1] Define Internet of Things (IoT).

Internet of Things (IoT) refers to the process of connecting everyday physical objects to the internet from common household objects like light bulbs to health care assets like medical devices to wearable, smart devices and even smart cities.

2] Analyse the benefits of AR and VR in project management.

- Increase in competitive ability.
- Increase in efficiency and productivity.
- Reduces time and costs.
- Reduces errors and facilitates work processes.
- Enables fast remote support for repairing systems weakness.
- Enable fast and remote collaboration.
- Involve innovation support.
- Facilitate to understand large amounts of data.
- Facilitate decision making problems solving.
- Facilitates monitoring of projects.
- Reduces the project validation risks.

3] Show any three differences between augmented reality and Virtual reality.

SL. No.	Augmented reality	Virtual reality
1	Combination of digital and real world.	Totally artificial digital world.
2	User experience is partially immersed.	Complete sense of immersion.
3	Camera-enabled devices such as smart phone, tablet or smart glasses are required. Desktop and lap-top are not suitable because of its fixed camera position, unless an external camera is used.	Special hardware equipment is required (Microsoft hololens, HTC vive, oculus right, Google daydream, etc).
4	Latest versions of common operating systems are good enough (Android, IOS, Windows).	Special software is required.
5	Initial cost is lower than the VR.	Initial cost is higher than the AR.

4] Discuss the applications of AR and VR. ***(Nov-Dec-2022-Makeup Exam)***

The applications of AR and VR in Project management are as follows:

i. ***Architecture, civil engineering, construction and real estate:*** Instead of standard 2D format of drawings and renderings, investors and customers can now experience realistic impression of their future buildings, flats, and business places, both from the outside and from the inside.

ii. ***Marketing and sales:*** Many companies have recognized additional values for both marketers and customers. For instance using app helps customers in fast decision making.

iii. ***Education:*** AR/VR technologies offer great opportunities and diversity in education (remote learning, interactive learning etc.)

iv. ***Visual industries:*** There are many examples of using AR/VR and related projects in this field; game industry, fashion industry, entertainment industry - cinema, film, travelling exhibitions (e.g. landmarks, museums) etc.

v. ***Automotive:*** AR/VR solutions are used for test drives, car elements testing, car dealership experience, etc.

vi. ***Manufacturing:*** In complex manufacturing processes AR is useful in delivering the right information at the right moment to factory workers on assembly lines.

vii. ***Healthcare:*** Training of surgeons is one of the most important fields of application of the AR/VR technologies in healthcare.

viii. ***Defence:*** The project uses different approaches allowing remote connection of AR and VR systems to geo-location and other tools, involving 3D modeling, photogrammetric, drones and many other state-of-the-art technologies.

ix. ***Service support:*** Remote technical and expert support, visualized instructions, remote repairing, knowledge, exchange, etc., with the AV/VR technologies, maintaining and repairing at remote locations is possible.

5] Discuss the application of cloud technology in project management. ***(March/April-2022)***

- Cloud-based project management software coordinates the planning, collaborating, monitoring, and delivering of a project.
- It allows project managers and teams to get work done using a network of tools available within the software, rather than using a plain old whiteboard and sticky notes.
- The use of project management software scales from business to business and team to team.
- But, in all, it is designed to make managing projects and deadlines easier and more effective. Cloud Technology allows the people to use the digital resources stored in the virtual space by the way of networks, often using satellite networks.
- It allows people to share the information and applications across the internet without being the restriction of their physical location.

6] Discuss the application of Internet of Things (IoT) in project management. ***(March/April-2022)***

- Internet of Things (IoT) and sensors are used to get real-time information from various connected devices and predict the outcome.
- In project management, the IoT technology will fundamentally alter the speed of project execution.
- Organizations that adopt IoT will complete the projects in a speedy manner.
- The IoT intersects with project management on everything from team collaboration to data collection and can expect real time status reporting via IoT to user in a new era of dynamic planning and execution.
- Data collection will happen on a large scale allowing leaders to make more informed decisions. Inventory and resources will be easily monitored at all times.
- Devices can automatically sense and respond to what is happening around them, reducing the need for human intervention, lowering operating costs and increasing response time and minimizing errors.

7] Discuss on how smart city projects can be developed using digital technologies. ***(March/April-2022)***

- A smart city is a framework, predominantly composed of information and communication technologies (ICT), to develop, deploy and promote sustainable development practices to address growing urbanization challenges.
- This ICT framework is essentially an intelligent network of connected objects and machines that transmit the data using wireless technology and cloud technology.
- Cloud based IoT applications receive, analyse and manage data in real-time to help municipalities, enterprises and citizens to make better decisions that improve quality of life.
- Augmented Reality (AR) can be the interface which provides access to all the benefits of a smart city.

