Chapter -7
Architecture Reference Model

IoT Reference Model

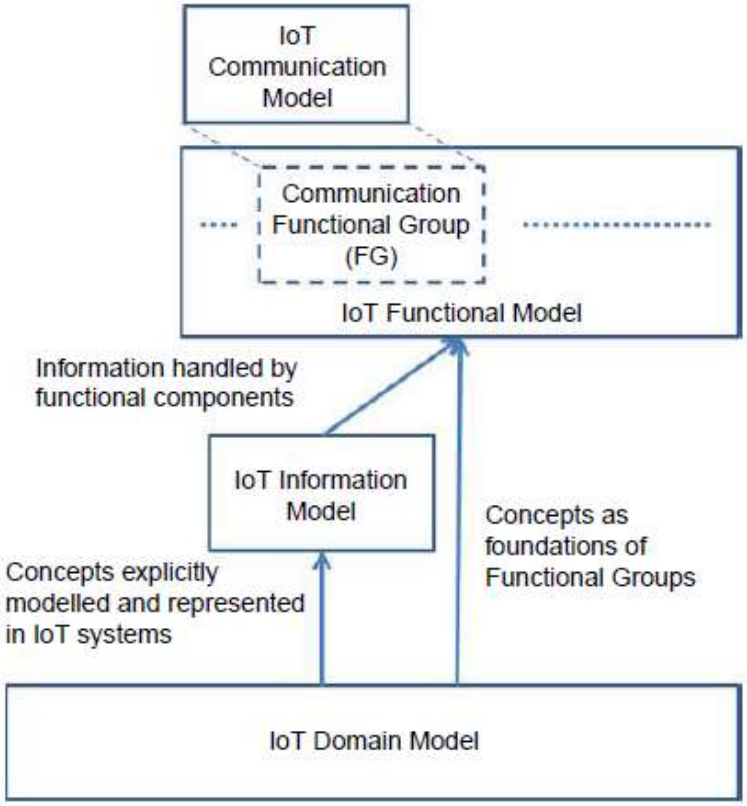

FIGURE 7.1

IoT Reference Model.

