



Shri Vishweshwar Shikshan Prasarak Mandal's

Vishweshwararaya Abhiyantri Padvika Mahavidyalaya

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COMPUTER ENGINEERING DEPARTMENT & INFORMATION TECHNOLOGY

Present's
TECHNICAL
MAGAZINE
2022-2023

COMPIT

INSTITUTE VISION MISSION

Vision

To provide quality technical education in rural area

Mission

1. To impart eco-friendly, advanced engineering knowledge.
2. To inculcate ethical and moral values among budding engineers.
3. Establishment of mentoring system for all -round personal and professional enhancement.
4. To make students aware social and national responsibilities.
5. To encourage students to pursue higher education and take competitive and career enhancement courses.
6. To create technology based society which is the need of modern era.

INFORMATION TECHNOLOGY DEPARTMENT



Vision

To inspire rural students of the region through quality education in Information Technology.



Mission

M1: To maintain state-of-the-art facilities and resources where students can enhance their understanding of technology

M2: To provide students with a computational environment for continuous learning in which they can explore, apply, and transfer knowledge.

M3: To provide continuing education programmes in Information Technology field for the benefit of stakeholders

COMPUTER ENGINEERING DEPARTMENT



Vision

To provide competent knowledge in the field
of computer technology.



Mission

M1: To provide conceptual as well as practical knowledge to
adapt changing technology in computer field.

M2: To provide the quality education to meet needs of profession
& society by arranging seminars, workshops and interactive
sessions.

M3: To prepare for interpersonal skills, leadership qualities,
ethical values, lifelong learning skills, and higher education of
budding engineers.

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METAVERSE

ABOUT METAVERSE

Metaverse is a virtual space in which user

can interact with a computer-generated

environment and other users. The internet will eventually evolve into the metaverse, which will come to represent the next major computing platform. combination of augmented, virtual and

mixed reality can be metaverse. What is the

Metaverse and Where Did the Concept Come From The Metaverse can be traced back to Neal Stephenson and his dystopian cyberpunk novel snow Crash. Which describes a virtual reality dataspace called the matrix. Like any

place in Reality, the Street is subject to

development. Developers can build their own all streets feeding off of the main one.

They can build buildings, parks, signs, as well as things that do not exist in Reality. Mark

Zuckerberg, the CEO of the newly named Meta

(formerly Facebook), estimates it could take five to 10 years before the key features of the metaverse become mainstream. Aspects of the metaverse currently exist. Ultra-fast broadband speed, virtual reality headsets and persistent always-on online worlds are already up and running, even though they may not be accessible to all. The Metaverse : Where We Are and Where We're Headed

-Zuckerberg recently told tech podcaster Lex Fridman: "We're gone desktop to web to mobile from text to photos to video. But this isn't the end of the line," writes.

- Zuckerberg in a recent letter to his employees.



FUTURE OF METAVERSE

Today's Metaverse: Virtual reality as the "digital escape". Over the next few years the future metaverse would be something very similar to our real world in many aspects and even replace some real-world activities (like working or hanging out). A lot of people think that virtual reality is an illusion, that it's not real. But I say that it has casual power, it exists outside of our mind, and is not an illusion".

Although it lacks many of the components that would make it a genuinely next-generation digital experience, exciting use cases and applications are already being seen in areas such as Augmented Reality (AR), Virtual Reality (VR), 3D social media platforms, blockchain-based marketplaces, and many others.

METaverse PURPOSE

The metaverse project is a virtual world designed to bring users together as in real life, as they can meet and interact with each other. It is a virtual universe where users can use avatars that represent their personality and wishes. The metaverse project is a virtual version of real life except that you can do whatever you want. In this world, it is possible to do activities that we usually do in the real world such as skydiving or shopping for example.

The design of the metaverse aims to have a virtual universe where everyone can interact as in the real world. Thus, players will be able to make purchases or trade in this world. It adds prestige and value to this universe. The metaverse is even economically independent. Indeed, it is not uncommon for users of the platform to make trades (sales and purchase) using real money to trade in the metaverse. The Metaverse is a spatial computing platform that provides digital experiences as an alternative to or replica of the real world, along with its key civilizational aspects.