8] Discuss on how digital technologies can be used in Education. ***(March/April-2022)***

- Digital technologies are electronic tools, systems, devices and resources that generate store or process data.
- The effective use of digital learning tools in classrooms can increase student engagement, help teachers improve their lesson plans, and facilitate personalized learning.
- It also helps students build essential 21st-century skills.
- Augmented Reality (AR) and Virtual Reality (VR) technologies offer great opportunities and diversity in education including remote learning. interactive learning etc.
- Students can collaborate on group projects using technology-based tools which enables new ways of learning, communicating, and working collaboratively where learners use programs or applications designed for problem solving or open-ended learning or technology for teachers, such as interactive whiteboards or learning platforms.

9] What are Digital Projects? Give any three examples of Digital projects. ***(Feb-March-2023)***

- Digital projects are modern day software projects that predominantly use digital technologies such as Big Data technologies, augmented reality and virtual reality (AR & VR), Artificial intelligence (AI) technologies, cloud computing technologies, experience platforms, enterprise portals, content management systems (CMS), commerce platforms, user experience technologies, mobile technologies, search, analytics, and collaboration etc. to achieve high quality deliverables.
- These digital projects are mainly executed through an agile methodology or in iterations to attain faster time to market.

Examples of Digital projects are:

a) Karnataka LMS Portal by Govt. of Karnataka Which uses content management systems
b) (CMS)
c) Unified University college management system (UUCMS) by Govt. of Karnataka
d) Digitization of existing banking processes, Development of next generation online banking platform, digital bank office, virtual branch, digital wallets, etc.
e) Media and entertainment sector service providers such as Netflix, Amazon do analysis on data collected on their users.
f) Online Educational Service providers, Vedanta, Byzus, Coursera etc.
g) Digitization of Identity – Aadhaar Card Project.
h) Automatic Driving car by Audi Volvo, cruise control in cars.
i) Smart Traffic system.
j) Robotics Digital project in hospitals, healthcare.
k) Tracking customer spending habit shopping behaviour in online or physical stores like amazon, flipkart, reliance etc.
l) Ola, Uber, Zomoto, Swiggy, Movie tickets using Book my Show, Rapido etc.

m) Smart Pollution Control, Smart traffic control, autonomous cars.
n) Smart Home Automation.
o) Government of Karnataka Digital Initiatives such as, e-Office, e-PAR, e-Procurement, HRMS, Bhoomi, Nondani, State Scholarship Portal (SSP), Khajane–II, e- Udyami, Seva Sindhu.
p) Government of India Digital initiatives such as, Digi locker, Direct Benefit transfer, National Academic Depository, ICT Learning missions – NPTEL, Swayam, National Digital Library (NDL).

10] Identify the digital trends in project management. ***(Feb-March-2023)***

- As the digital technology ecosystem is continuously evolving organizations need to constantly look out for modern digital technologies to realize their digital vision.

The main current trends in the digital space are given here:

a) Location-based analytics: Using location-based services, organizations want to push personalized, relevant, and effective campaigns and services.
b) Social channel utilization and touch point optimization: Organizations want to engage their customers at all touch points (web, offline, kiosk, mobile, social media, IVR, etc.) due to increased popularity of social media platforms, organizations use them for the voice of customer channels, brand marketing, campaigns, etc.
c) Mobile-first and cloud-first strategies: Digital platforms are built with mobile devices as their primary delivery platforms. The applications are deployed increasingly on the cloud to realize the "software-as service" model.
d) Intuitive user experiences: Seamless and integrated cross-channel enabled content with dashboard views, unified views, 360-degree activity views, and rich, real-time visualizations are becoming the norm in the user experience space. Good customer experiences bring trust and loyalty.
e) Digital marketing: Organizations are leveraging social media platforms to market their products such as Insurance etc. and brands. Peer recommendations and peer approval play a major role in influencing customers.
f) Analytics: Real-time analytics of user actions and analysis of historical data will be used for contextual recommendation and for personalizing the experience.
g) Banking: Digital banking, Omni-channel experience, personalization, dashboard experience, virtual branch, self-service tools, social media engagement, analytics, mobile apps, digital payments, and digital wallets.
h) Retail: Virtual assistant, AI-based smart recommendations, chat bot, augmented reality, mobile apps, Big Data, IoT, wearables, cloud delivery (SaaS), social media marketing, social listening, user enablement, targeted marketing, loyalty management, digital marketing, customer segmentation, and voice of customers.
i) Utilities: Dashboard experience, self-service, process automation, real-time monitoring, dashboard view, and analytics.
j) Life sciences: Business intelligence, mobile apps, CRM, ERP applications, wearable's, IoT, and reporting.
k) Automobile: IoT and telematics.
l) Other digital technologies: Organizations are increasingly investing in Big Data, IoT, and wearables for applicable use cases.

