

Internet of Things (IoT)



How IoT Works?

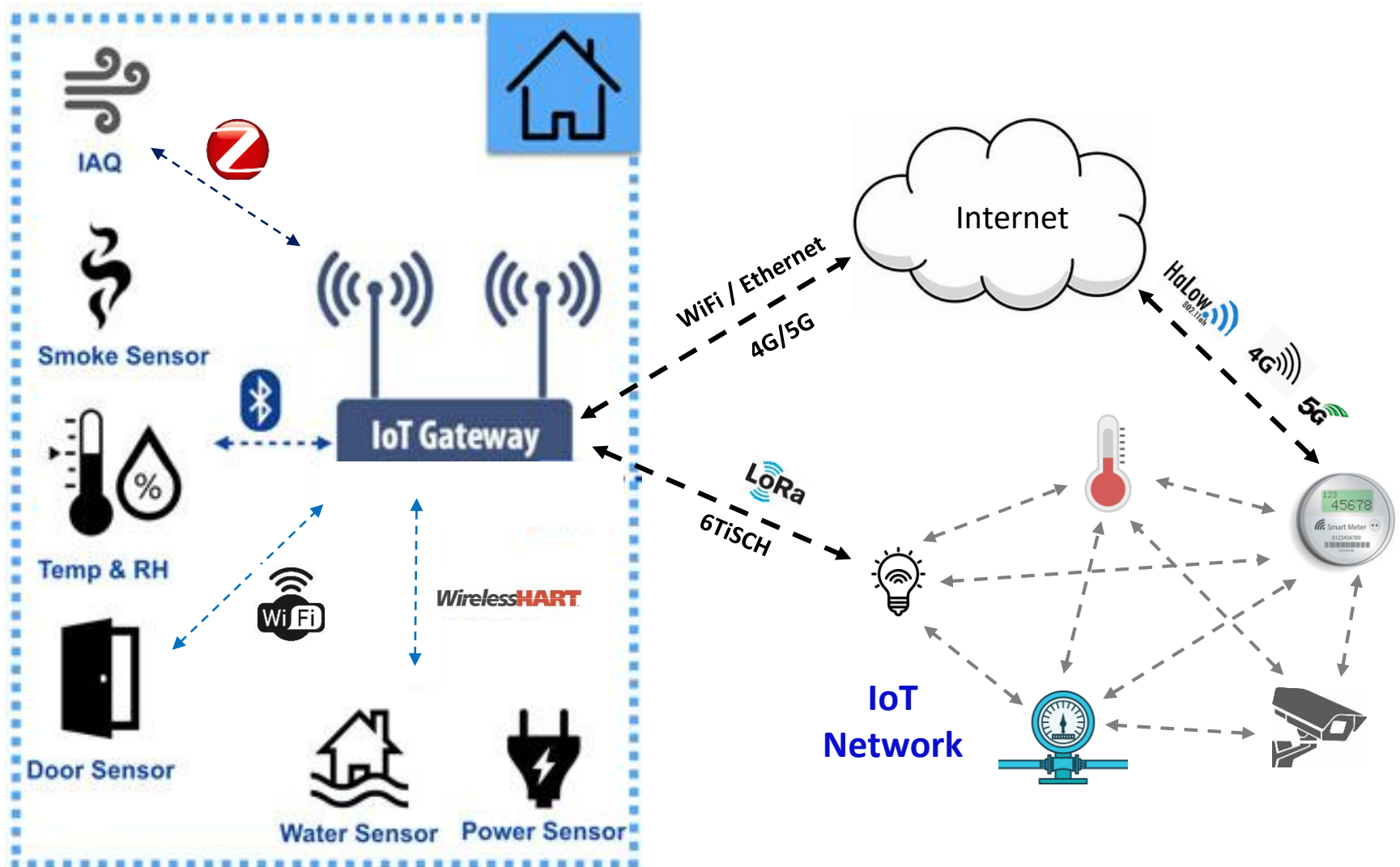
Dr. Manas Khatua

Associate Professor

Dept. of CSE, IIT Guwahati

E-mail: manaskhatua@iitg.ac.in

Smart Home IoT Application



Traditional Data Flow in IoT



Image Source: <http://events17.linuxfoundation.org/sites/events/files/slides/Intelligence%20at%20the%20Edge.pdf>

