



SNS College of Engineering

An Autonomous Institution

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Redesigning Common Mind & Business Towards Excellence



Build an Entrepreneurial Mindset Through Our Design Thinking FrameWork

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Internet Of Things



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M2M Communications



- Machine-to-machine (M2M) refers to the process of communication of a physical object or device at machine with others of the same type, mostly for monitoring but also for control purposes.
- Each machine in an M2M system embeds a smart device.
- The device senses the data or status of the machine, and performs the computation and communication functions.
- A device communicates via wired or wireless systems.
- The communication protocols are 6LowPAN, LWM2M, MQTT, and XMPP. Each communication device is assigned 48-bits Ipv6 address



M2M Communications : M2M vs IoT



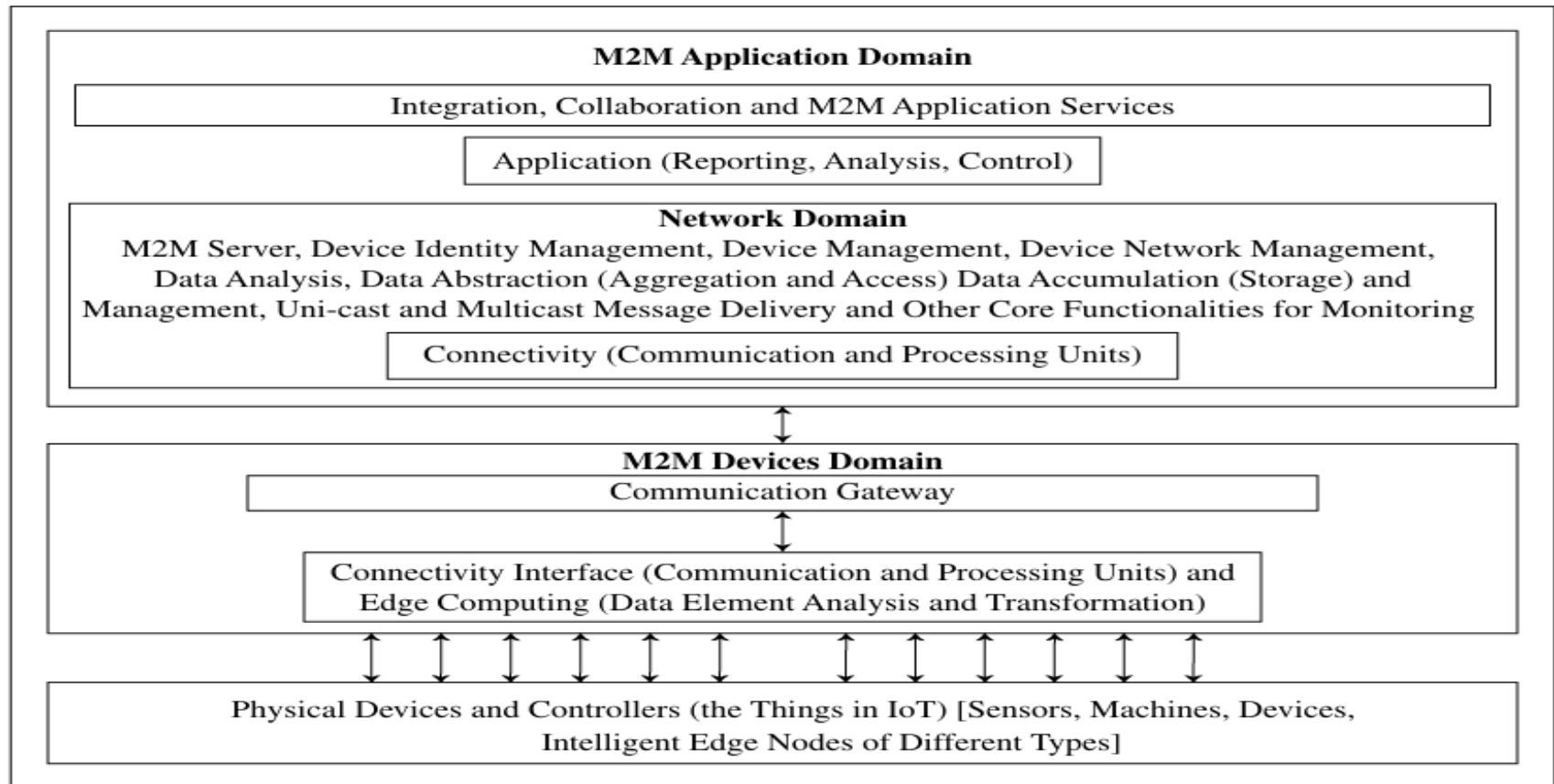
- IoT integrates complex M2M communication with the cloud/network, analyses it and takes necessary actions
- M2M must deploy device to device and carry out coordination, monitoring, controlling of devices **without using Internet.**
- IoT **will use Internet**, servers, protocols and cloud based applications
- Example of M2M – coordinated movements of tools, robots, drones, refinery operations, sequential control in a production line etc...
- Applications – Industrial automation, logistics, smart grids, health and defence, **IIoT**
- IIoT – Industrial IoT – Manufacturing at multiple locations, railways, mining, agriculture, oil and gas, utilities, transportation etc... along with usage of internet, and softwares for analytics



