



67th Foundation Day of DRDO

For Prelims: [Defence Research and Development Organisation](#), [unmanned aerial vehicles](#), [sonar systems](#), [Air Defence Tactical Control Radar](#), [Long Range Land Attack Cruise Missile](#), [Quick Reaction Surface to Air Missile](#), [Trishul](#), [Akash](#), [BrahMos](#)

For Mains: Contributions of DRDO in India's defense sector, Defense Technologies

Source: [PIB](#)

Why in News?

Recently, the [Defence Research and Development Organisation \(DRDO\)](#) celebrated its **67th Foundation Day on 1st January** and paid tributes to former President [Dr. APJ Abdul Kalam](#), the **Missile Man of India**

- The event highlighted the significant strides DRDO has made in bolstering India's defense capabilities.

What are the Key Facts About DRDO?

- **About:** DRDO was established in 1958 by merging the **Technical Development Establishment (TDEs)** of the Indian Army, the **Directorate of Technical Development and Production (DTDP)**, and the **Defence Science Organisation (DSO)**.
 - **DRDO** is the R&D wing of the **Ministry of Defence**, Government of India.
 - DRDO initially had 10 laboratories, it currently operates 41 laboratories and 5 [DRDO Young Scientist Laboratories \(DYSLs\)](#).
- **Philosophy:** The guiding principle of DRDO is "**Balasya Mulam Vigyanam**" (**Strength lies in science**), driving the nation in both peace and war.
- **Mission:** Achieve **self-reliance in critical defence technologies** and systems while equipping the Indian armed forces with state-of-the-art weapon systems and equipment, as per the requirements of the three Services.
- **Technology Clusters of DRDO:** A committee under the chairmanship of **Dr. P. Rama Rao** was constituted in 2007 to conduct a comprehensive review of the DRDO.
 - This led to the creation of **seven technology domain-based clusters**, each headed by a Director General.
 - **Aeronautics Systems (Aero):** Focuses on [unmanned aerial vehicles \(UAVs\)](#), aerostats, and related technologies.
 - **Missiles and Strategic Systems (MSS):** Develops **missile systems, including long and short-range missiles**, and related technologies.
 - **Naval Systems and Materials (NSM):** Works on naval platforms, underwater systems, including [sonar systems](#) and submarine technologies.
 - **Micro Electronic Devices (MED) and Computational Systems (CoS):** Focuses on electronics, radars, [cyber security](#), and [artificial intelligence](#) for defense applications.
 - **Armament and Combat Engineering Systems (ACE):** Involves the development

- of armaments, ammunition, explosives, and combat vehicles.
- **Electronics and Communication Systems (ECS):** Specializes in military **electronics, sensors, communication systems,** and electronic warfare technologies.
- **Soldier Support System (SSS):** Equipping the **armed forces with advanced weapon systems** must be complemented by optimizing the psychological, physiological, and nutritional well-being of personnel.
- **Key Achievements of DRDO:**
 - **Achievements of DRDO in 2024:**
 - **System Handovers:** DRDO handed over multiple advanced systems notable systems include:
 - **Air Defence Systems:** [Air Defence Tactical Control Radar \(ADTCR\)](#), [Air Defence Fire Control Radar \(ADFCR\)](#).
 - **Missile Systems:** [Long Range Land Attack Cruise Missile \(LR-LACM\)](#), [Quick Reaction Surface to Air Missile \(QRSAM\)](#), and [Medium Range Anti-ship Missile \(MRashM\)](#).
 - **Advanced Platforms:** Multi-Mission Maritime Aircraft (MMMA), SCA (Signal Intelligence and COMJAM Aircraft), and **Anti-Tank Influence Mine PRACHAND.**
 - **AI Tools:** DRDO developed '**Divya Drishti,**' an AI tool that integrates face recognition with **immutable physiological traits** like gait (pattern of walking) and skeleton.
 - **Flagship Programs:** Two flagship programs **Full Scale Engineering Development (FSED) of Advanced Medium Combat Aircraft (AMCA)** and a new **Missile Test Range in Andhra Pradesh,** were sanctioned by the [Cabinet Committee on Security \(CCS\)](#).
 - **Missile Systems:**
 - **Air-to-Air Missile:** [MICA](#), [Astra Missile](#)
 - **Surface-to-Air Missiles:** [Trishul](#), [Akash](#), Barak 8
 - **Surface-to-Surface Missiles:** [Agni](#), [Prithvi](#), [Dhanush](#), [Shaurya](#)
 - **Cruise Missiles:** [BrahMos](#), [Nirbhay](#)
 - **Combat Aircraft:** [Indigenous Fighter Jet Light Combat Aircraft \(LCA\) Tejas.](#)
 - **Rocket Systems:** [Multi-barrel rocket launcher Pinaka.](#)
 - **Naval Systems:** [Humsa](#), Nagan (sonar system), Ushus (Submarine Sonar Suite), Mihir (helicopter sonar system).
 - **Main Battle Tank:** [Arjun.](#)
 - **Unmanned Aerial Systems (UAS):**
 - **Lakshya:** Reusable aerial target system for training, launched from land/ship with tow targets.
 - **Nishant:** Multi-mission [UAV](#) for surveillance and artillery correction with autonomous flight and parachute recovery.