Traditional Data Flow in IoT

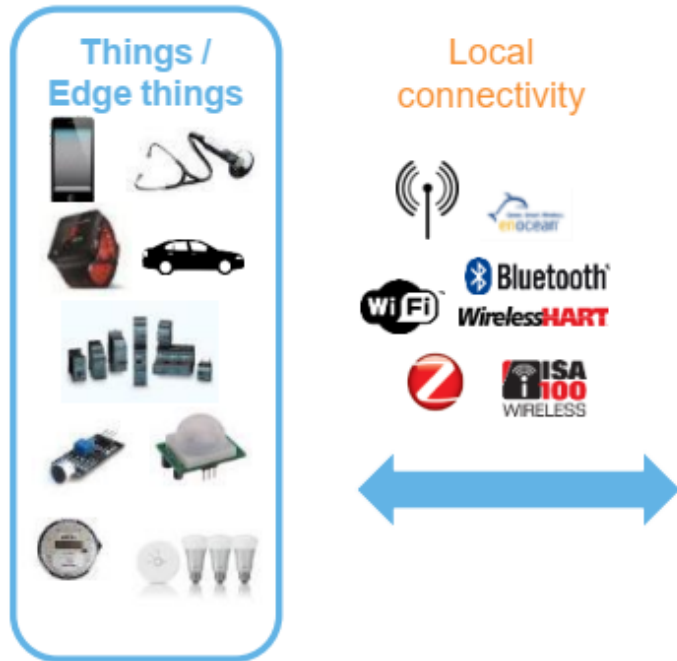


Image Source: <http://events17.linuxfoundation.org/sites/events/files/slides/Intelligence%20at%20the%20Edge.pdf>