METaverse SIGNIFICANCE

The metaverse is the result of over 30 years of technological progress. It required ubiquitous high-speed internet access. The larger culture needed to be familiar with concepts popularized by video games, such as moving in virtual environments. And, of course, both standard and graphical processing units are required to evolve to their current impressive state. Finally, display technologies used in virtual and augmented reality needed to become lightweight enough to feel natural when worn.

VR HEADSETS

VR headsets have exploded in popularity over the past few years. This is hardly a surprise, given that VR gaming, the metaverse, and similar technologies have also become so popular. VR headsets are one of the best ways to experience these new cutting-edge attractions. You'll soon find out which virtual reality headsets can best fit your particular needs. A VR consists of sensors to track your field of vision and two screens that provide a stereoscopic display.

METaverse IMPORTANCE -

The Metaverse is not a single system but a collection of interconnected systems, each with its own rules and capabilities. It is made up of interconnected worlds that are not limited by geographical boundaries, meaning that technically everyone with an internet connection and the right setup can have access to it.

The Metaverse is the next evolution of the internet and is changing how we live, work, and play forever. Moreover, the metaverse is important because it allows people to interact with others that they may never have had the chance to, in a setting, they may not be able to visit. For example, if you work remotely from home in California, but your employer's office is located in New York, you can use the metaverse to sit in the same office, in a shared virtual space. The metaverse also allows for a more immersive experience in entertainment, education, and other forms of content all through virtual reality. The virtual environment enables people to communicate with others, share ideas, and create content easily.



CONCLUSION

Metaverse technology is far more advanced than virtual reality, as per the detailed report of differences between the Metaverse vs. virtual reality. Virtual reality is practically one of the basic automation for the advancement of the Metaverse. It grants the consumers to be a part of the metaverse universe. Nevertheless, high -tech VR still has limited power leading to a fixed number of efficient components.

The Metaverse, on the other hand, is a vast and rapidly expanding virtual environment that would be a 3D depiction of the internet and the real virtual world. Users may navigate around virtual 3D environments in the Metaverse in the same way they can browse through different websites. Most essential of all, there is no end to the potential of supporting advanced technologies in the Metaverse.

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WIRELESS NETWORK SYSTEM

ABSTRACT

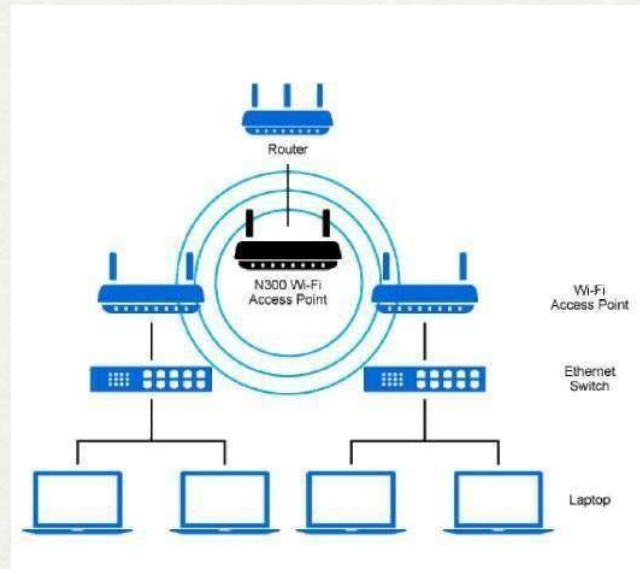
Computer networks that are not connected by cables are called wireless networks. They generally use radio waves for communication between the network nodes. They allow devices to be connected to the network while roaming around within the network coverage.

A wireless network refers to a computer network that makes use of Radio Frequency (RF) connections between nodes in the network. Wireless networks are a popular solution for homes, businesses, and telecommunications networks.

INTRODUCTION

There are more subtle technology differences that come in to play between wired and wireless. Most modern wired networks are now “full duplex”, meaning that they can be transmitting/receiving packets in both directions simultaneously. In addition, most wired networks have a dedicated cable that runs to each end user device.

In a Wi-Fi network, the medium (the radio frequency being used for the network) is a shared resource, not just for the users of the network, but often for other technologies as well (Wi-Fi operates in what are called ‘shared’ bands, where many different electronic devices are approved to operate). This has several implications: 1) unlike a wired network, wireless can’t both talk and listen at the same time, it is



APPLICATIONS OF WSN :

“half duplex” 2) All users are sharing the same space must take turns to talk 3) everyone can ‘hear’ all traffic going on. This has forced Wi-Fi networks to implement various security measures over the years to protect the confidentiality of information passed wirelessly.

