Know Python Bytes

www.knowpythonbytes.blogspot.com

UNIT 1: Introduction to AI

Chapter 2: Relating Applications to our Daily Life

(SMART CITIZENS TO SMART HOMES TO SMART CITIES

PREPARED BY STUDENT OF CLASS IX: 2021-22

- **SWARNIMA SHUKLA**

Mrs. Payal Bhattacharjee, PGT(C.Sc.)

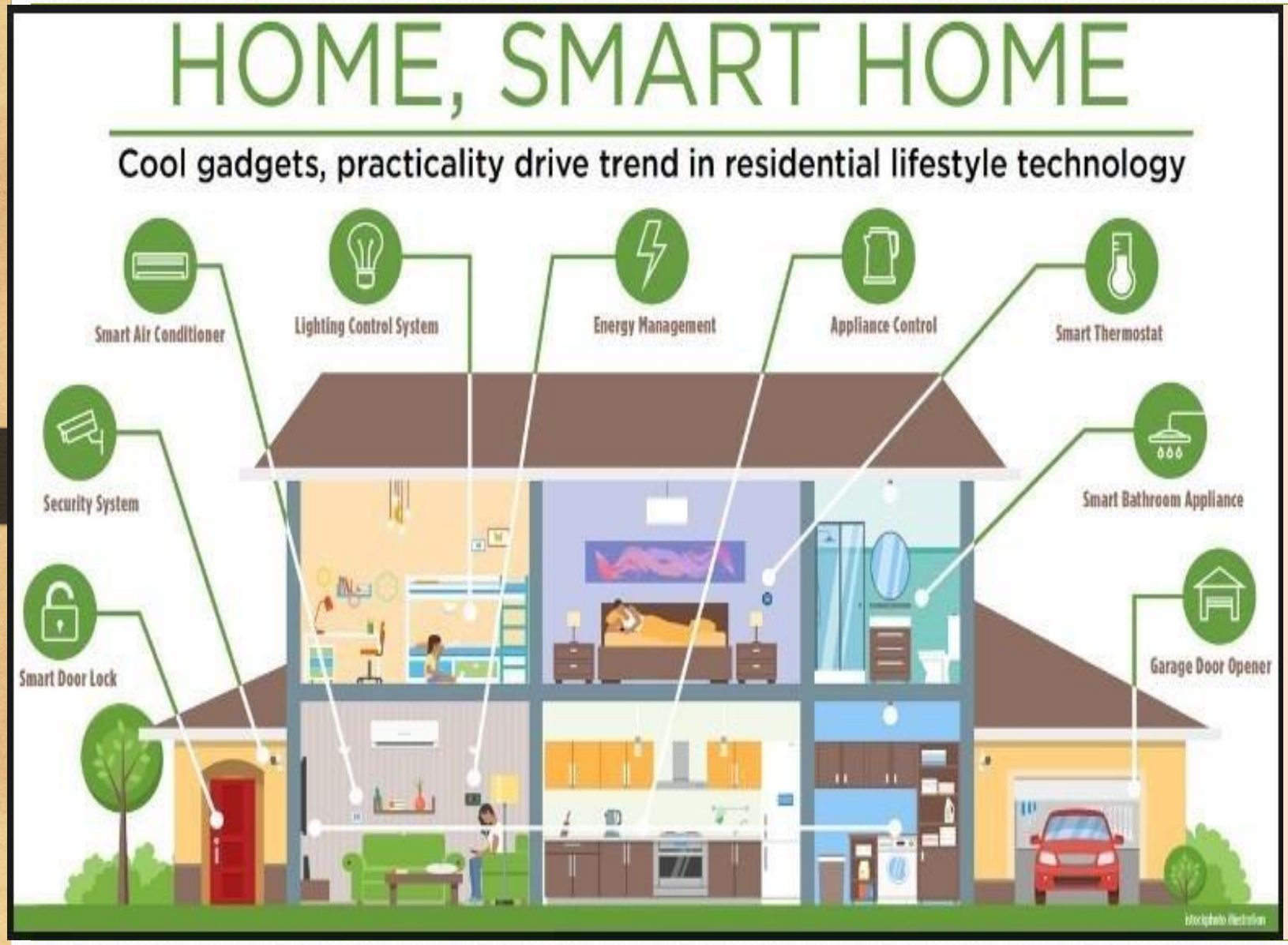
K V No.1 Kanchrapara

KVS-RO(Kolkata)

