



UPSC & STATE PCS CURRENT AFFAIRS · UJIYARI.COM

DAILY CURRENT AFFAIRS

DRDO's Prajna Satellite Imaging System — MHA Integration for Border Surveillance

22 April 2026

SCIENCE & TECH

SECURITY & DEFENCE

GS3

GS2

CURATED & WRITTEN BY

**Bharat Choudhary**

UPSC Educator & Content Creator

[linkedin.com/in/epicbharat](https://www.linkedin.com/in/epicbharat)**ALSO FROM THE CREATOR****BharatNotes**Free UPSC notes, MCQs, PYQ analysis. **100% Free.**bharatnotes.com →**ADVERTISE****Advertise with Ujiyari**

Reach thousands of UPSC aspirants daily.

epicbharat@gmail.com

DRDO's Prajna Satellite Imaging System — MHA Integration for Border Surveillance

 22 April 2026 · 5 min read · 2 tags ▾

WHY IN NEWS

The **Ministry of Home Affairs (MHA)** has integrated **DRDO's Prajna satellite imaging system** into India's national security surveillance infrastructure — enabling **real-time high-resolution imaging** of sensitive border areas, conflict zones, and internal security-sensitive regions. Prajna represents an advancement in India's **indigenous space-based Intelligence, Surveillance, and Reconnaissance (ISR)** capability, reducing dependence on commercial satellite imagery and foreign intelligence. The system operates under the framework of India's **Defence Space Agency (DSA)** and complements existing assets in the **RISAT** and **Cartosat** satellite families.

WHAT IS THE PRAJNA SYSTEM?

Prajna (from Sanskrit — *intelligence/wisdom*) is a **DRDO-developed satellite imaging and data fusion system**:

PARAMETER	DETAIL
Developer	DRDO (Defence Research and Development Organisation)
Type	Satellite imaging analytics and data fusion platform
Primary user	Ministry of Home Affairs (MHA); Defence forces
Application	Real-time border surveillance, intelligence gathering, disaster monitoring
Integration	Works with RISAT, Cartosat satellite feeds; ISRO data pipelines
Classification	Classified specifications; publicly disclosed: high-resolution real-time imaging

Key capability: Prajna integrates multi-source satellite data — **SAR (Synthetic Aperture Radar) from RISAT** (which sees through clouds and at night) and **optical imagery from Cartosat** — with **AI-powered analytics** to detect movement, infrastructure changes, and threats in near-real-time.

INDIA'S SPACE-BASED SURVEILLANCE ARCHITECTURE

ISRO Satellite Families for Security

SATELLITE	TYPE	CAPABILITY
RISAT-1, RISAT-2	SAR (Radar)	All-weather, day-night imaging; ~1m resolution
RISAT-2B, 2BR series	SAR (improved)	Sub-metre resolution; X-band radar
Cartosat-1, 2, 3	Optical	Cartosat-3: 25cm resolution — one of India's sharpest imaging satellites
EMISAT	Electronic Intelligence (ELINT)	Tracks enemy radar emissions
Microsat series	Multi-purpose	Various intelligence functions
NavIC	Navigation	Positioning; regional GPS alternative; 7 satellites

Cartosat-3 (launched November 2019) provides **25 cm resolution** — among the highest for any Indian satellite — sufficient to identify vehicle types and military equipment.

The RISAT Advantage — SAR Imaging

SAR (Synthetic Aperture Radar) is especially valuable for:

- **All-weather imaging** — optical cameras cannot see through clouds; SAR can
- **Night imaging** — SAR is active (emits its own radar signal); works in darkness
- **Vegetation penetration** — SAR can image through forest canopy to detect concealed assets
- Critical for **LoC surveillance** in Jammu & Kashmir (cloudy terrain) and **LAC** (Ladakh high-altitude, frequent cloud cover)

DEFENCE SPACE AGENCY (DSA)

What Is the DSA?

The **Defence Space Agency (DSA)** was established in **2019** under the **Integrated Defence Staff (IDS)**:

PARAMETER	DETAIL
Established	2019
Under	Integrated Defence Staff (IDS); tri-services
Functions	Coordination of all military space activities; space-based ISR; space situational awareness
HQ	Bengaluru
Relationship with ISRO	DSA uses ISRO launch capability; Defence satellites on ISRO vehicles

DSA was created following India’s **anti-satellite (ASAT) test — Mission Shakti (March 27, 2019)** — which demonstrated India’s capability to destroy satellites in Low Earth Orbit, establishing India as a **space warfare power**.

Space as the Fourth Dimension of War

Modern military doctrine recognises space as a **contested domain**:

- GPS/NavIC-based precision strikes depend on satellite navigation
- ISR relies on satellite imagery
- Communication satellites enable long-range command and control
- **ASAT weapons** can neutralise enemy satellite advantages

India’s DSA coordinates India’s **Military Space Doctrine** — ensuring satellite assets are protected and adversary space capabilities are monitored.

MHA INTEGRATION — INTERNAL SECURITY APPLICATIONS

Beyond border surveillance, MHA uses satellite imaging for:

APPLICATION	USE
LoC and LAC monitoring	Near-real-time imaging of border infrastructure changes
Naxal-affected areas	Tracking movement in Left Wing Extremism districts
Flood and disaster	Damage assessment for NDRF deployment
Illegal encroachment	Monitoring of forest land and protected areas
Coastal surveillance	Complement to NCMC (National Command Control Centre) and coastal radar network

Prajna's AI analytics layer allows rapid automated detection of changes — new construction, troop movement, vehicle concentration — without requiring human review of every image frame.