Internet of Things (IoT)

Surveillance and Monitoring for security, threat detection

Environmental temperature, humidity, and air pressure

Noise Level of the surrounding

Medical applications like patient monitoring

Agriculture

Landslide Detection

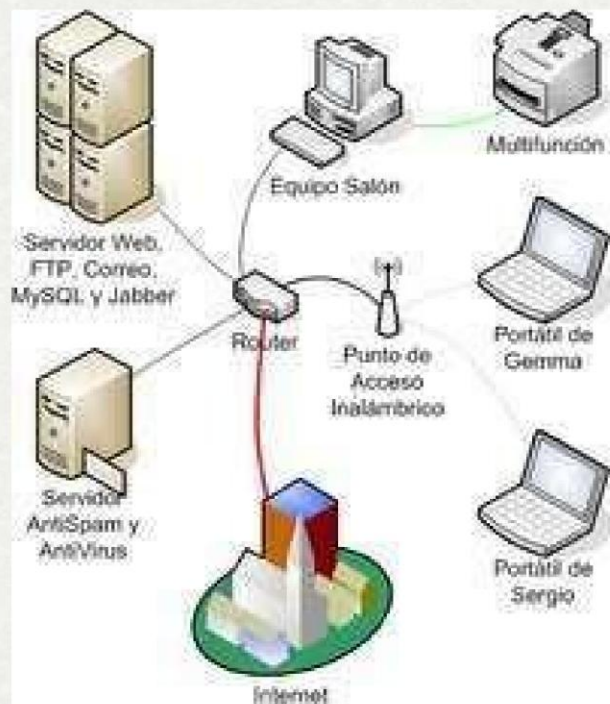
HOW DOES WI-FI NETWORK WORK?

A Wi-Fi based wireless network sends signals using radio waves (cellular phones and radios also transmit over radio waves, but at different frequencies and modulation).

In a typical Wi-Fi network, the AP (Access Point) will advertise the specific network that it offers connectivity to. This is called a Service Set Identifier (SSID) and it is what users see when they look at the list of available networks on their phone or laptops. The AP advertises this by way of transmissions called beacons.

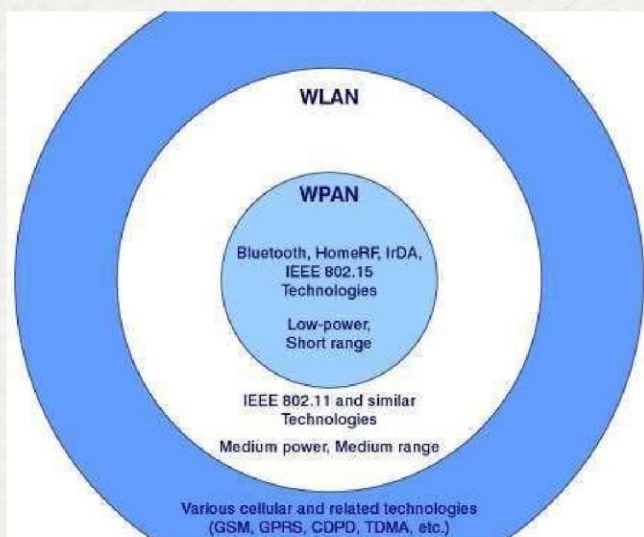
The beacon can be thought of as an announcement saying "Hello, I have a network here, if it's the network you're looking for, you can join".

A client device receives the beacon transmitted by the AP and converts the RF signal into digital data, then that data is passed along to the device for interpretation. If the user wants to connect to the network, it can send messages to the AP trying to join and (when security is enabled) providing the proper credentials to prove they have the right to join. These processes are known as Association & Authentication. If either of these fail, the device will not successfully join the network and will be unable to further communicate with the AP.



Assuming all goes well, we come to the part that is the end user's ultimate goal: passing data. Data from the client (or from the AP to the client) is converted from digital data into an RF modulated signal and transmitted over the air. When received, this is de-modulated, converted back to digital data, and then forwarded along to its destination (often the internet or a resource on the larger internal network).