Preface

Artificial Intelligence (AI) has taken the world by storm. Almost every industry across the globe is incorporating AI for a variety of applications and uses. It has also become a part of our normal lives. We are surrounded by this technology in the form of automatic parking systems, smart sensors for taking spectacular photos, personal assistance and so on.

INDEX



- **Smart homes -**
  - A smart home refers to a convenient home setup where appliances and devices can be automatically controlled remotely from anywhere with an internet connection using a mobile or other networked device.
  - A home equipped with lighting, heating, and electronic devices that can be controlled remotely by smartphone or computer.
    "you can contact your smart home on the internet to make sure the dinner is cooked, the central heating is on, the curtains are drawn, and a gas fire is roaring in the grate when you get home"


Energy Conservation
Growing Technology
Smarter Communication
BENEFITS OF A SMART HOME
Money Savings
Remote Control
Connected Devices

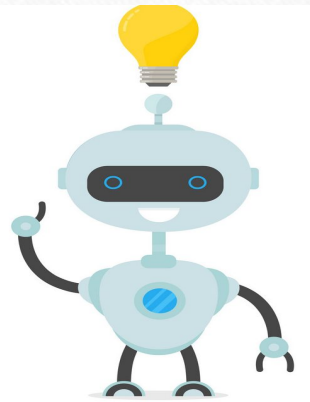
Benefits of Smart Home

- Keeps Your Home **Secure**. One of the greatest benefits of a home automation system is automated door locks.
- Smart homes allow you to have **greater control of your energy use**, all while automating things like adjusting temperature, turning on and off lights, opening and closing window treatments, and adjusting irrigation based on the weather.
- Smart homes provide insights into energy use that can help you become more **energy efficient and mindful of ecological factors.**

RECOMMENDED ACTIVITY:

To write an Interactive Story

Learners to draw a floor plan of a Home/School/City and write an interactive story around it using **Story Speaker** extension in Google Docs.



Smart building - A smart building is one that uses technology to enable efficient and economical use of resources, while creating a safe and comfortable environment for occupant. Smart building may uses of wide range of existing technologies and are designed or retrofitted in a way that allows for the integration of future technology development. Internet of Things (IOT) sensors, building management system, artificial intelligence (AI), and augmented reality are amongst some of the mechanisms and robotics that may be used in a smart building .to control and optimize it's performance

Benefits of Smart Buildings

1. Reduce energy consumption

Usually it reduces the energy consumption in a building by around 5% -35% with significant financial savings, as well as a much more efficient and effective approach to meeting green goals.

2. Improve building efficiency

Sensors also help to identify overused and underused areas in the building, providing the opportunity to optimize space utilization, which in turn can facilitate growth.

3. Predictive maintenance

Sensors can detect building performance and activate maintenance procedures before an alert is triggered.

