

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGG.

*Departmental **TeCh**ronicle*

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Department Vision:-

To be recognized as an excellent department offering competent technical education to create competent electronics & telecommunication engineers for the benefit of the common masses.

Department Mission:-

Committed to serve the needs of society through innovative teaching learning processes, promoting industry-institute interaction to provide competent and cultured electronics and telecommunication engineers.

Program Educational Objectives:-

- 1. To impart state of art technical education in the Electronics & Telecommunication Engineering.*
- 2. To promote society beneficial projects and activities.*
- 3. To develop soft skill, team work, professional ethics and multidisciplinary approach for the carrier enhancement.*
- 4. To bridge the gap between Industry-Institute through collaboration with Industries, Institutions and Universities.*
- 5. To provide suitable infrastructure and facilities in tuned with advancing technological evaluation.*

Greeting,

Department of Electronics and Telecommunication is celebrating national science day by unveiling technical newsletter "TeChronicle" VOL-6, ISSUE-1 on 4th April 2024.

The day is observed every year on April 4TH on occasion of the birth anniversary of Ex Sarchitnis of Maratha Vidya Prasarak Samaj's (MVPS's, Nashik) late Dr. V. N. Pawar, recipient of the prestigious Dr. B. C. Roy award.

Advanced Medium Combat Aircraft (AMCA)

[Ms. Vishakha Joshi T.E. E&TC]

The Advanced Medium Combat Aircraft (AMCA) symbolizes India's bold step towards developing a fifth-generation fighter jet domestically. It aims to cater to the evolving requirements of the Indian Air Force (IAF) and bolster India's indigenous defense capabilities. This article provides an overview of the AMCA program, highlighting

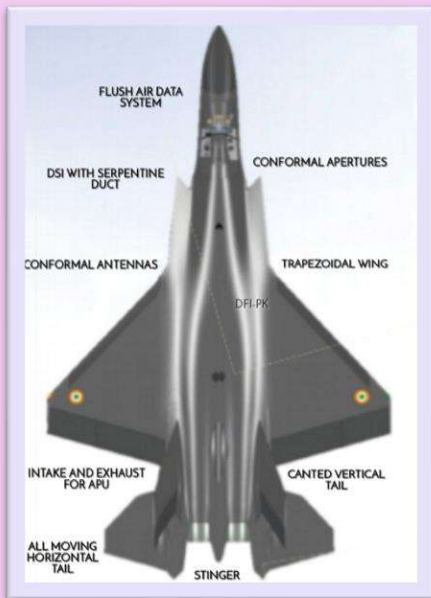
its features, capabilities, and strategic significance for India.



In the early 2000s, India initiated the AMCA program to address the need for a domestically developed fifth-generation fighter aircraft. The project aimed to design and manufacture a stealthy, multi-role combat aircraft capable of operating effectively in contested air-space.

Key Features and Capabilities:

- 1. Stealth Technology:**The AMCA integrates advanced stealth features to minimize radar cross-section, enhancing survivability in modern combat scenarios.
- 2. Advanced Avionics:**Equipped with cutting-edge avionics systems, including radar, sensors, and communication systems, the AMCA ensures superior situational awareness and mission effectiveness.
- 3. Weapon Systems:**The aircraft is designed to carry a diverse array of weapons, making it a versatile platform for various mission profiles, including air-to-air and air-to-surface engagements.
- 4. Supercruise Capability:** The AMCA is expected to possess the ability to supercruise, enabling sustained supersonic flight without afterburners, thereby enhancing range and mission flexibility.
- 5. Maneuverability:** With advanced aerodynamics and thrust vectoring capabilities, the AMCA boasts exceptional maneuverability, providing an edge in air-to-air engagements.



As of the current timeline, the AMCA project has progressed through the conceptual and preliminary design phases. Several technology demonstrator programs have been conducted to validate key technologies and concepts. However, full-scale development and production are pending, with challenges such as technological complexities and funding constraints needing to be addressed.