Wi-Fi communication is only approved to transmit on specific frequencies, in most parts of the world these are the 2.4 GHz and 5 GHz frequency bands, although many countries are now adding 6GHz frequencies as well. These frequency bands are not the same that cellular networks use, so cell phones and Wi-Fi are not in competition for use of the same frequencies. However that does not mean that there are not other technologies that can operate in these bands. In the 2.4GHz band in particular there are many products, including Bluetooth, ZigBee, cordless keyboards, and A/V equipment just to name a small subset that does use the same frequencies and can



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ADVANTAGES OF WNS:

- **Low cost:** WSNs consist of small, low-cost sensors that are easy to deploy, making them a cost-effective solution for many applications.
- **Wireless communication:** WSNs eliminate the need for wired connections, which can be costly and difficult to install. Wireless communication also enables flexible deployment and reconfiguration of the network.
- **Energy efficiency:** WSNs use low-power devices and protocols to conserve energy, enabling long-term operation without the need for frequent battery replacements.
- **Scalability:** WSNs can be scaled up or down easily by adding or removing sensors, making them suitable for a range of applications and environments.
-

DISADVANTAGES OF WNS:

- **Real-time monitoring:** WSNs enable real-time monitoring of physical phenomena in the environment, providing timely information for decision making and control.
- **Limited range:** The range of wireless communication in WSNs is limited, which can be a challenge for large-scale deployments or in environments with obstacles that obstruct radio signals.
- **Limited processing power:** WSNs use low-power devices, which may have limited processing power and memory, making it difficult to perform complex computations or support advanced applications.
- **Data security:** WSNs are vulnerable to security threats, such as eavesdropping, tampering, and denial of service attacks, which can compromise the confidentiality, integrity, and availability of data.
-

TYPES OF WIRELESS NETWORK CONNECTIONS

In addition to a LAN, there are a few other types of common wireless networks: personal-area network (PAN), metropolitan-area network (MAN), and wide-area network (WAN).

LAN

A local-area network is a computer network that exists at a single site, such as an office building. It can be used to connect a variety of components, such as computers, printers, and data storage devices. LANs consist of components like switches, access points, routers, firewalls, and Ethernet cables to tie it all together. Wi-Fi is the most commonly known wireless LAN.

PAN

A personal-area network consists of a network centralized around the devices of a single person in a single location. A PAN could have computers, phones, video game consoles, or other peripheral devices. They are common inside homes and small office buildings. Bluetooth is the most commonly known wireless PAN.

MAN

A metropolitan-area network is a computer network that spans across a city, small geographical area, or business or college campus. One feature that differentiates a MAN from a LAN is its size. A LAN usually consists of a solitary building or area. A MAN can cover several square miles, depending on the needs of the organization.

Large companies, for example, may use a MAN if they have a spacious campus and need to manage key components, such as HVAC and electrical systems.

WAN

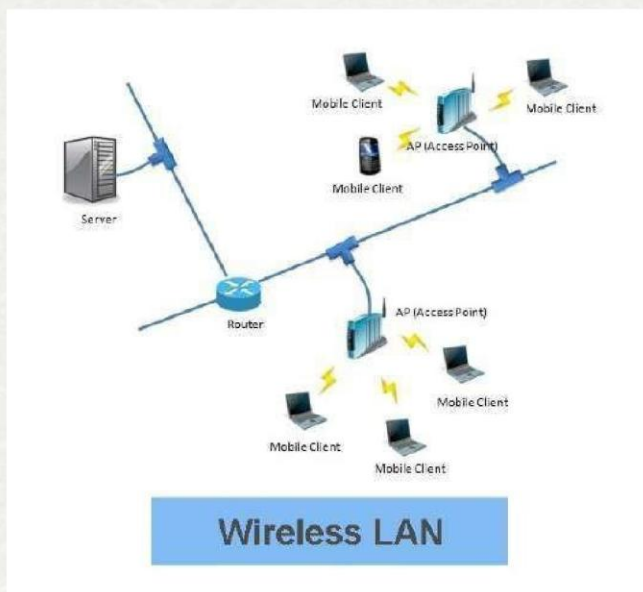
A wide-area network covers a very large area, like an entire city, state, or country. In fact, the internet is a WAN. Like the internet, a WAN can contain smaller networks, including LANs or MANs. Cellular services are the most commonly known wireless WANs.

