SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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Chennai

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

19ECE306- SMART IOT APPLICATIONS

III ECE / V SEMESTER

UNIT 2 – BASICS APPLICATION

TOPIC 7 –SMART WATER: WATER LEAKAGES

Water Leakage

- Detect pollution: Abnormal pH levels can indicate water contamination.

- Forecast water quality: Data collected by sensors can be used to forecast water quality.

- Trigger alerts: Systems can send automated alerts when water quality issues are detected.

- Remote access: Data can be accessed remotely, allowing for quick response to issues.

- Prevent disease: Monitoring water quality helps prevent water-borne diseases that can affect people, animals, and plants.

Water Leakge

- Remote access: Data can be accessed remotely, allowing for quick response to issues.

Reference: https://apstorm.co.uk/wp-content/uploads/2020/10/RemoteAccessTransparentv5-1024x758.png

Water Leakge

- Water leakage detection is an essential application of IoT (Internet of Things) in smart water management.

- IoT-based systems help identify, locate, and address water leaks in pipelines, distribution networks, or residential buildings in real-time, saving water and preventing damage.

Reference: https://www.biz4solutions.com/wp-content/uploads/2018/12/iot-water-banner-mobile.jpg

Components of IoT-Based Water Leak Detection System

Sensors:

- Flow Sensors: These are installed at various points in the water pipeline. They measure the flow rate of water and detect any unusual drops in pressure, which could indicate a leak.

- Pressure Sensors: Pressure sensors detect changes in water pressure. A sudden drop in pressure is often a sign of a leak in the system.

Components of IoT-Based Water Leak Detection System

- Acoustic/Vibration Sensors: These detect vibrations caused by water escaping through cracks or holes in the pipes.

- Moisture Sensors: Placed near joints or susceptible areas, they detect any excess moisture caused by water leaks.
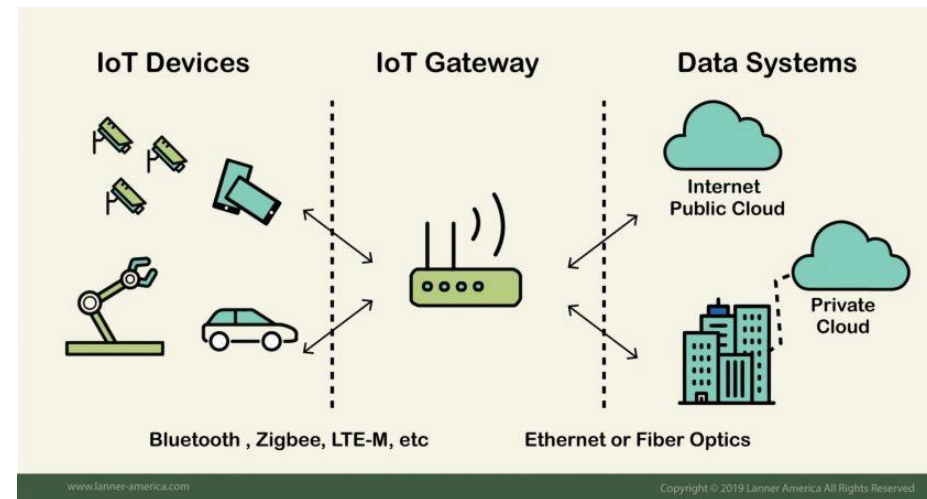

Reference: https://www.metrixvibration.com/media/puzpann5/metrix-vibration-sensors.jpg

Components of IoT-Based Water Leak Detection System

- **IoT Gateway:**

- The sensor data is collected and transmitted to an IoT gateway via wireless communication protocols like LoRaWAN, Zigbee, or Wi-Fi.

- The gateway acts as a bridge between the sensors and the cloud platform.

Reference: https://www.daviteq.com/blog/wp-content/uploads/2020/09/WP2005-H1-e1600142070543.jpg

Components of IoT-Based Water Leak Detection System

- **Cloud Infrastructure:**

- The IoT gateway transmits the data to a cloud-based platform where the data is stored and processed in real-time.

- Machine learning algorithms can be used to analyze sensor data and detect anomalies that indicate water leaks.


Reference: https://www.i-scoop.eu/wp-content/uploads/2017/10/Depiction-IoT-gateway-function-Intel.jpg
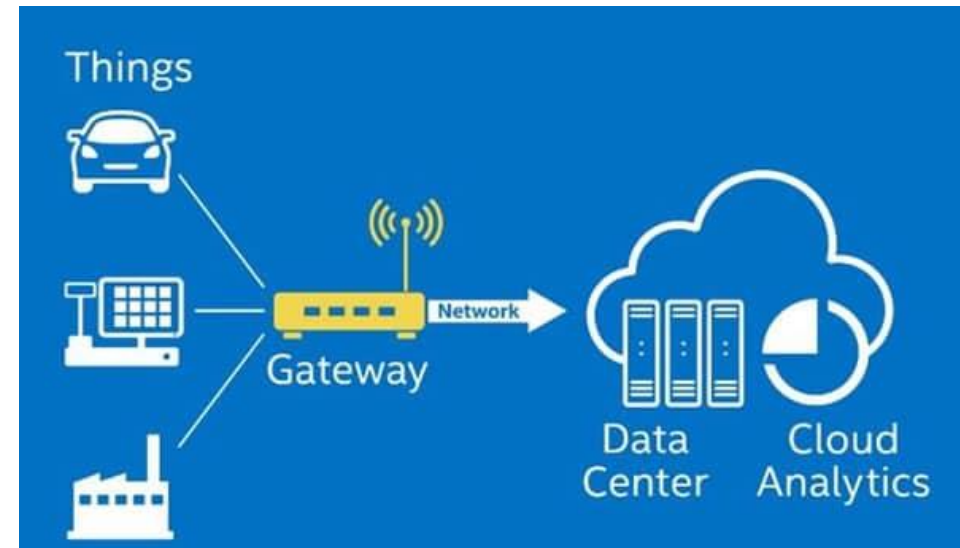
Components of IoT-Based Water Leak Detection System

