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INTERNET OF THINGS DIGITAL ASSIGNMENT – 1
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1) Explain M2M technology with a suitable example:
M2M means ‘Machine to Machine’. It describes the interplay of billions of gadgets and machines that are related to the net and to every different application. These gadgets integrate computing abilities that permit them to seize facts approximately about the sector around them and proportion this with different related gadgets, growing an intelligent community of ‘things’ or structures.
The foremost cause of device-to-device generation is to faucet into sensor facts and transmit it to a community. Unlike SCADA or different faraway tracking tools, M2M structures regularly use public networks and get right of entry to methods -- for example, mobile or Ethernet -- to make it extra cost-effective.
Four basic degrees which are common to most M2M primarily based totally packages are as follows:
• Collection of statistics
• Transmission of statistics through a communication network
• Assessment of statistics
• Response to the to be had information

The traits of M2M are as follows:
• Low energy, Low-cost, Low processing power
• Infrequent and small statistics transmissions
• Enormous number of MTC nodes
• Point-to-factor communication
• Low latency and Reliable transmission (QoS)
• No mobility or constrained mobility

Fig. M2M Architecture
The possibilities in the realm of M2M can be seen in four major use cases, which we’ve detailed below:
1. MANUFACTURING
Every production surroundings—whether or not its meals processing or well-known product production—is based on generation to make sure fees are controlled nicely and approaches are finished efficiently. Automating production approaches within one of these fast-moving surroundings is anticipated to enhance approaches even more. In the producing world, this can contain tremendously computerized gadget protection and protection procedures.
For example, M2M gear permit enterprise proprietors to be alerted on their smartphones while a crucial piece of gadget desires servicing, intending to cope with problems as fast

as they arise. Sophisticated networks of sensors linked to the Internet may want to even order substitute elements automatically.

2. HOME APPLIANCES

M2M is expected to take home-based IoT to the following level. Manufacturers like LG and Samsung are already slowly unveiling clever domestic appliances to assist make sure a better fine of lifestyles for occupants.

For example, an M2M-successful washing system ought to ship indicators to the owners' clever gadgets as soon as it finishes washing or drying, and a clever fridge ought to automatically order groceries from Amazon as soon as its stock is depleted.

There are many more examples of domestic automation which could probably enhance fine of lifestyles for residents, along with structures that permit contributors of the family to remotely manage structures the usage of their cellular gadgets. In conditions wherein a the homeowner makes a decision to go away paintings early, she or he ought to touch the house heating machine earlier than leaving paintings to ensure the temperature at domestic will be crust upon arrival.

3. HEALTHCARE DEVICE MANAGEMENT

One of the biggest opportunities for M2M technology is in the realm of health care. With M2M technology, hospitals can automate processes to ensure the highest levels of treatment. Using devices that can react faster than a human healthcare professional in an emergency situation make this possible. For instance, when a patient's vital signs drop below normal, an M2M-connected life support device could automatically administer oxygen and additional care until a healthcare professional arrives on the scene. M2M also allows patients to be monitored in their own homes instead of in hospitals or care centers. For example, devices that track a frail or elderly person's normal movements can detect when he or she has had a fall and alert a healthcare worker to the situation.

4. SMART UTILITY MANAGEMENT

In the brand new age of strength efficiency, automation will speedy come to be the brand new normal. As strength businesses search for new approaches to automate the metering process, M2M involves the rescue, assisting strength businesses mechanically acquire strength intake data, a good way to correctly invoice customers. Smart meters can music how a whole lot strength a family or enterprise makes use of and mechanically alert the strength company, which supplants sending out an worker to study the meter or requiring the customer to offer a reading. This is even extra essential as utilities flow in the direction of extra dynamic pricing models, charging customers extra for strength utilization at some point of peak times.

The challenges M2M means Smart: Smart services, Smart connectivity, Smart devices.

Smart implies challenges:

• Coordination of devices (multiple locations, special device sorts and vendors)
• Complicated interplay logic
• Hardware limitations (RAM,CPU)
• Interoperability issues
• Various communication / control protocols

M2M V/S IoT:

While many use the phrases interchangeably, M2M and IoT arent the same. IoT wishes M2M, however, M2M does now no longer want IoT.

Both phrases relate to the conversation of related gadgets, however, M2M structures are regularly isolated, stand-on my own networked equipment.

IoT structures take M2M to the subsequent level, bringing collectively disparate structures into one large, related ecosystem. Data accumulated from M2M gadgets are used by carrier control applications, while IoT statistics are regularly included with corporation structures to enhance commercial enterprise overall performance throughout more than one group.

Communication Protocol Differences:

• M2M
– Uses propriety or nonIP based communication protocols for communication within M2M area networks
– Common protocols include Zigbee, Bluetooth, Modbus, Bus, Wireless, etc.
• IoT
– HTTP, CoAP, Web sockets, MQTT, XMPP, DDS, AMQP

History of M2M
While the origins of the acronym are unverified, the primary use of machine-to-machine communication is frequently credited to Theodore Paraskevakos, who invented and patented era associated with the transmission of data over telephone lines, the idea for

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