The development of the AMCA holds strategic importance for India on various fronts:

- 1. Reduced Dependency:** Developing its fifth-generation fighter jet aims to decrease India's reliance on foreign imports for defense, enhancing self-sufficiency and sovereignty.
- 2. Enhanced Defense Capabilities:** The AMCA will provide the Indian Air Force with a technologically advanced platform to address modern warfare challenges, bolstering India's national security posture.
- 3. Export Potential:** Once operational, the AMCA could become an attractive option for export, contributing to India's defense diplomacy efforts and strengthening its defense industrial base.

The Advanced Medium Combat Aircraft (AMCA) signifies India's aspiration to establish itself as a significant player in the global aerospace industry and strengthen its national defense capabilities. While challenges lie ahead, the successful development and deployment of the AMCA have the potential to reshape India's defense landscape and position it as a leading force in fifth-generation fighter aircraft technology.

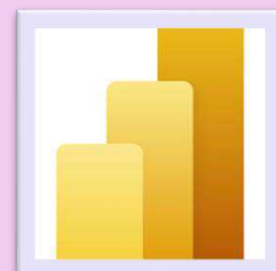
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Power BI tool

[Ms. Shreya Belheker S.E. E&TC]

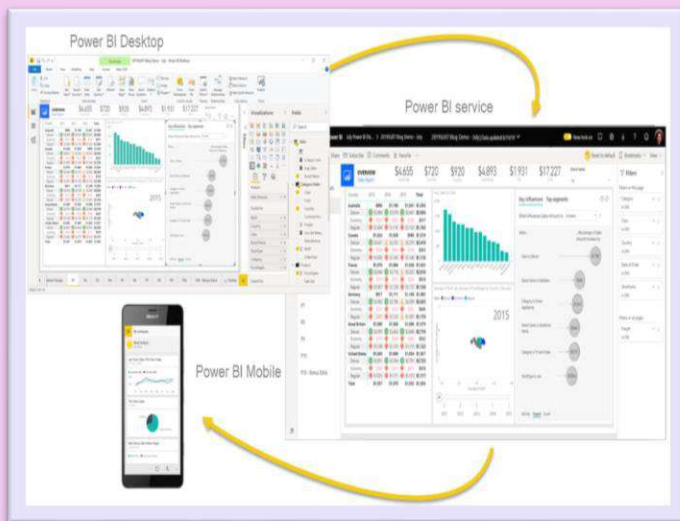
Power BI is a **Data Visualization and Business Intelligence tool** by Microsoft that converts data from different data sources to create various business intelligence reports. It provides interactive visualizations using which end users can create reports and interactive dashboards by themselves.



Navigating Power BI: Power BI provides a plethora of various tool and services to make creative, interactive and intelligent Business Reports.

Power BI consists of several elements that all work together, starting with these three basics:

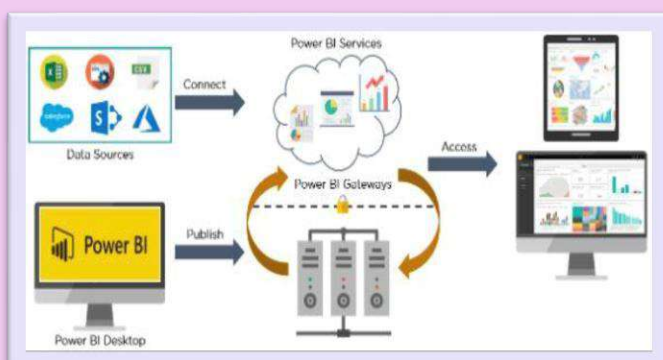
- A Windows desktop application called Power BI Desktop.
- An online software as a service (SaaS) service called the Power BI service.
- Power BI Mobile apps for Windows, iOS, and Android devices.



These three elements—Power BI Desktop, the service, and the mobile apps—are designed to let you create, share, and consume business insights in the way that serves you and your role most effectively.

Power BI Architecture:

Power BI architecture is a service built on top of Azure. There are multiple data sources that Power BI can connect to. Power BI Desktop allows you to create reports and data visualizations on the dataset.