4. Increase productivity

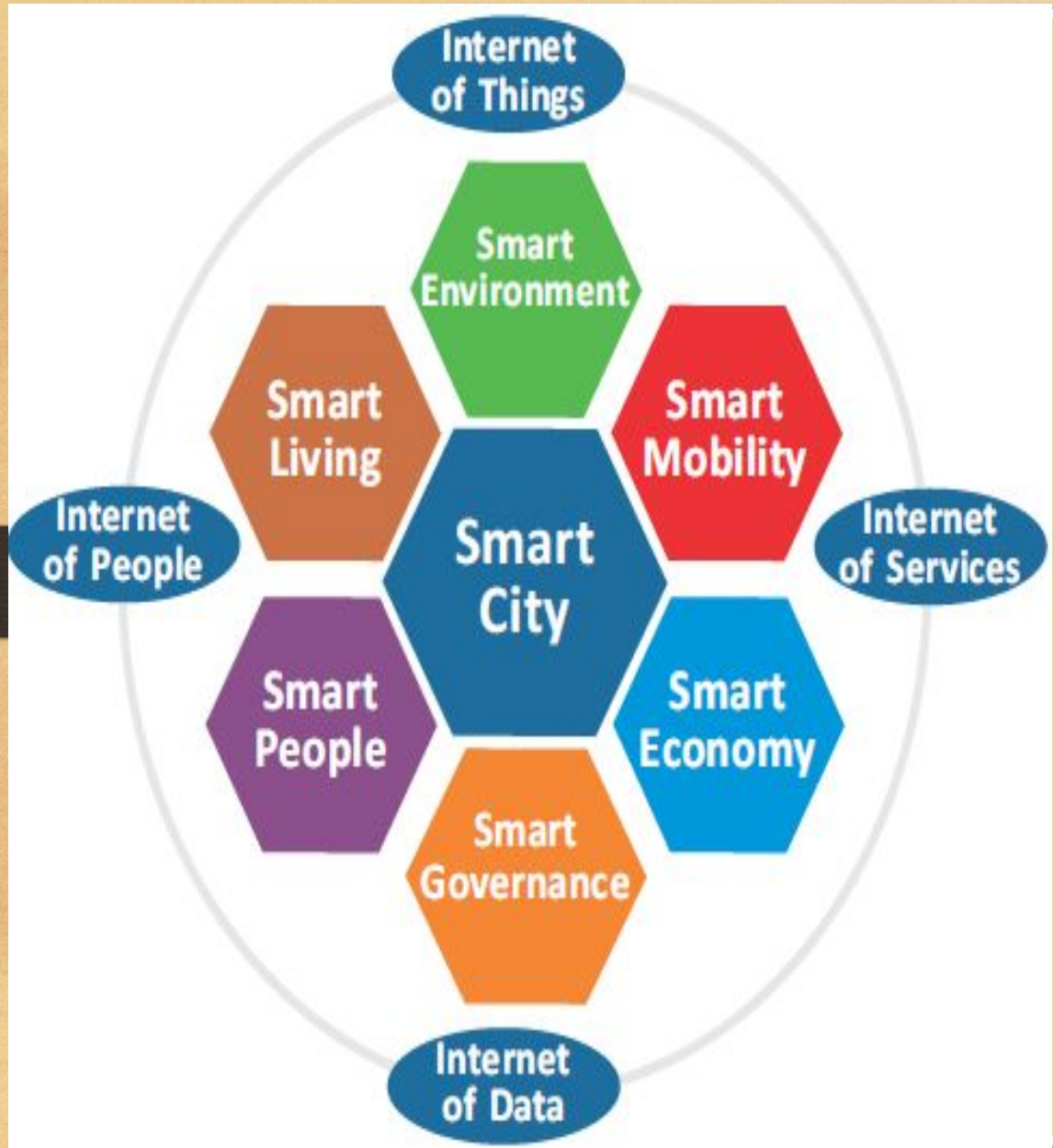
Smart buildings make people more productive by continually monitoring building use and adjust systems to ensure that occupants have the facilities that they need.

5. Better use of resources

The data generated by a smart building provides key insights that can be fed into planning and make use of resources more efficient.

SMART CITIES -

- A **smart city is an urban area that uses different types of electronic methods and sensor to collect data**. Insight gained from that data are used to manage assets, resources and services efficiently ; in return that data is used to improve the operation across the city .
- A smart cities uses **Information and Communication Technology (ICT)** to improve operational efficiency, share information with the public and provide a better quality of government services and citizen welfare… Confident and progressive city plans .



COMPONENTS OF SMART CITIES -

Components of smart city include smart people, smart governance, smart homes, smart infrastructure, smart technology, smart ecosystem, smart economy, smart mobility, smart living and smart environment.

Two closely related technologies, the **Internet of Things (IoT)** and **big data** or **Internet of data** play very crucial roles in transforming the traditional cities into smart cities. These two are the perfect blend in bringing an interesting and novel challenge to attain a futuristic smart city. Besides this, everyone is needed to be online to access all the services in order to realize the full benefits of IoT.