11] Discuss the use of IoT application in Digital project management. ***(Feb-March-2023)***

- The Internet of Things (IoT) is a network of physical objects/devices such as appliances, vehicles etc. that are fitted with sensors, software and other technologies connected to the Internet, these 'things' are able to exchange real time data with other connected devices and systems over networks.
- These connected devices combine with automated systems to gather IoT data that can be analysed to assist with tasks.

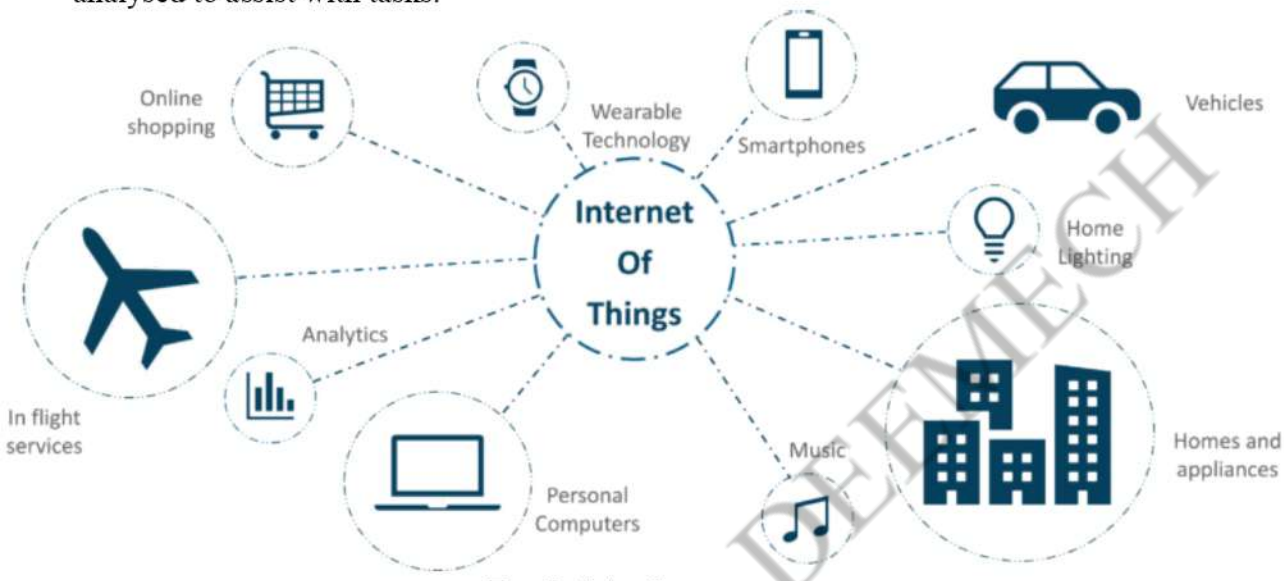

Fig. IoT Applications

- Over 9 billion 'Things' (physical objects) are currently connected to the Internet, as of now.
- In the near future, this number is expected to rise to a whopping 20 billion.

Applications of Internet of Things (IoT):

a) Connected vehicles such as Autonomous driving cars.
b) Connected Health – monitoring BP and Heart rate, Wearables in fitness control.
c) Smart Grids with Energy management capability.
d) Smart cities - to assist the infrastructure planning of an entire smart city, air quality monitoring, Earthquake detection, Radiation detection/hazardous gas detection.
e) Smart Building – Reducing Energy consumption.
f) Smart homes / Home automation such as, auto lighting and electricity monitoring, home security systems, Smart Air conditioning systems, Smart Washing machine.
g) Industrial IoT used in manufacturing, healthcare, retail, automotive.
h) Agriculture for weather monitoring, soil content monitoring.
i) Transport – Smart Traffic control, Smart parking control, smart roadside assistance.
j) Military applications for data collection of battle field.
k) Voice assisted devices such as Alexa, Google, Siri etc.