CONCLUSION

In conclusion, wireless network systems have transformed the way we live and work, and their potential for innovation and growth is limitless. As technology continues to advance, wireless networks will continue to play a critical role in powering the future of connectivity, enabling new applications, and shaping the way we interact with the digital world. It is imperative to invest in research, development, and standards to further enhance the capabilities of wireless networks and unlock their full potential for the benefit of society at large.

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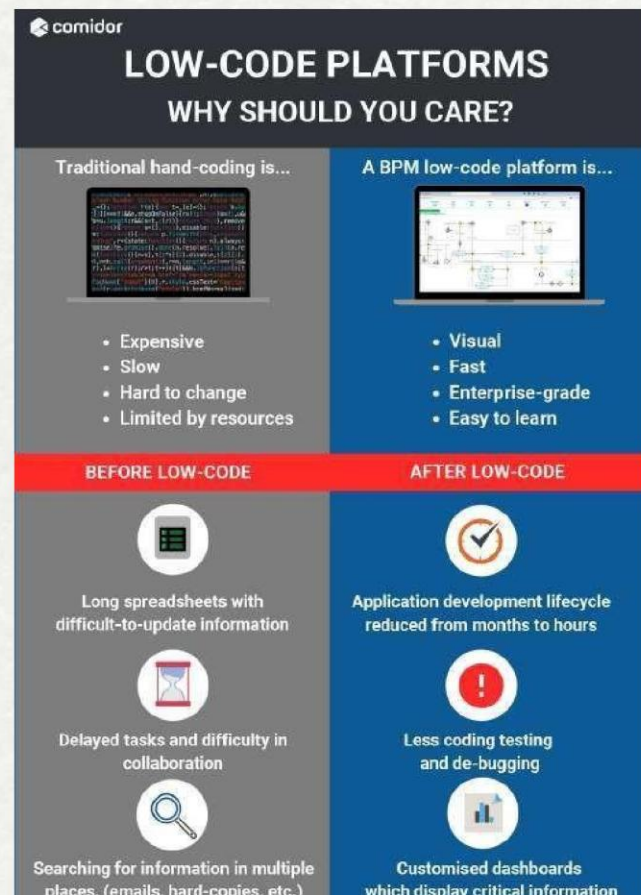


THE RISE OF LOW-CODE DEVELOPMENT PLATFORMS: HOW THEY ARE CHANGING THE SOFTWARE DEVELOPMENT LANDSCAPE

INTRODUCTION

The article discusses the rise of low-code development platforms and how they are changing the software development landscape. These platforms offer a visual interface that enables developers to build applications at a faster pace, with fewer resources, and at a lower cost, compared to traditional software development methods. Low-code development platforms democratize software development and improve collaboration between business stakeholders and developers, resulting in better-designed applications that meet business needs more effectively. However, there are also some challenges that organizations need to be aware of, such as limited customization, vendor lock-in, and security concerns. Overall, low-code development platforms offer significant benefits to organizations looking to build applications at a faster pace and at a lower cost.

In recent years, the software development landscape has undergone a significant transformation, thanks to the emergence of low-code development platforms. These platforms have enabled developers to build applications at a faster pace, with fewer resources, and at a lower cost, compared to traditional software development methods. Low-code development platforms offer a visual interface that enables developers to drag-and-drop pre-built components and integrate them into the application. This approach to development is often referred to as model-driven development..



WHAT IS LOW-CODE ?

A software development approach that requires minimal hand-coding i.e, it uses the GUI with little coding for software development.

There are several platforms that provide users with low-level coding like -

Quickbase, ZohoCreator, Oracle APEX, Mendix ,Salesforce lightning,Airtable, Kissflow Low Code, Appian, OutSystems etc.

BENEFITS OF LOW-CODE DEVELOPMENT PLATFORMS

Low-code development platforms offer several benefits to organizations looking to build applications.

Here are some of the most significant advantages:

1. **Faster Time to Market:** Low-code development platforms allow developers to build applications at a much faster pace compared to traditional software development methods. The visual interface and pre-built components eliminate the need for developers to write code from scratch, which significantly reduces the development time.
2. **Lower Costs:** Building applications using low-code development platforms requires fewer resources, which means lower development costs. By reducing the need for manual coding, companies can lower the number of developers required to build an application, leading to a significant reduction in development costs.
3. **Increased Collaboration:** Low-code development platforms enable business stakeholders to work together more effectively. The visual interface and pre-built components make it easy for stakeholders to provide feedback, resulting in more effective collaboration between developers and business stakeholders.
4. **Better Agility:** Low-code development platforms enable developers to quickly make changes to the application as per changing business needs. This agility is critical in today's fast-paced business environment.