5

Traditional Data Flow in IoT

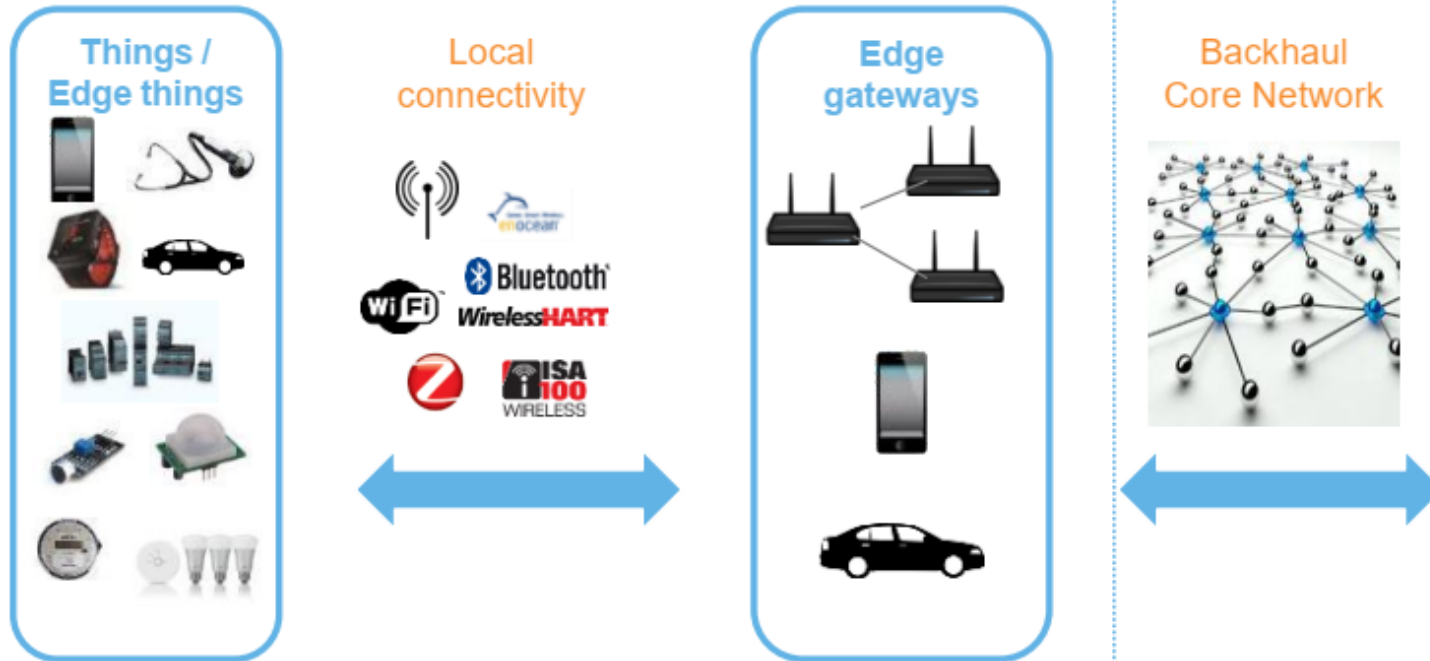


Image Source: <http://events17.linuxfoundation.org/sites/events/files/slides/Intelligence%20at%20the%20Edge.pdf>