12] Discuss cloud computing technology application in digital project management. ***(Feb-March-2023)***

- Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you go pricing.
- Instead of buying, owning, and maintaining physical data centres and servers, (IT infrastructure) you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider such as Google Cloud, Amazon Web Services (AWS).

- It eliminates the need for enterprises to procure, configure, or manage resources themselves, and they only pay for what they use.

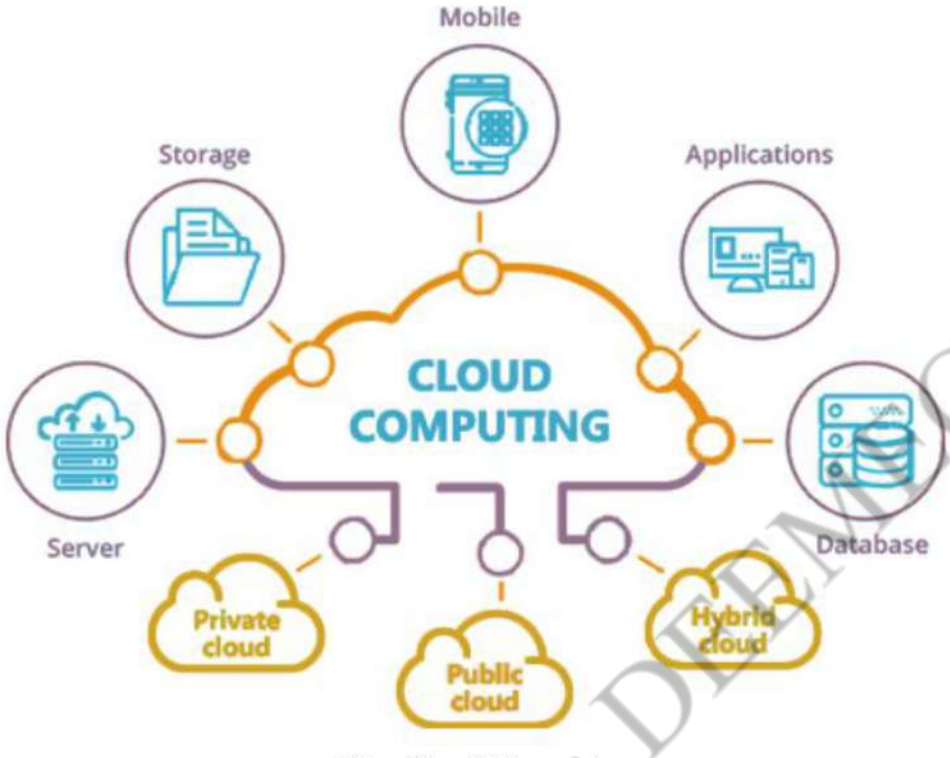

Fig: Cloud Computing

Benefits of cloud computing:

a) Agility - The freedom to experiment, test new ideas to differentiate customer experiences, and transform your business.
b) Elasticity- scale the resources up or down to instantly grow and shrink capacity as your business needs change.
c) Lower IT costs (Cost savings)- The cloud allows you to trade fixed expenses (such as data centres and physical servers) for variable expenses, and only pay for IT as you consume it. Plus, the variable expenses are much lower than what you would pay to do it yourself because of the economies of scale.
d) Deploy globally in minutes-With the cloud, can expand to new geographic regions and deploy globally in minutes. For example, AWS has infrastructure all over the world, so can deploy your application in multiple physical locations with just a few clicks.

Applications of cloud computing:

a) Healthcare companies are using the cloud to develop more personalized treatments for patients.
b) Financial services companies are using the cloud to power real-time fraud detection and prevention.
c) Video game makers are using the cloud to deliver online games to millions of players around the world.
d) IT companies use data backup, Disaster recovery- Rather than building more data centres to ensure continuity during disasters, businesses use cloud computing to safely back up their digital assets.

Email address : **deemechkvgp@gmail.com**

Webpage : **deemechkvgp.wordpress.com**

YouTube channel : **@DEEMECH**

UNIT-06 - Digital Project Management

20PM01T – PROJECT MANAGEMENT SKILLS

Question & Answer

REV-02-2023 UPDATE

Note: This document will be updated periodically with latest rev no., you can download the latest revision through the *webpage:**deemechkvgp.wordpress.com***

Prepared by:
Deekshith Kumar U R
Lecturer, Mechanical Dept.
K.V.G Polytechnic, Sullia.
*Available in the webpage:**deemechkvgp.wordpress.com***