M2M Communications : M2M Architecture

M2M architecture consists of three domains

1. M2M device domain
2. M2M network domain
3. M2M application domain



Three domains of M2M architecture



M2M Communications : Software development tools



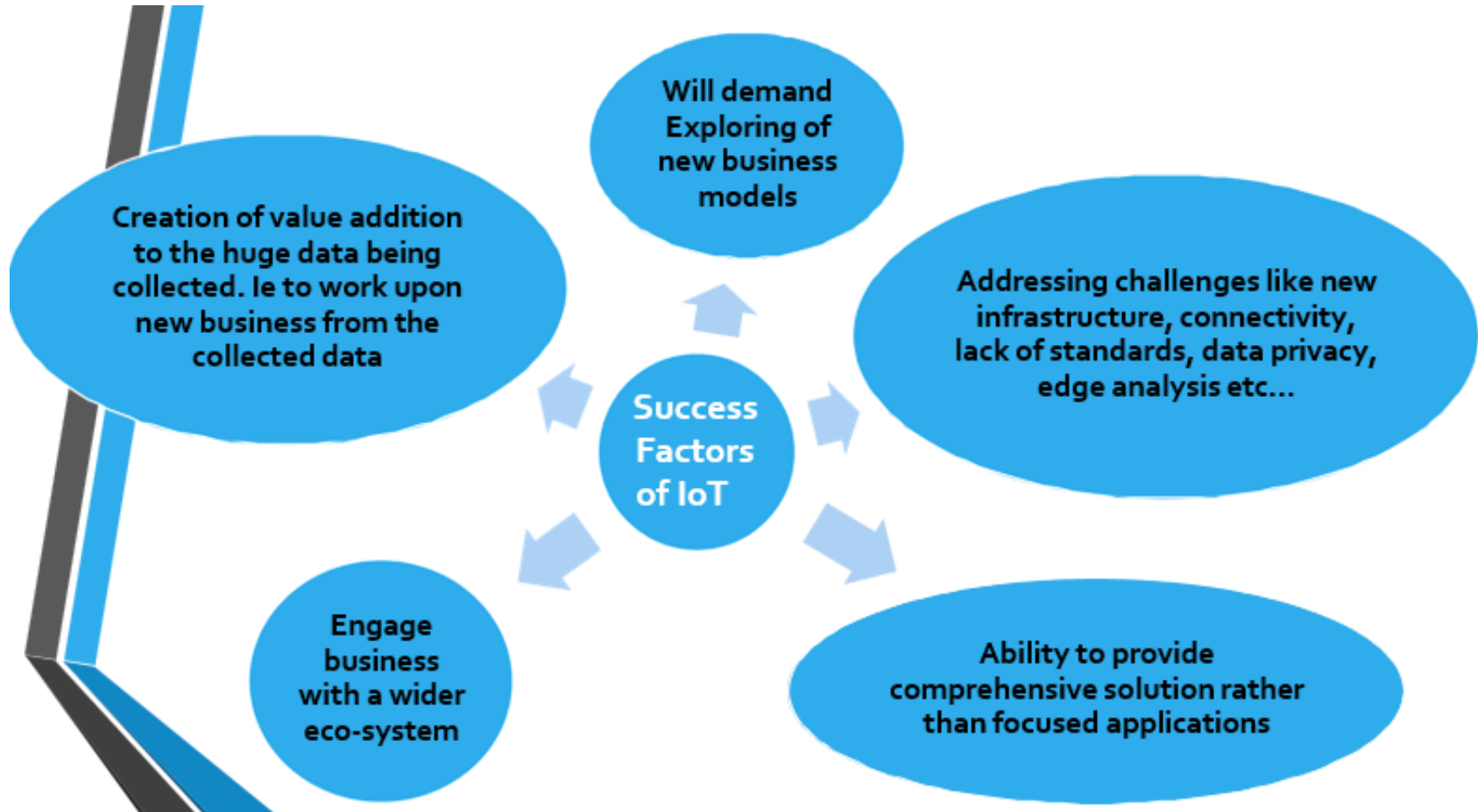
- Mango – Open source M2M web based software
- Mainspring from M2M labs
- DeviceHive is an M2M communication framework - enables connecting devices to IoT - web based management



Success Factors of IoT



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Examples of IoT /Application Areas



Features of smart watches

- Ability to make phone call
- WiFi & Bluetooth
- GPS enabled
- Health applications & UV monitors
- Tracks health parameters all the time
- Enables payment using wallet
- Video chat
- News & social networking
- Navigation
- Gyroscope, Accelerometer, heart sensor, UV sensor, skin temp sensor, barometer, light sensor etc...