Reference to concrete architecture and actual system

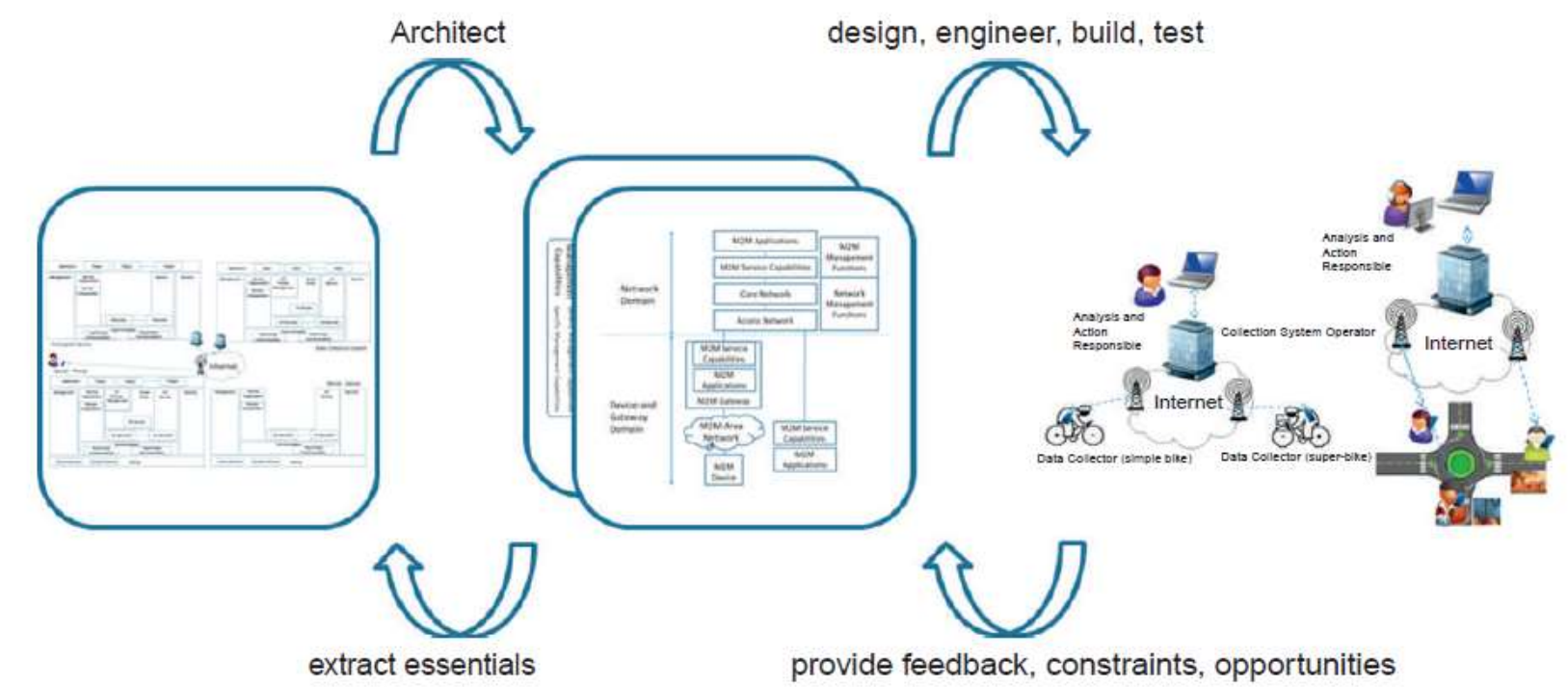

FIGURE 7.2

From reference to concrete architectures and actual systems.

Phvsical vs. Virtual World

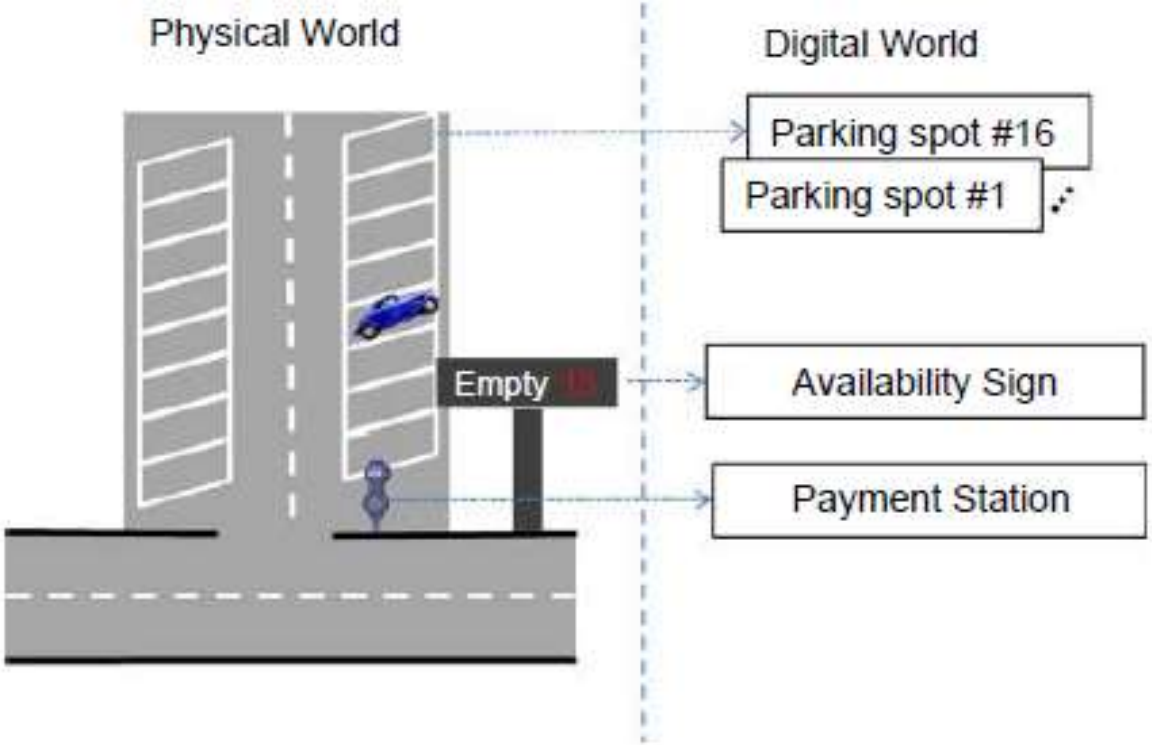

FIGURE 7.5

Physical vs. Virtual World.