Traditional Data Flow in IoT

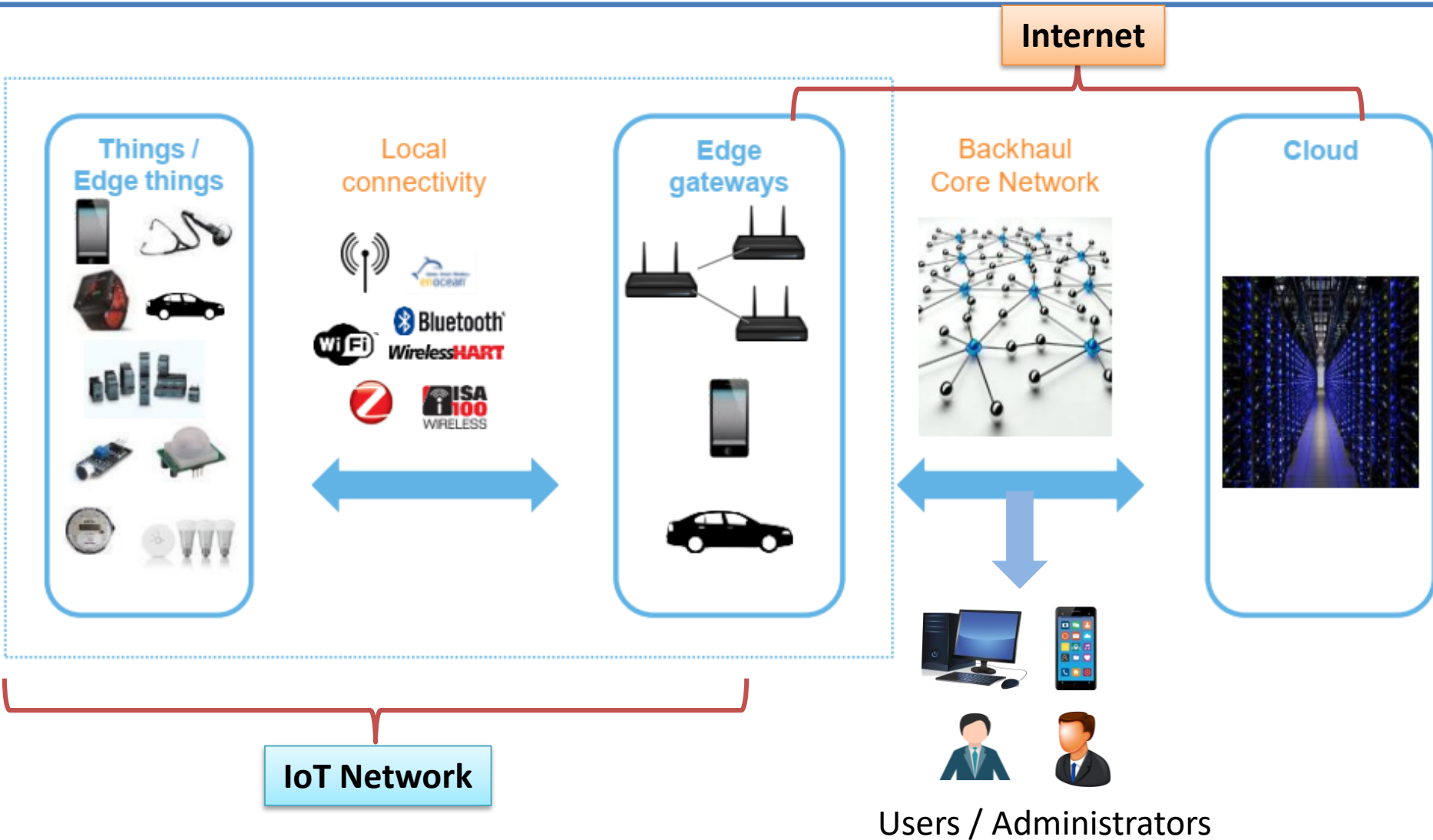
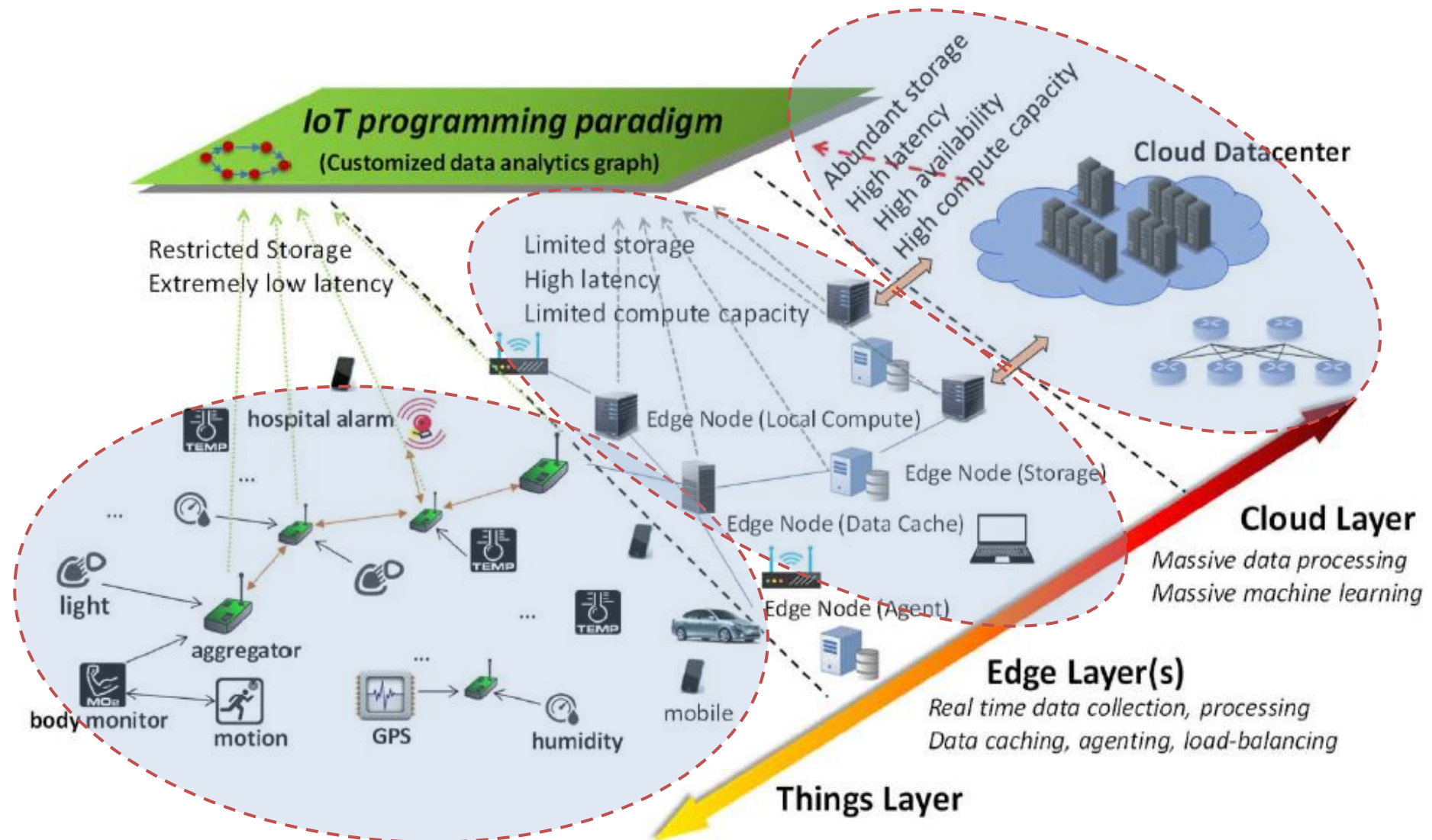


