satellites operate.

In the plans are a high-precision, long range telescope in Leh and a radar in the North East. “Along with them, we will also use the Multi-Object Tracking Radar (MOTR) that we have put up at the Satish Dhawan Space Centre in Sriharikota, and the telescopes at Ponmudi and Mount Abu” to get a broad SSA picture, he said.

Dr. Sivan said, “Even now we do collision avoidance manoeuvres on our satellites. To do that we depend on data from NORAD and others available in the public domain but we don’t get accurate [or comprehensive] information. By establishing an observation system of our own, we become part of the global network and can access precise data.”

NORAD, or the North American Aerospace Defense Command, is an initiative of the U.S. and Canada that shares selective debris data with many countries.

The new SSA centre would consolidate debris tracking activities that are now spread across

ISRO centres.

Currently there are 15 functional Indian communication satellites in the geostationary orbit of 36,000 km; 13 remote sensing satellites in LEO of up to 2,000 km; and eight navigation satellites in medium earth orbits.

More importantly, the SSA also has a military quotient to it and adds a new ring to the country's overall security, as space and defence experts read it.

NORAD, too, uses satellites, ground and air radars to secure its two countries against attacks from air, space or sea.

"We should have started this kind of an SSA project a long-time back," said Dinesh Kumar Yadvendra, Distinguished Fellow at the Centre For Joint Warfare Studies, Delhi. "With long-range tracking radars, the SSA also provides us the capability of an early warning system against ballistic missiles coming in at a height."

S. Chandrashekar, JRD Tata Visiting Professor, National Institute of Advanced Studies, and also a former ISRO scientist, said, "India, as a responsible space power, should have SSA as a part of a national capability, as in the U.S. This is a vital requirement for protecting our space assets and a force multiplier."

Apart from radars and telescopes, he said India should also think of deploying satellites that track other satellites — as the U.S. and other space powers had done.

Combined with other elements of military intelligence, he said SSA would help us to understand motives behind any suspicious orbit changes of other satellites and to know if they were spying on or harming our spacecraft.

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