IMPACT OF LOW-CODE DEVELOPMENT PLATFORMS

Low-code development platforms are changing the software development landscape in several ways. :

1. **Democratization of Software Development:** Low-code development platforms are making it possible for non-technical stakeholders to build applications. This democratization is reducing the reliance on developers, resulting in more innovative solutions as individuals from different business functions bring their perspectives to the application development process.
2. **Improved Collaboration:** Low-code development platforms are empowering business stakeholders to become more involved in the development process, resulting in more efficient and effective collaboration. This approach is leading to better-designed applications that meet business needs more effectively.
3. **Increased Speed of Innovation:** Low-code development platforms enable developers to build applications at a faster pace, resulting in a quicker time to market. This speed of innovation is giving companies a competitive edge in the marketplace.

CHALLENGES OF LOW-CODE DEVELOPMENT PLATFORMS

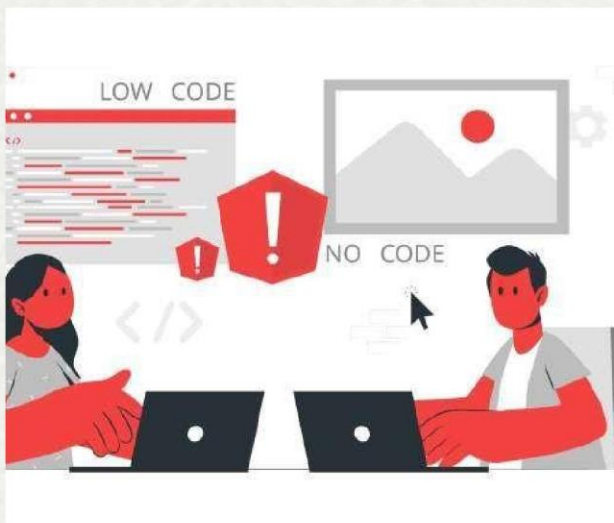
While low-code development platforms offer several benefits, there are also some challenges that organizations need to be aware of. Here are some of the most significant challenges:

1. **Limited Customization:** Low-code development platforms are best suited for building applications that require standard functionality. For applications that require extensive customization, developers may still need to write custom code.
2. **Vendor Lock-in:** Organizations that use low-code development platforms are often dependent on the vendor for ongoing support and maintenance. This dependence may make it challenging for organizations to switch to a different platform in the future.
3. **Security Concerns:** Low-code development platforms often require developers to share access to the platform, which may raise security concerns. Organizations need to ensure that adequate security measures are in place to protect their data and applications.



CONCLUSION

Low-code development platforms are transforming the software development landscape by offering a more efficient, cost-effective, and collaborative approach to building applications. Organizations that use low-code development platforms can benefit from a faster time to market, reduced development costs, improved collaboration, and better agility. While there are challenges that organizations need to be aware of, low-code development platforms are likely



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INDUSTRIAL VISIT 2022-23



DRONE CENTER OSMANABAD

A drone center is a specialized facility focused on the development, testing, and training related to drone technology. These centers often serve as hubs for research, innovation, and hands-on experience with unmanned aerial vehicles (UAVs). They offer services such as flight training programs, drone testing areas, and workshops on regulatory standards, maintenance, and advanced drone operations. Some centers are also involved in developing drone-based solutions for industries like agriculture, construction, logistics, and emergency response. They typically collaborate with government agencies, educational institutions, and private sector companies to advance the capabilities and safety of drone technology.



WHAT WE LEARN?

Our visit to the drone center was an eye-opening experience, giving us insights into the technology, applications, and future of drones. We learned about different types of drones, their components, and how they are used in industries like agriculture, delivery, surveillance, and disaster management. The highlight was witnessing live drone demonstrations and understanding flight controls, GPS navigation, and AI integration. Safety regulations and drone laws were also covered, emphasizing responsible usage. This visit deepened our appreciation for how drones are shaping the future of automation and innovation. Overall, it was a highly informative and exciting learning opportunity.