Structural Aspects of the IoT

Structural Issue related to

- Environment Characteristics

- Traffic Characteristics

- Scalability

- Interoperability

- Security and Privacy

- Open Architecture

Structural Aspects of the IoT Environment Characteristics
Most (but certainly not all) IoT/machine-to-machine (M2M) nodes have design constraints:Low power (with the requirement that they will run potentially for years on batteries)Low cost (total device cost in single-digit dollars or triple digit rupee)Significantly more devices than in a LAN environmentSeverely limited code and RAM space (e.g., generally desirable to fit the required code—MAC, IP, and anything else needed to execute the embedded application—in, for example, 32K of flash memory, using 8- bit microprocessors)Unobtrusive but very different user interface for configuration (e.g., using gestures or interactions involving the physical world)Requirement for simple wireless communication technology. In particular, the IEEE standard is very promising for the lower (physical and link) layers

Structural Aspects of the IoT Traffic Characteristics
The characteristics of IoT/M2M communication is different from other types of networks or applications.For example, cellular mobile networks are designed for human communication and communication is connection centric; it entails interactive communication likebetween humans (voice, video), or data communication involving humans (web browsing, file downloads, and so on).It follows that cellular mobile networks are optimized for traffic characteristics of human-based communication and applications.But in IoT, M2M the expectation is that there are many devices, there will be long idle intervals, transmission entails small messages, there may be relaxed delay requirements, and device energy efficiency is paramount.

Structural Aspects of the IoT Scalability
The application and its a desire over time for the service decides the Scalability.When contemplating expansion, one wants to be able to build on previously deployed technology (systems, protocols), without having to scrap the system and start from scratch.The efficiency of a larger system should be better than the efficiency of a smaller system.This is what is meant by scalability.The goal is to make sure that capabilities such as addressing, communication, and service discovery, among others, are delivered efficiently in both small and large scale.

Structural Aspects of the IoT Interoperability
Applications, technology suppliers, and stakeholders, it is desirable to develop and/or re- use a core set of common standards.To the degree possible, existing standards may prove advantageous to a rapid and cost-effective deployment of the technology.

Structural Aspects of the IoT Security and Privacy
IoT relates to electric power distribution, goods distribution, transport and traffic management, e- health, and other key applications, as noted earlierIt is critical to maintain system-wide confidentiality, identity integrity, and trustworthiness.

Structural Aspects of the IoT Open Architecture

The goal is to support a wide range of applications using a common infrastructure, preferably based on a service-oriented architecture (SOA) over an open service platform, and utilizing overly networks (these being logical networks defined on top of a physical infrastructure)