Image Source: <http://events17.linuxfoundation.org/sites/events/files/slides/Intelligence%20at%20the%20Edge.pdf>

Data Processing Locations

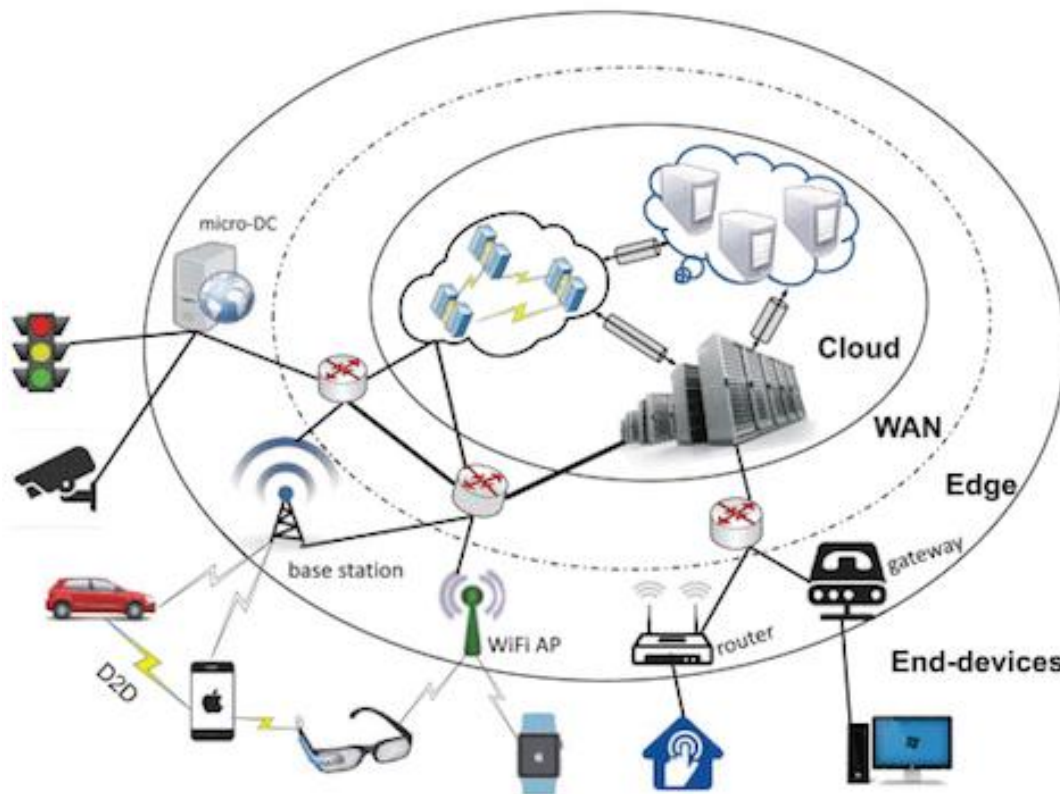


Source: Rajiv Ranjan et. al., "Integrating the IoT and Data Science" IEEE Cloud Computing, 2018

Data Processing at the Edge

Edge Computing

- Host computation tasks close to the data sources and end users.



