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Mission Drishti — India's GalaxEye Launches World's First OptoSAR Satellite

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CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator

linkedin.com/in/epicbharat

Mission Drishti — India's GalaxEye Launches World's First OptoSAR Satellite

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WHY IN NEWS

On **May 3, 2026**, Bengaluru-based space-tech startup **GalaxEye** successfully launched **Mission Drishti** aboard a **SpaceX Falcon 9** rocket from Vandenberg Space Force Base, California at 12:29 PM IST — placing the satellite into a ~500 km Sun-Synchronous Orbit (SSO). Mission Drishti is the **world's first OptoSAR satellite** — a platform that fuses Synthetic Aperture Radar (SAR) and Multispectral Imaging (MSI) in a single spacecraft. PM Narendra Modi and External Affairs Minister S Jaishankar publicly congratulated the team. ISRO described it as a "major boost" to India's private space sector.

WHAT IS OPTOSAR?

Traditional Earth observation satellites use either:

- **Optical/Multispectral sensors** — high-resolution colour imagery, but blocked by clouds and darkness
- **Synthetic Aperture Radar (SAR)** — all-weather, day-night imaging using microwave pulses, but lacks spectral detail

OptoSAR (Optical + SAR) fuses both sensors on a single platform, enabling:

CAPABILITY	OPTICAL ALONE	SAR ALONE	OPTOSAR (MISSION DRISHTI)
Cloud penetration	✗	✓	✓
Night imaging	✗	✓	✓
Colour/spectral detail	✓	✗	✓
Change detection	Limited	✓	✓
Resolution	High	Medium–High	1.2–1.8 m

The fusion allows a single pass to produce both radar and optical data simultaneously — reducing revisit time and data integration complexity.

MISSION DRISHTI — TECHNICAL SPECIFICATIONS

PARAMETER	DETAIL
Satellite name	Mission Drishti
Operator	GalaxEye Space Solutions Pvt Ltd, Bengaluru
Launch vehicle	SpaceX Falcon 9 (rideshare)
Launch date	May 3, 2026; 12:29 PM IST
Launch site	Vandenberg Space Force Base, California, USA
Orbit	Sun-Synchronous Orbit (SSO), ~500 km altitude
Mass	~190 kg
Resolution	1.2–1.8 metres
Sensor 1	Synthetic Aperture Radar (SAR) — C-band or X-band
Sensor 2	Multispectral Imaging (MSI)
Onboard processor	AI-enabled real-time image analysis in space
Indigenisation	Fully built in India
Future constellation	8–12 satellites by 2029

ABOUT GALAXEYE

- **Founded:** 2021 by alumni of **IIT Madras** (Suyash Singh, Denil Chawda, Rakesh Belwal, Aakash Chavda)
- **Headquarters:** Bengaluru, Karnataka
- **Funding:** Backed by Peak XV Partners (formerly Sequoia India), Exfinity Ventures, and others
- **Mission:** Make Earth observation data affordable and accessible for government, agriculture, defence, and climate applications
- India’s largest privately built satellite at the time of launch (~190 kg)

APPLICATIONS

Civil Applications

1. **Agriculture** — Crop health monitoring, soil moisture mapping, yield prediction (works in monsoon cloud cover)
2. **Disaster management** — Flood mapping, landslide monitoring, earthquake damage assessment in real time
3. **Urban planning** — High-resolution change detection for infrastructure monitoring
4. **Forestry** — Deforestation tracking, biomass estimation
5. **Climate monitoring** — Ice sheet changes, coastline erosion, wetland mapping

Defence / Strategic Applications

1. **Border surveillance** — Day-night monitoring of LAC, LOC, and maritime zones
2. **Naval surveillance** — Ship detection and tracking in Indian Ocean Region
3. **Dual-use intelligence** — Cross-referencing SAR and optical for camouflage detection
4. **Rapid damage assessment** — Post-strike or disaster damage evaluation

INDIA'S PRIVATE SPACE SECTOR CONTEXT

MILESTONE	YEAR
IN-SPACe established (Indian National Space Promotion and Authorisation Centre)	2020
Space Activities Bill introduced	2023
Skyroot Aerospace — Vikram-S (first private rocket from India)	Nov 2022
AgniKul Cosmos — Agnibaan SOrTeD (first semi-cryogenic private rocket)	May 2024
Pixxel — Firefly constellation (hyperspectral)	2023–2024
GalaxEye — Mission Drishti (first OptoSAR)	May 2026

IN-SPACe (under the Department of Space) is the regulatory body enabling private participation in space activities under the Indian Space Policy 2023.

UPSC RELEVANCE

PAPER	ANGLE
GS3 — Science & Technology	Space technology, remote sensing, private space sector in India
GS3 — Economy	Startups, indigenisation, technology export potential
GS3 — Security	Dual-use satellite technology, border surveillance
GS2 — Governance	IN-SPACe, Space Activities Bill, regulatory framework

Mains Keywords: OptoSAR satellite, Synthetic Aperture Radar (SAR), Multispectral Imaging (MSI), GalaxEye, Mission Drishti, IN-SPACe, Indian Space Policy 2023, private space sector India, IIT Madras, Sun-Synchronous Orbit

Prelims Facts Corner

ITEM	FACT
Mission Drishti	World's first OptoSAR satellite
Developer	GalaxEye (IIT Madras alumni), Bengaluru
Launch date	May 3, 2026; SpaceX Falcon 9
Orbit	~500 km, Sun-Synchronous Orbit
Mass	~190 kg (India's largest private satellite at launch)
Resolution	1.2–1.8 metres
Key feature	SAR + Multispectral Imaging fused; onboard AI; all-weather day-night
Future plan	8–12 satellite constellation by 2029
IN-SPACe	Regulatory body for private space; est. 2020 under Dept of Space

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