- Data Analytics:Real-time analysis of sensor data is performed using algorithms. AI can be used to predict leaks based on historical data patterns, sudden drops in pressure, or abnormal flow rates.

- User Interface (UI) / Mobile App: Users (utility managers, building owners, or homeowners) can monitor water systems through a dashboard or mobile app. Alerts and notifications are sent when a leak is detected.
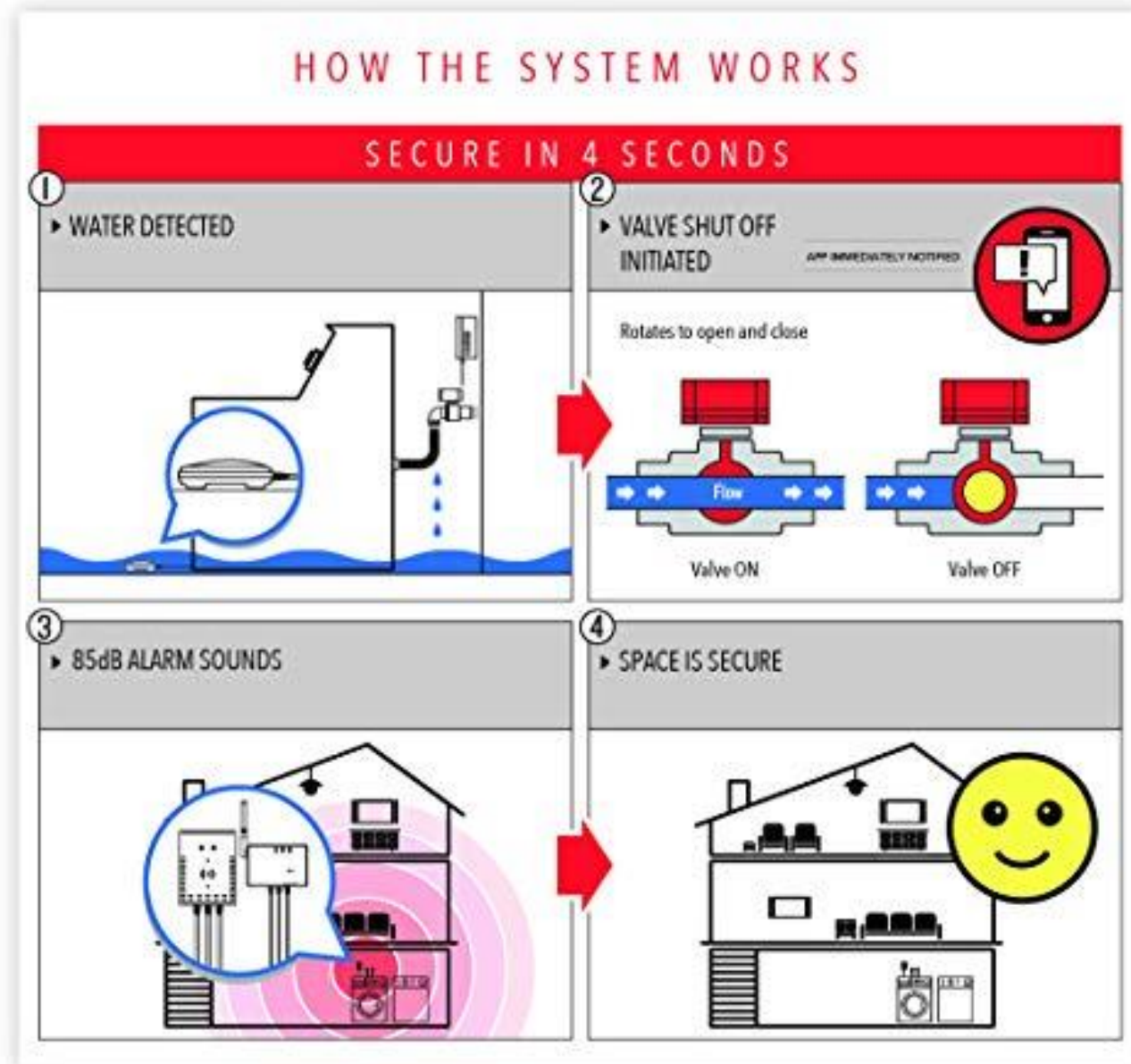
Reference: https://images-na.ssl-images-amazon.com/images/I/51FuYiSfzqL.jpg

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Assessment

- 1. How water leakage system works ?

- 2.What is the role of IOT in water leakage detection system ?

- 3.What are the key components used in water leakage detection system ?

Thank You