Benefits of Smart Cities

- Air quality tester. Safer cities. Smart city technology like Wi-Fi, IoT, and surveillance cameras can improve resident safety and increase incident response times.
- Smart technology can provide cities with predictive analytics to identify the areas that need to be fixed before the infrastructure failures. These can help cities to save massive tax and prevent infrastructure failure.

How do smart homes fit into smart cities?

- The smart homes are gaining popularity these days, with lots of famous companies working to improve this technology and create connection with the smart city. Without automatization, the future will be bleak.
- **A network of interconnected sensors and systems form the basis of any smart city. These sensors form the Internet of Things (IoT), a legion of digitally connected devices recording and analyzing streams of data gathered from the everyday goings-on of city life and acting upon it to improve facilities, processes and the overall life of its citizens.**

How data helps to smart homes to become smarter

- Smart Homes makes use of AI, and Internet of Things (IoT) devices such as connected sensors, lights, and meters to collect and analyze data. This data is used in making the effective use of home infrastructure, utilities and more to ease up the everyday life effectively and efficiently.
- With the integration of AI and IoT, Smart Homes only cater to the tech-savvy but also help with saving energy costs and higher security very significantly. So, Smart homes give ease of satisfaction and a sense of security for the next level of high-tech living.

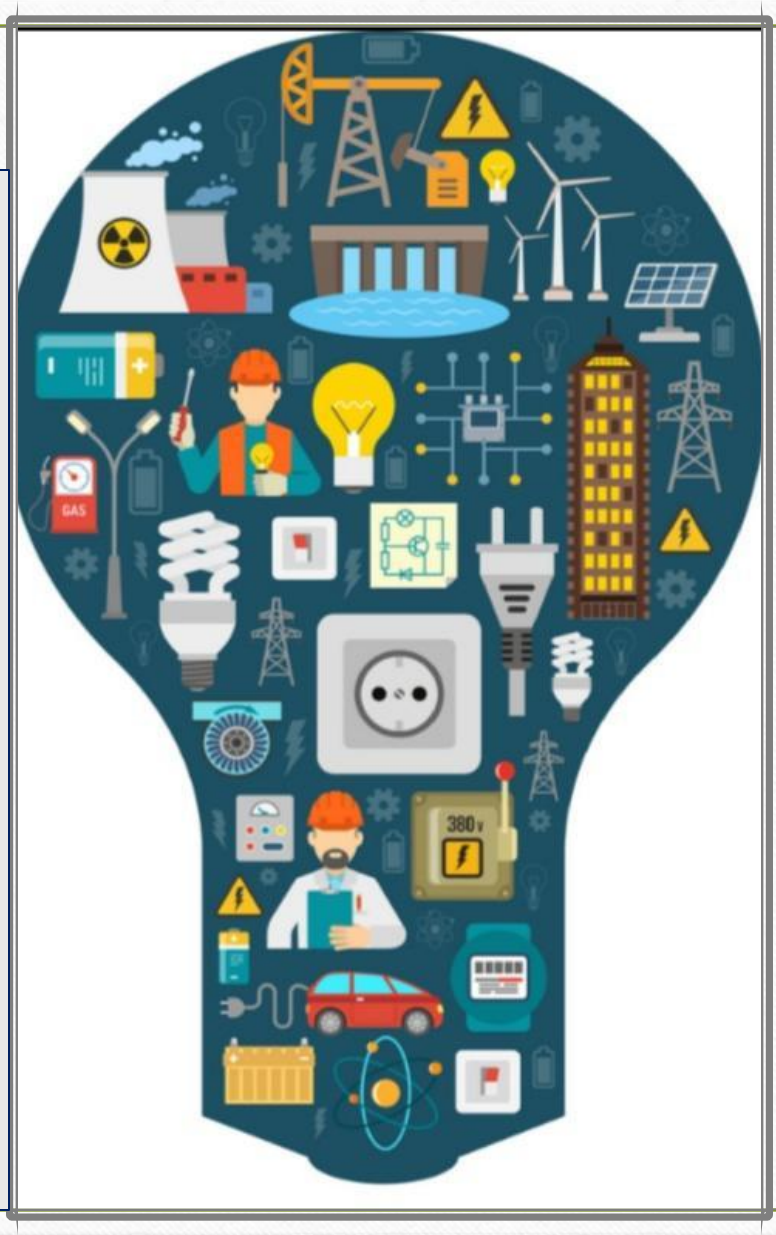
Connection of Smart Building Data To Smart Cities