INDIA'S DRDO — ROLE IN SPACE AND SURVEILLANCE

DRDO (Defence Research and Development Organisation):

PARAMETER	DETAIL
Established	1958
Under	Ministry of Defence
Laboratories	50+ labs across India
Key domains	Missiles, armour, electronics, cyber, space, nuclear technologies
Budget	~₹25,000+ crore annually

DRDO's space-related achievements:

- **ASAT system** (Mission Shakti, 2019)
- **Electronic warfare systems** for satellite communication jamming
- **Prajna** satellite imagery analytics
- **GAGAN** (GPS-Aided Geo Augmented Navigation) — jointly with ISRO and AAI for aviation

GEOPOLITICAL CONTEXT — WHY THIS MATTERS

China's Space Militarisation

China's **PLA Strategic Support Force (SSF)** — restructured in 2024 as PLA Information Support Force — controls:

- Hundreds of reconnaissance satellites
- **Beidou navigation system** (global GPS alternative)
- ASAT weapons (demonstrated 2007)
- Directed energy weapons (laser dazzling of satellites)

India's Prajna integration is partly a **capability-building response** to China's extensive space-based ISR advantage along the LAC.

Pakistan's Space Assets

Pakistan's **SUPARCO** (national space agency) has limited satellite capability — most ISR support comes from **Chinese satellites** and commercial imagery.

The Commercial Imagery Dependency Risk

Before indigenous systems like Prajna, India relied partly on **commercial satellite providers** (Maxar Technologies, Airbus Defence and Space) for high-resolution imagery. Commercial providers:

- Can be pressured by their governments to deny imagery of sensitive areas
- Have variable revisit times (not always real-time)
- Carry data security risks

Prajna addresses **strategic self-reliance in intelligence collection**.

UPSC RELEVANCE

PAPER	ANGLE
GS3 — S&T	Satellite imaging, SAR, RISAT, Cartosat, DRDO, NavIC
GS3 — Security	DSA, Mission Shakti, ASAT, space warfare, border surveillance
GS2 — Governance	MHA, internal security, NDRF, coastal surveillance
GS2 — IR	China's SSF, LAC surveillance, India's space diplomacy
Mains Keywords	DRDO, Prajna, DSA, Mission Shakti, RISAT, Cartosat, SAR imaging, ASAT, space-based ISR, NavIC

FACTS CORNER

- **Prajna:** DRDO satellite imaging + AI analytics system; MHA integrated for border/security surveillance
- **DSA (Defence Space Agency):** Established 2019; under Integrated Defence Staff; HQ Bengaluru
- **Mission Shakti (March 27, 2019):** India's ASAT test — destroyed own satellite in LEO; 4th country to demonstrate ASAT
- **RISAT:** Synthetic Aperture Radar satellites — all-weather, day-night imaging; RISAT-2B sub-metre resolution

- **Cartosat-3 (2019):** 25cm optical resolution — India’s sharpest commercial-use imagery satellite
- **EMISAT:** ISRO electronic intelligence satellite — tracks enemy radar emissions
- **NavIC:** India’s regional navigation system; 7 operational satellites; covers India + 1,500 km neighbourhood
- **DRDO:** Est. 1958; Ministry of Defence; 50+ labs; ₹25,000+ crore annual budget
- **SAR advantage:** Sees through cloud, rain, forest canopy; works day and night — critical for LoC/LAC
- **China’s SSF (2024 restructured):** PLA Information Support Force — controls space, cyber, and electronic warfare
- **GAGAN:** GPS-Aided Geo Augmented Navigation — DRDO+ISRO+AAI civil aviation system

[← NEWER ARTICLE](#)

Core Sector Output Contraction — Reading India's Industrial...

[OLDER ARTICLE →](#)

Current Affairs Today — April 21, 2026

RELATED EDITORIALS

BUSINESS STANDARD

[After the Red Corridor: India's Post-Maoist Challenge Is Development, Not Celebration](#)

19 Apr

BUSINESS STANDARD

[India's 100 GW Nuclear Push: Strategic Necessity, Liability Gridlock, and the Private-Sector Question](#)

18 Apr

MINT

[India-China After Ladakh: Pragmatic Re-engagement Without Strategic Concession](#)

18 Apr

THE HINDU

[The UAPA at the Crossroads: Anti-Terror Law and Civil Liberties Under Strain](#)

17 Apr

RELATED KEY TERMS

KEY TERM

[Active Case Finding \(TB\)](#)

A proactive public health strategy where health workers systematically...

KEY TERM

[Advanced Technology Vessel \(ATV\) Programme](#)

India's classified, decades-long programme to indigenously design and...

KEY TERM

[AFSPA \(Armed Forces Special Powers Act\)](#)

A central legislation granting special powers to armed forces...

KEY TERM

[Agri-Photovoltaic](#)

A dual land-use technology that integrates elevated solar panels with...



CURATED & WRITTEN BY

Bharat Choudhary

UPSC Educator & Content Creator

[linkedin.com/in/epicbharat](https://www.linkedin.com/in/epicbharat)[Read Full Article on Ujiyari →](#)<https://ujiyari.com/daily/2026/04/22/drdo-prajna-satellite-imaging-mha/>

ALSO FROM THE CREATOR

BharatNotes

Free UPSC study platform — subject-wise notes across all 4 GS papers, Prelims MCQs, Mains answer frameworks, PYQ analysis & progress tracking. **100% Free • No Login Required.**

[Start Preparing → bharatnotes.com](http://bharatnotes.com)

📌 OPPORTUNITY

Advertise with Ujiyari

Reach **thousands of serious UPSC & State PCS aspirants** daily through our PDFs, website, and social channels.

Ideal for: Coaching institutes • EdTech platforms • Book publishers • Exam prep apps

[✉ epicbharat@gmail.com](mailto:epicbharat@gmail.com)

Write to us for rates & media kit

Free UPSC & State PCS Current Affairs · ujiyari.com · bharatnotes.com