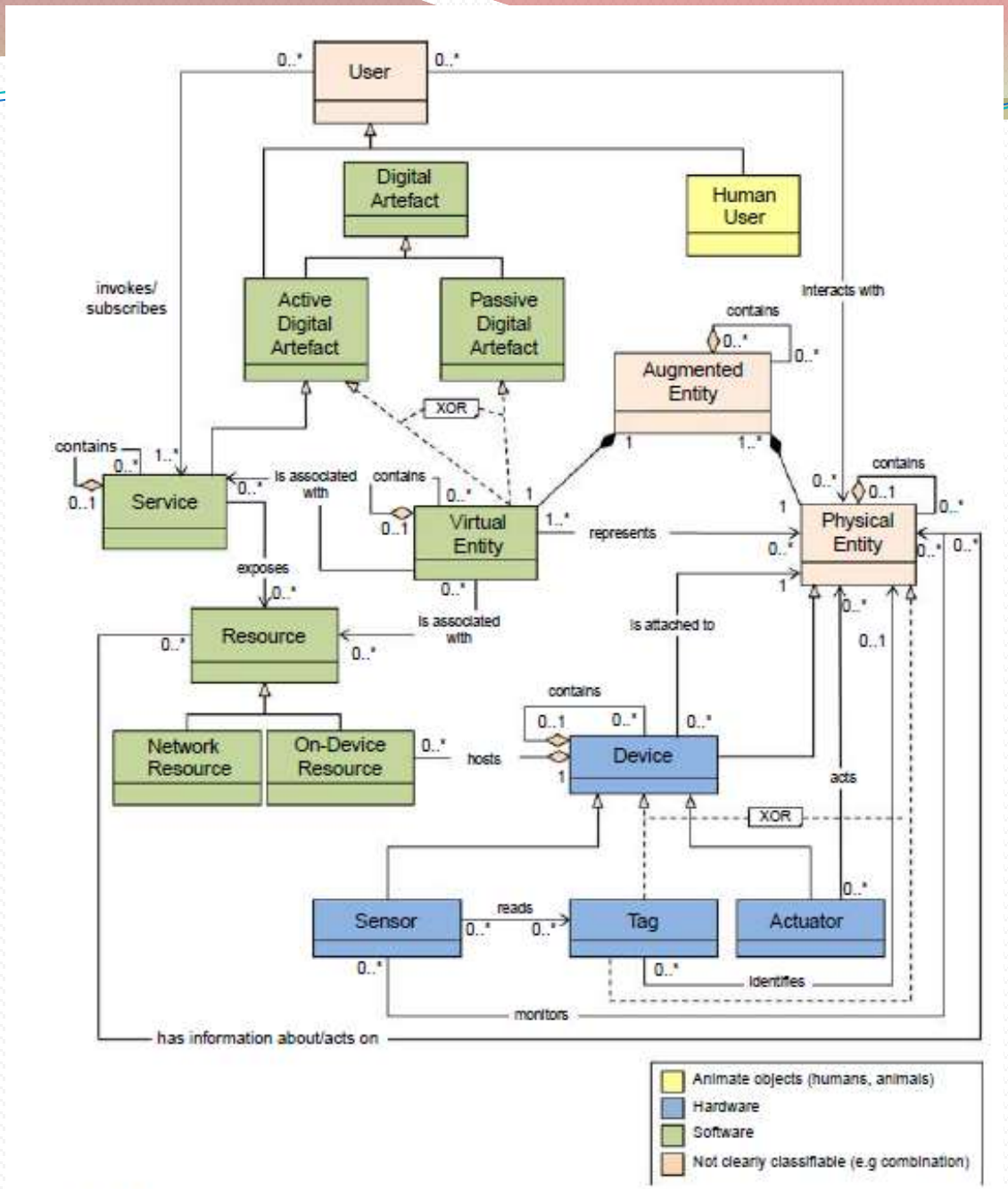

FIGURE 7.6

IoT Domain Model.

