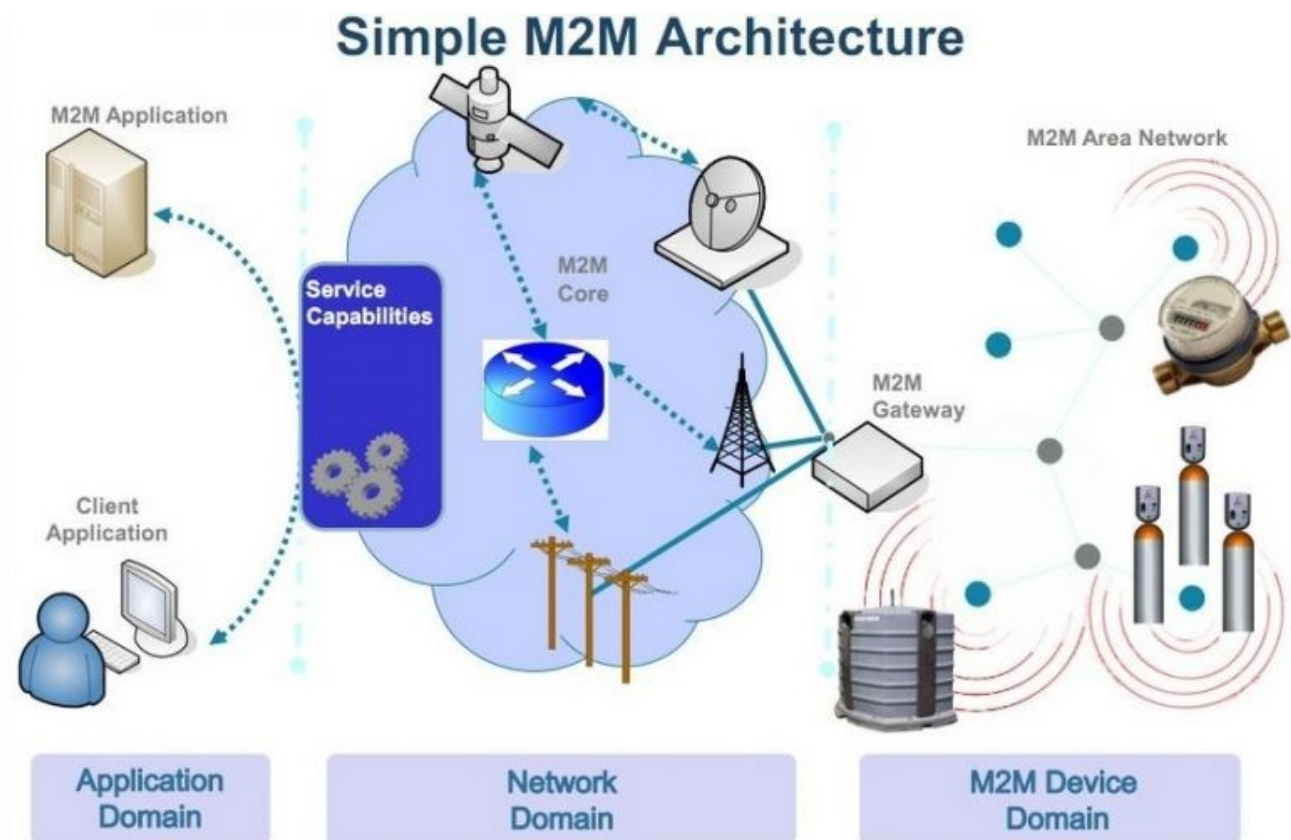


## Machine to Machine(M2M)

M2M systems use peer-to-peer communications between machines, sensors, and hardware over wired or wireless networks, while IoT systems rely on IP-based networks to send data collected from connected devices to gateways, cloud platforms, or middleware.

M2M communications will connect and enable an array of equipment from mainframes to everyday products (e.g., home appliances, vehicles, buildings) in order to unleash new levels of smart services” and commerce. M2M has the potential to reshuffle entire industry structures and to create a windfall for technology enablers in the arena.

### Architecture



### How Parallel Processing Works?

Parallel processing involves taking a large task, dividing it into several smaller tasks, and then working on each of those smaller tasks simultaneously. The goal of this divide-and-conquer approach is to complete the larger task in less time than it would have taken to do it in one large chunk. A computer scientist divides a complex problem into component parts using special software specifically designed for the task. He or she then assigns each component part to a dedicated processor. Each processor solves its part of the overall

computational problem. The software reassembles the data to reach the end conclusion of the original complex problem.

### **How Parallel Programming Works?**

Parallel programming, in simple terms, is the process of decomposing a problem into smaller tasks that can be executed at the same time using multiple compute resources.

Parallel programming works by assigning tasks to different nodes or cores. In High Performance Computing (HPC) systems, a node is a self-contained unit of a computer system contains memory and processors running an operating system. Processors, such as central processing units (CPUs) and graphics processing Units(GPUs), are chips that contain a set of cores. Cores are the units executing commands; there can be multiple cores in a processor and multiple processors in a node.

With parallel programming, a developer writes code with specialized software to make it easy for them to run their program across on multiple nodes or processors. A simple example of where parallel programming could be used to speed up processing is recoloring an image. A developer writes the code to break up the overall task of to change the individual aspects of an image by segmenting the image into equal parts and then assigns the recoloring of each part to a different parallel task, each running on their own compute resources. Once the parallel tasks have completed, the full image is reassembled.