A smart building is the functional unit of any smart city. … Within a smart building, all the systems are connected – energy, lighting, water, lighting, emergency and security services. Therefore, IoT and cloud technology-enabled smart buildings are what will render smart cities successful.

ENERGY CONSUMPTION

- Energy consumption refers to ALL the energy used to perform an action, manufacture something or simply inhabit a building. In a factory, total energy consumption can be measured by looking at how much energy a production process consumes, for example, by making car parts. This will include water, electricity, gas.

- In a factory, total energy consumption can be measured by looking at how much energy a production process consumes, for example, by making car parts. This will include water, electricity, gas…any energy source needed for the stuffed animals to be made.

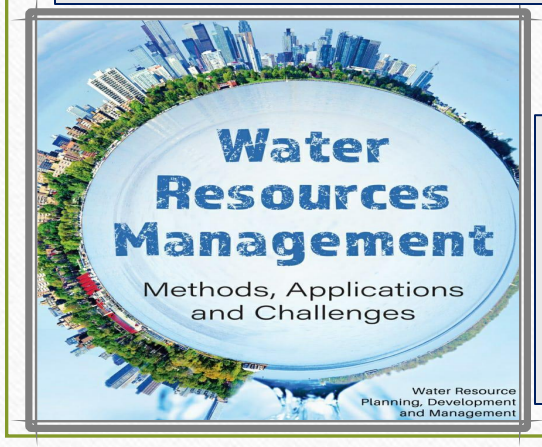


SMART CAMERA (SURVIELLANCE)

A smart camera (sensor) or intelligent camera (sensor) or (smart) vision sensor or intelligent vision sensor or smart optical sensor or intelligent optical sensor or smart visual sensor or intelligent visual sensor is a machine vision system which, in addition to image capture circuitry, is capable of extracting.