IoT Domain Model

- Sensors: These are simple or complex Devices that typically involve a transducer that converts physical properties such as temperature into electrical signals. These Devices include the necessary conversion of analog electrical signals into digital signals, e.g. a voltage level to a 16-bit number, processing for simple calculations

IoT Domain Model Cont.

- Actuators: These are also simple or complex Devices that involve a transducer that converts electrical signals to a change in a physical property (e.g. turn on a switch or move a motor).
- Tags: Tags in general identify the Physical Entity that they are attached to. In reality, tags can be Devices or Physical Entities but not both, as the domain model shows. An example of a Tag as a Device is a Radio Frequency Identification (RFID) tag, while a tag as a Physical Entity is a paper-printed immutable barcode or Quick Response (QR) code.

High – level IoT information Model

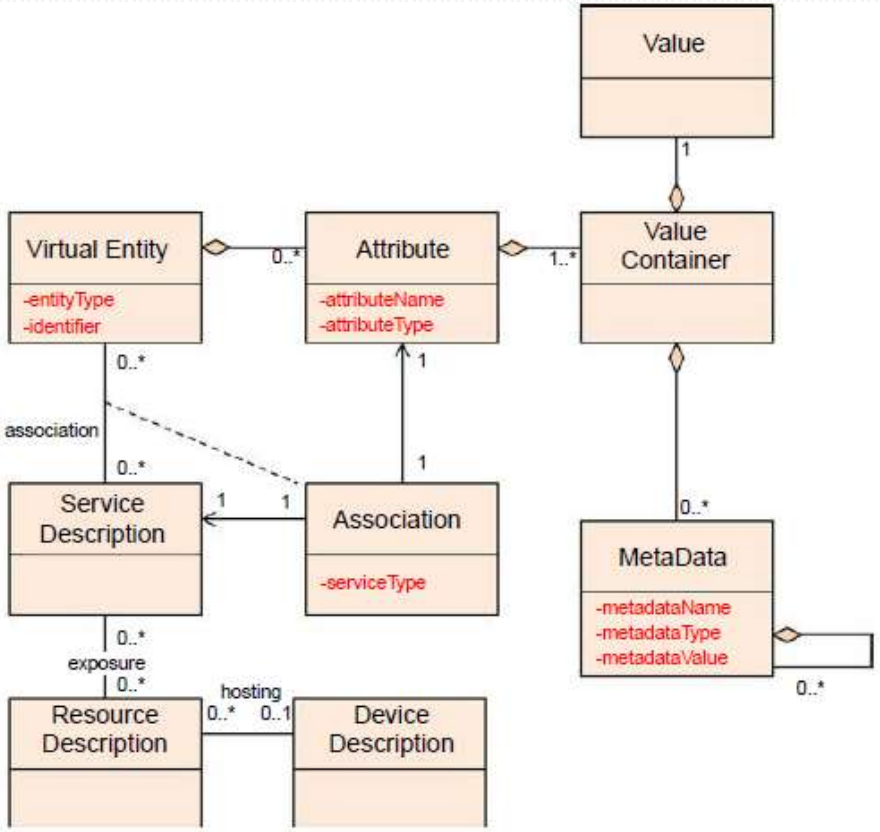

FIGURE 7.8

High-level IoT Information Model.