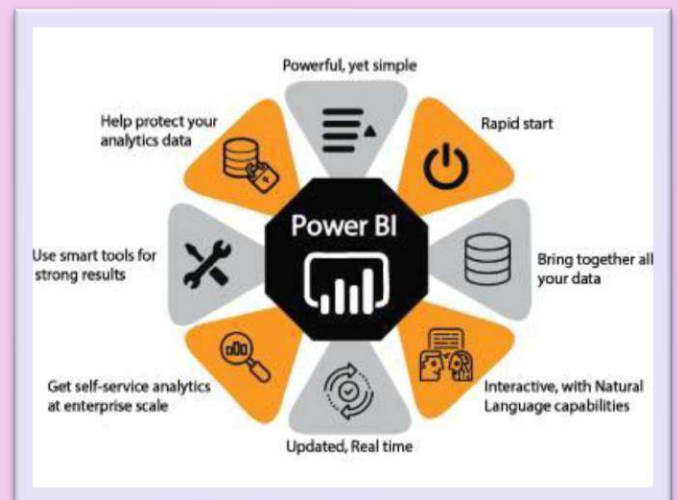


Power BI gateway is connected to on-premise data sources to get continuous data for reporting and analytics. Power BI services refer to the cloud services that are used to publish Power BI reports and data visualizations. Using Power BI mobile apps, you can stay connected to their data from anywhere. Power BI apps are available for Windows, iOS, and Android platforms.

What is Power BI used for?

Whether you're a data pro or are just entering the business world, Power BI is designed to empower you with data-driven insights. Some of the most common uses for the platform include:

Creating reports and dashboards that present data sets in multiple ways using visuals.



Connecting various data sources, such as Excel sheets, onsite data warehouses, and cloud-based data storage, and then transforming them into business insights.

Turning data into a wide range of different visuals, including pie charts, decomposition trees, gauge charts, KPIs, combo charts, bar and column charts, and ribbon charts – among many other options .

Providing company-wide access to data, data visualization tools, and insights in order to create a data-driven work culture.

References:

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Solar Container-Mobile solar system

[Mr. Tanmay Karale T.E. E&TC]

Dubbed Solarcontainer, **SolarCont** has devised a photovoltaic power plant developed as a mobile power generator with collapsible photovoltaic modules. The unfolded panels can reach up to 120 meters in length, and there are 240 solar panels that can be installed. The Solarcontainer is a mobile system that can be used for both on- and off-grid purposes, including rescue missions and gatherings.

The Solar container represents a grid-independent solution as a mobile solar plant. Especially in remote areas it can guarantee a stable energy supply or support or almost replace a public grid with strong power fluctuations, as well as diesel generators that are used. The use of multiple modules to increase the solar yield offers flexible scaling of the system, which can also be combined with battery systems and other energy storage devices.

These panels are part of the ingenious folding system with which they can be pulled out of the container quickly and easily using the innovative solar rails and can be spread over Solar containers' solar energy offerings can be tailored to individual business/customer needs. These products are **designed** specifically for **off-grid communities** where **conventional solar PV solutions will not work**. With the push of a button this system folds-away for security or transport.



Price (in USD)

These products can vary from \$180 – \$32,000 according to client needs.

Key Features:

1. Hubs: Solar containers (manual, auto, and roof mounted)

can be utilized at offices, clinics, shop, internet cafe or anything else you may envision. Being a container, it can additionally offer security.

2. Mini: Fiberglass units with fixed mounted solar canopy.

Sparks: Mobile solar trading kiosk – case, bike & cart. Ideal for street vendors and great for events/festivals.

3. Sparks gives vendors the opportunity to offer phone charging services, power bank sales, and Wi-Fi hot spot services to customers.

4. Products are designed to be quick and easy to set up with little to no infrastructure.

5. Robust, hot-dip galvanized steel construction.

The robust, hot-dip galvanized steel construction of the rail system and the module frame constructions Due to their own weight, they already offer sufficient protection against lifting or shifting due to wind loads.

Purposes of the Solar container

The areas of application and use cases are wide-ranging. This results in very general use cases such as:

1. Provision of an off-grid solution.
2. Support weak public network.
3. Support for existing energy generators.

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