AI:

- Extracts insights that leads to better decisions & strategic move

Edge Intelligence:

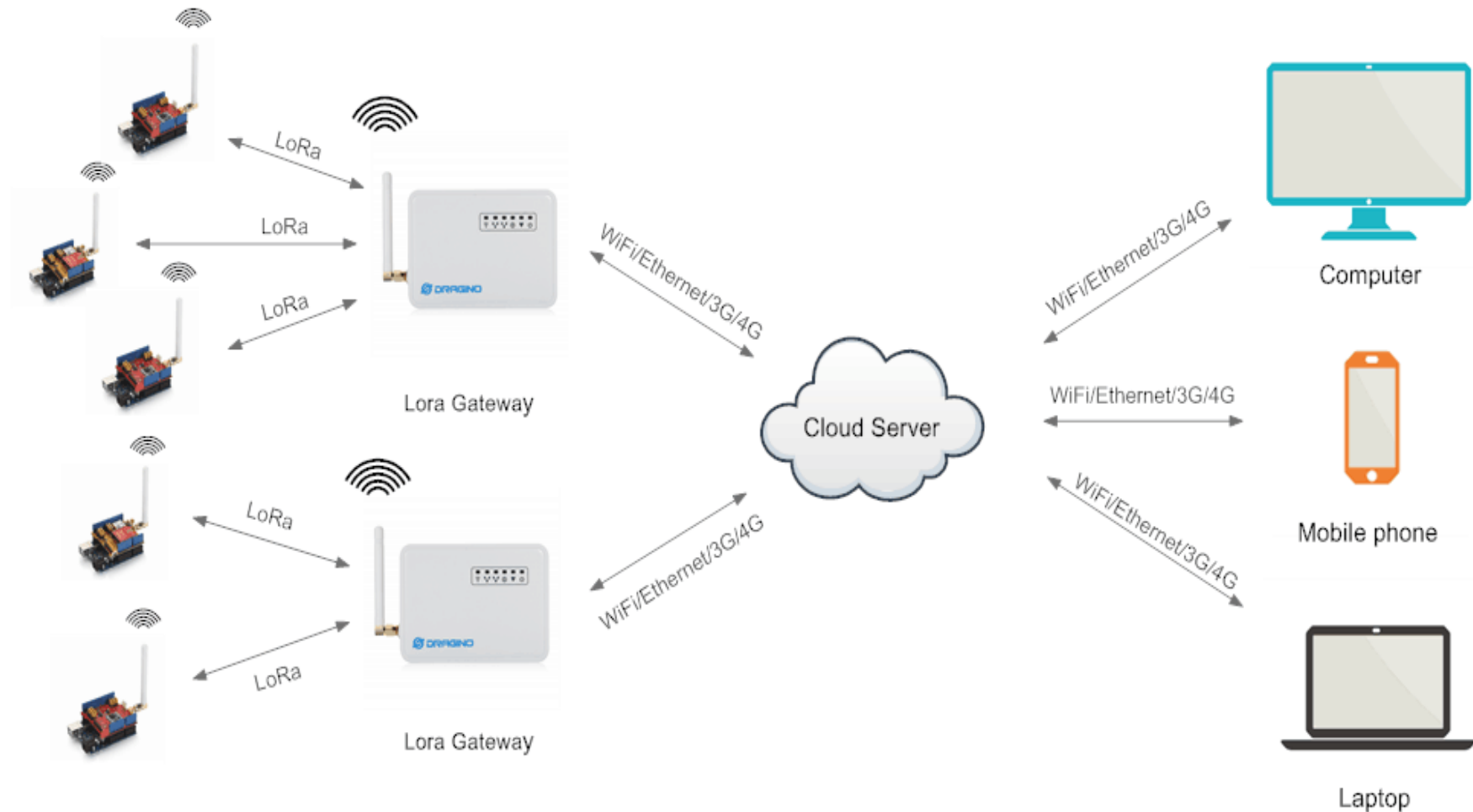
- Apply AI on data at network Edge

What is needed to know?