What are the Contributions of Dr. APJ Abdul Kalam to DRDO?

- **Leadership in IGMDP:** Dr. Kalam was instrumental in the creation and execution of the **Integrated Guided Missile Development Program (IGMDP)**, launched in 1983.
 - His leadership led to the successful development of the **Prithvi, Trishul, Akash, Nag, and Agni missiles,** positioning India as a member of the **exclusive group of missile-producing nations** and earning him the title of '**Missile Man of India.**'
 - Under Dr. Kalam's leadership, DRDO achieved breakthroughs in missile technologies like **propulsion, navigation, control systems, and aerodynamics,** leading to **indigenous missile systems** and reduced dependency on foreign suppliers.
- **Integrated Guided Missile Development Program:** The IGMDP was a program initiated by the **Indian Ministry of Defence** in 1982–1983 under the leadership of **Dr. APJ Abdul Kalam,** aimed at researching and developing a wide array of missiles.
 - The program's primary objective was to **reduce dependency on imports and build indigenous expertise** in areas such as propulsion, navigation, and control systems.
 - The program resulted in the development of key missile systems such as **Prithvi, Trishul, Akash, Nag, and Agni.**
 - Concluding in 2008, IGMDP also provided significant technological spin-offs, strengthened

India's strategic deterrence, and contributed to the development of the **defense-industrial base**, in alignment with the ['Make in India' initiative](#).

Key Facts About Dr. APJ Abdul Kalam

- **Born:** Dr. Avul Pakir Jainulabdeen Abdul Kalam born on **15th October 1931**, Rameswaram, Tamil Nadu.
- **President:** Served as India's **11th President from 2002 to 2007**.
- **Awards:** [Padma Bhushan \(1981\)](#), [Padma Vibhushan \(1990\)](#), and [Bharat Ratna \(1997\)](#).
- **Literary Works:** *Wings of Fire*, *India 2020 - A Vision for the New Millennium*, *My Journey*, *Ignited Minds*.
- **Contributions:**
 - **ISRO:** Project Director for India's first indigenous [Satellite Launch Vehicle \(SLV-III\)](#).
 - Successfully launched the [Rohini satellite](#) into near-earth orbit (July 1980).
 - Played a key role in evolving ISRO's launch vehicle program, particularly in developing configurations for [PSLV \(Polar Satellite Launch Vehicle\)](#) configuration.
 - Pioneer at ISRO, leading the development of **fiberglass technology** (fibrous form of glass).
 - **Pokhran-II:** Led India's nuclear tests in collaboration with the [Department of Atomic Energy](#), making India a nuclear weapon state.
 - **Pokhran-II:** Dr. Kalam led the **Pokhran-II nuclear tests in 1998**, which were conducted in collaboration with the [Department of Atomic Energy](#).
 - **Vision 2020:** Proposed a national plan to transform India from a developing to a developed nation by 2020.
 - **Kalam-Raju Stent:** Co-developed an affordable stent for **coronary heart disease** with cardiologist **B. Soma Raju**.



Drishti Mains Question:

Discuss the role of DRDO in India's journey towards self-reliance in defense technologies, with specific reference to the Integrated Guided Missile Development Program.

UPSC Civil Services Examination, Previous Year Question (PYQ)

Prelims:

Q. In the context of Indian defence, consider the following statements: (2009)

1. The Shourya missile flies with a speed of more than 8 Mach.
2. The range of Shourya missile is more than 1600 km.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

Ans: (d)

Q. Which one of the following is the best description of 'INS Astradharini', that was in the news recently? (2016)

- (a) Amphibious warfare ship
- (b) Nuclear-powered submarine
- (c) Torpedo launch and recovery vessel
- (d) Nuclear-powered aircraft carrier

Ans: (c)

Mains:

Q. How is S-400 air defence system technically superior to any other system presently available in the world? (2021)