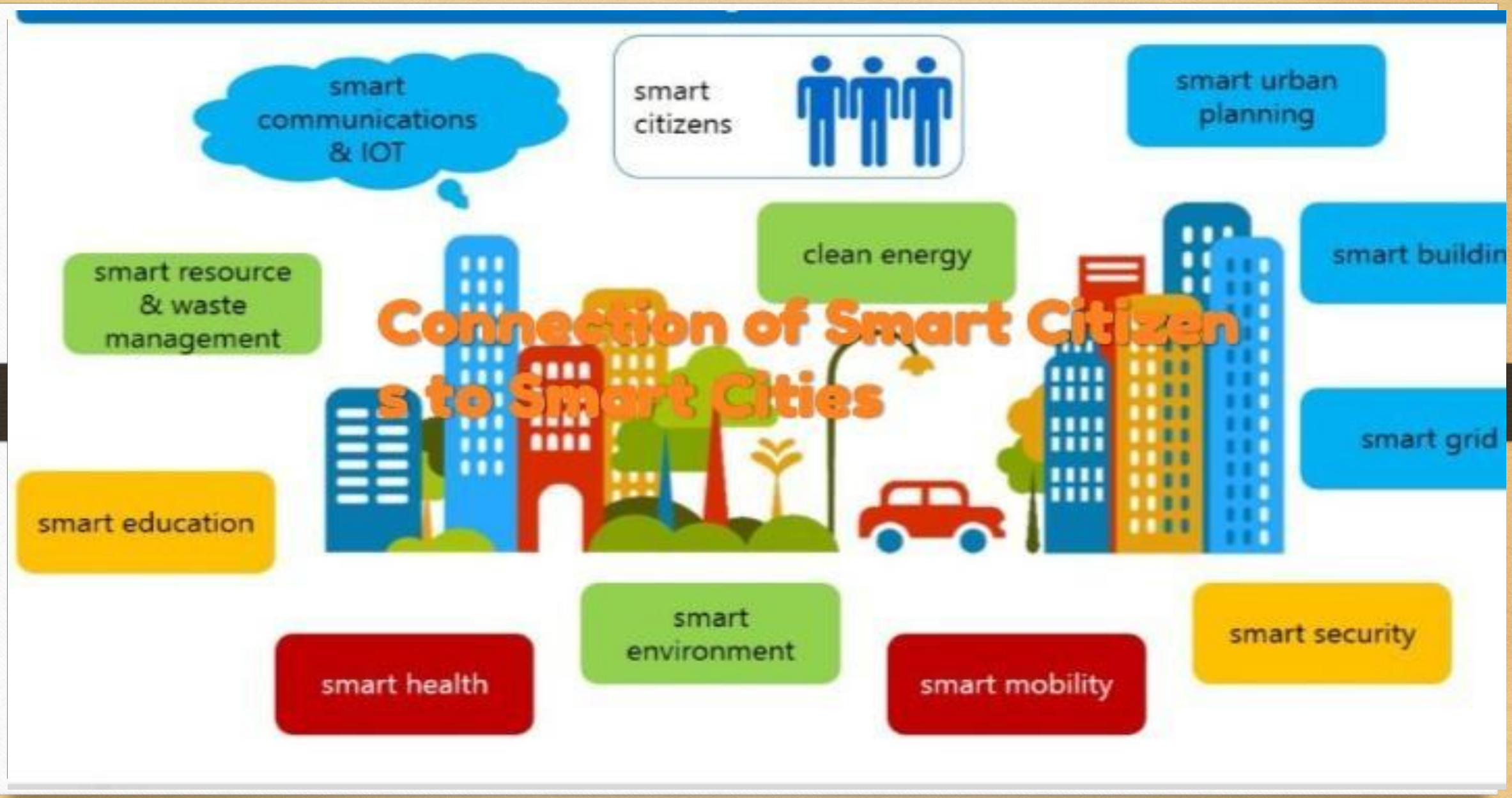
HEALTH MANAGEMENT

IOT technology makes a transparency of information and distributes the accurate and current information to patients. This lead the fewer accidents from miscommunication, better preventive care, and improved patient satisfaction.



WATER MANAGEMENT

AI can make the process of water management easier with data analytics, regression models, and algorithms. These cutting-edge technologies help in building efficient water systems and networks. AI can be used to build water plants and to get the status of water resources.


smart communications & IOT
smart citizens
smart urban planning
clean energy
smart buildin
smart resource & waste management
Connection of Smart Citizen
s to Smart Cities
smart grid
smart education
smart environment
smart security
smart health
smart mobility

Connection of Smart Citizen to Smart Cities

- Smart city technologies provide an ever-expanding tool set to **intelligently connect citizens, services, and systems.**
- **smart cities are about using sensors to gather data, then using intelligent networks to analyze that data, extract insights, and share them with people and organizations**
- **A smart city connects people with their environment and city to create more efficient and optimal relationships between available resources, technology, community services, and events** in the urban area.

The major areas in which smart cities will connect with citizens are:

i) **Transportation:** With the help of congestion sensors, diversion of vehicles can be managed for the purpose of saving time and fuel inefficiencies.

ii) **Buildings:** Smart buildings use IoT-powered monitoring systems to optimize energy usage levels based on the requirements.

iii) **Utilities:** A smart grid, an IoT based technology can visualize energy consumption and deliver only as much supply as needed.

iv) **Environment:** Smart buildings can use various sensor networks to monitor the environmental conditions like pollution, dirtiness, etc. This data is used by municipalities to make improvement in these conditions with the help of AI-based products like smart water management, waste management, etc.

v) **Security:** Smart cities increase the comfort, safety, and livelihoods of the people living in them by using connected cameras which allow users to communicate with the city through the Internet.

ACKNOWLEDGEMENTS

- Artificial Intelligence Book by Davinder and Deepa, PM Publishers
- Google
- Different websites and blogs for references

THANK YOU !!! ☺