

Inflatable Aerodynamic Decelerator (IAD)

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In news—Indian Space Research Organisation (ISRO) has successfully demonstrated a new technology with Inflatable Aerodynamic Decelerator (IAD).

What is Inflatable Aerodynamic Decelerator (IAD)?

- **Designed and developed by ISRO's Vikram Sarabhai Space Centre (VSSC)**, IAD is a game-changer with multiple applications for future missions including to Mars and Venus.
- As its name suggests, the **IAD serves to decelerate an object plunging down through the atmosphere.**
- It is a technique **used for an atmospheric entry payload.** An inflatable envelope and an inflatant (anything that inflates the envelope, like air or helium) make up the inflatable aerodynamic decelerator.
- While entering the atmosphere, **it inflates like a balloon and decelerates the lander.**
- The recently IAD was **successfully test flown in a 'Rohini' sounding rocket (RH300 Mk II)** from Thumba Equatorial Rocket Launching Station.
- **Rohini sounding rockets are routinely used for flight demonstration of new technologies** being developed by ISRO as well as by scientists from India and abroad.
- The **pneumatic system used for inflating the IAD was developed by the Liquid Propulsion Systems Centre (LPSC), Valiyamala.**
- The IAD will help ISRO in performing many space tasks effectively including recovery of spent stages of rockets, for landing payloads on missions to other planetary bodies.

- **This is the first instance where an IAD has been specially created for spent stage recovery.**
- **According to ISRO, this demonstration opens a gateway for cost-effective spent stage recovery using the IAD technology and this technology can also be used in ISRO's future missions to Venus and Mars.**