Examples of IoT /Application Areas



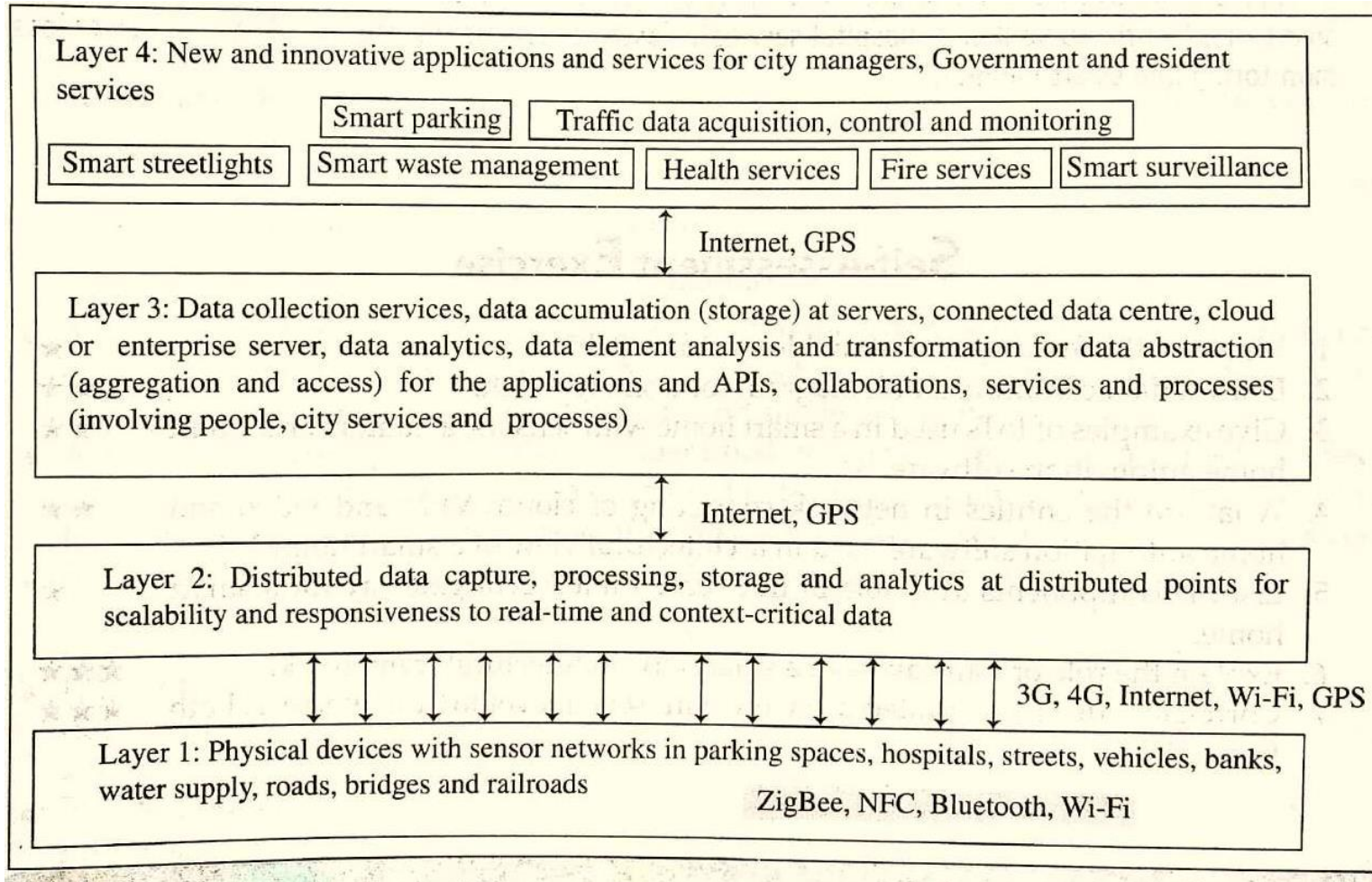
- Smart homes – A home with sensors and actuators, connected and managed via internet
- Cameras, security sensors, thermostats, smart plugs, light and entertainment systems, smoke detector, energy meter interface (electricity, gas, water), surveillance cameras, speakers, LED lights etc...
- Home automation softwares:
 - Intel based intelligent gateway
 - OpenHAB – An Eclipse IoT based project – runs on java enabled system
 - The Thing System. Language is “Node.js”. Can fit into a raspberry pi

Examples of IoT /Application Areas





Smart Cities – an Architectural framework by CISCO





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sign Thinking FrameWork

Thank
You