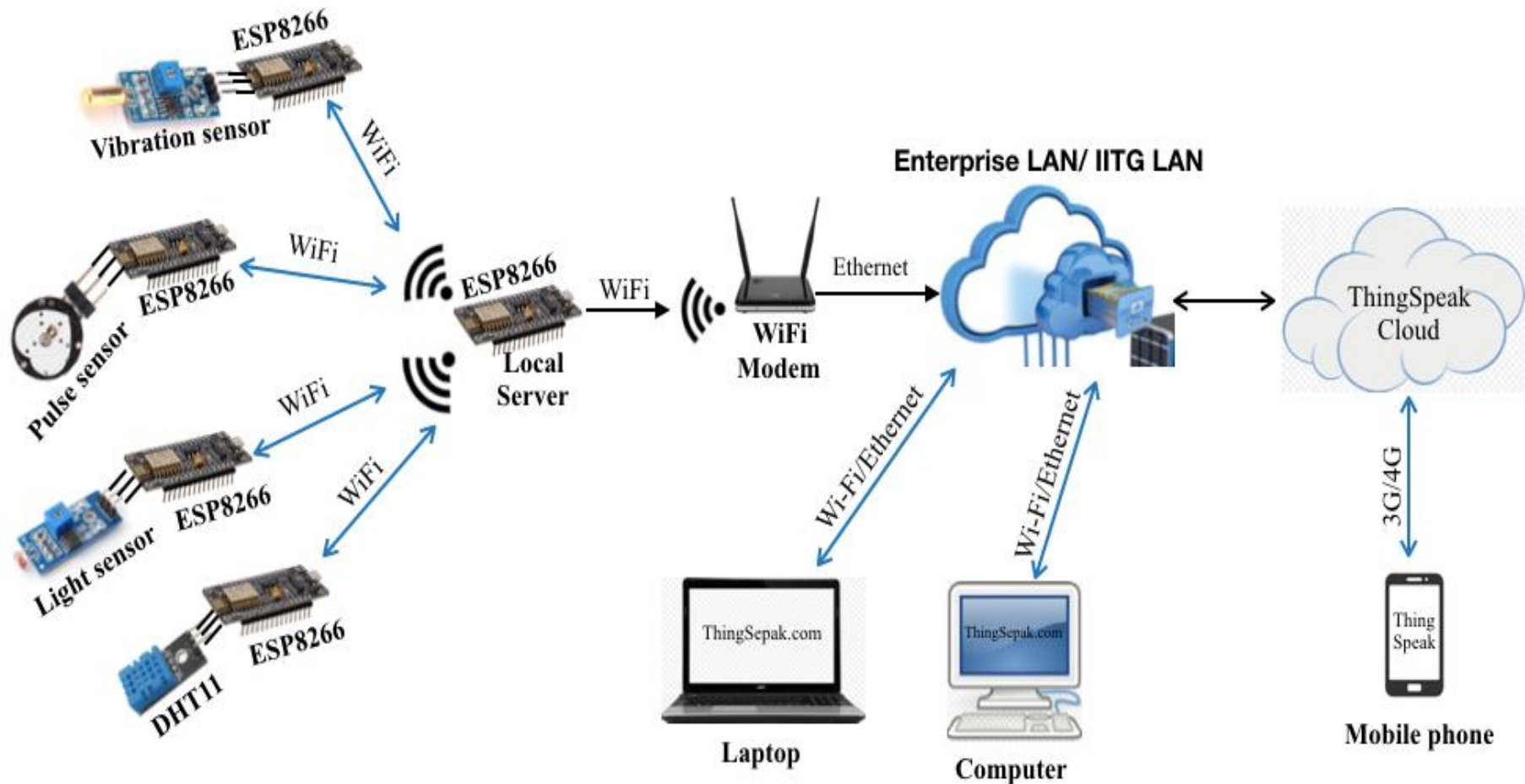


- **IoT Components**
 - Application developer needs to know what are the **required components** for designing an IoT application
- **IoT Architecture**
 - For any IoT application it is required to know the **physical arrangement** of IoT sensors, actuators, gateway, edge devices and Internet connectivity
- **IoT Network Access Technology**
 - Types of IoT Network Access Technology or **Connectivity Technology** used to connect the sensors/actuators with each other, and with the IoT gateway or Internet
- **IoT Data Processing / Analysis**
 - Sensed data needs to be **stored and analyzed** to take business decision or to get new business insight. Where it can be done and How?

DIY: Long-range Monitoring & Control



DIY: Smart Home Monitoring



Lessons Learned



- ✓ Layered View of an IoT Application
- ✓ Traditional Data Flow in IoT
- ✓ Data Processing Locations in IoT
- ✓ What is needed to know before developing IoT Applications

Thanks!