IoT- A Functional Model

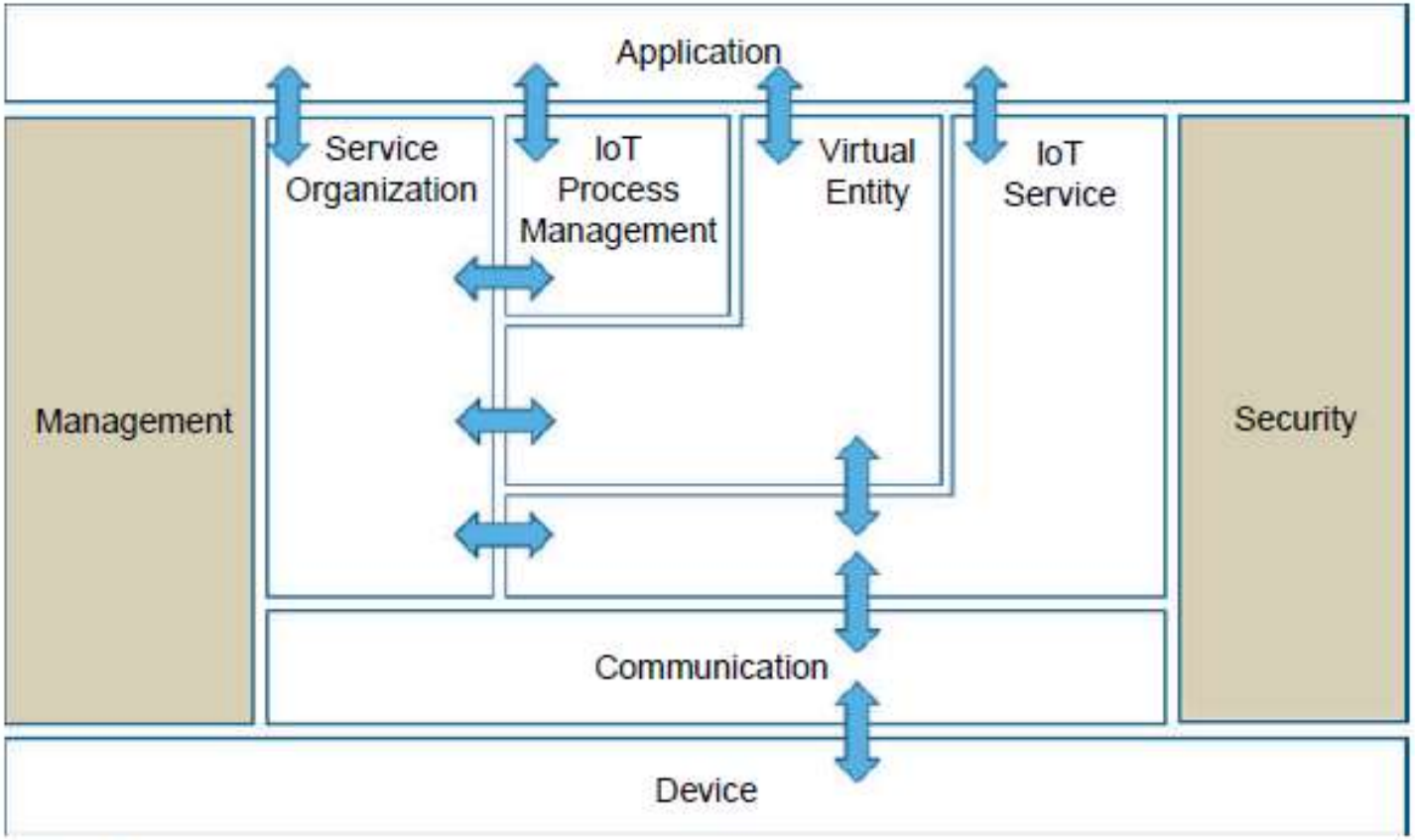

FIGURE 7.11

IoT-A Functional Model.

Chapter -8
IoT Reference Architecture

The Reference Architecture

- The Reference Architecture is a starting point for generating concrete architectures and actual systems. A concrete architecture addresses the concerns of multiple stakeholders of the actual system, and it is typically presented as a series of views that address different stakeholder concerns

The Reference Architecture Cont.

- we have chosen to present the Reference Architecture as a set of architectural views
  - Functional View: Description of what the system does, and its main functions.
  - Information View: Description of the data and information that the system handles.
  - Deployment and Operational View: Description of the main real world components of the system such as devices, network routers, servers, etc.

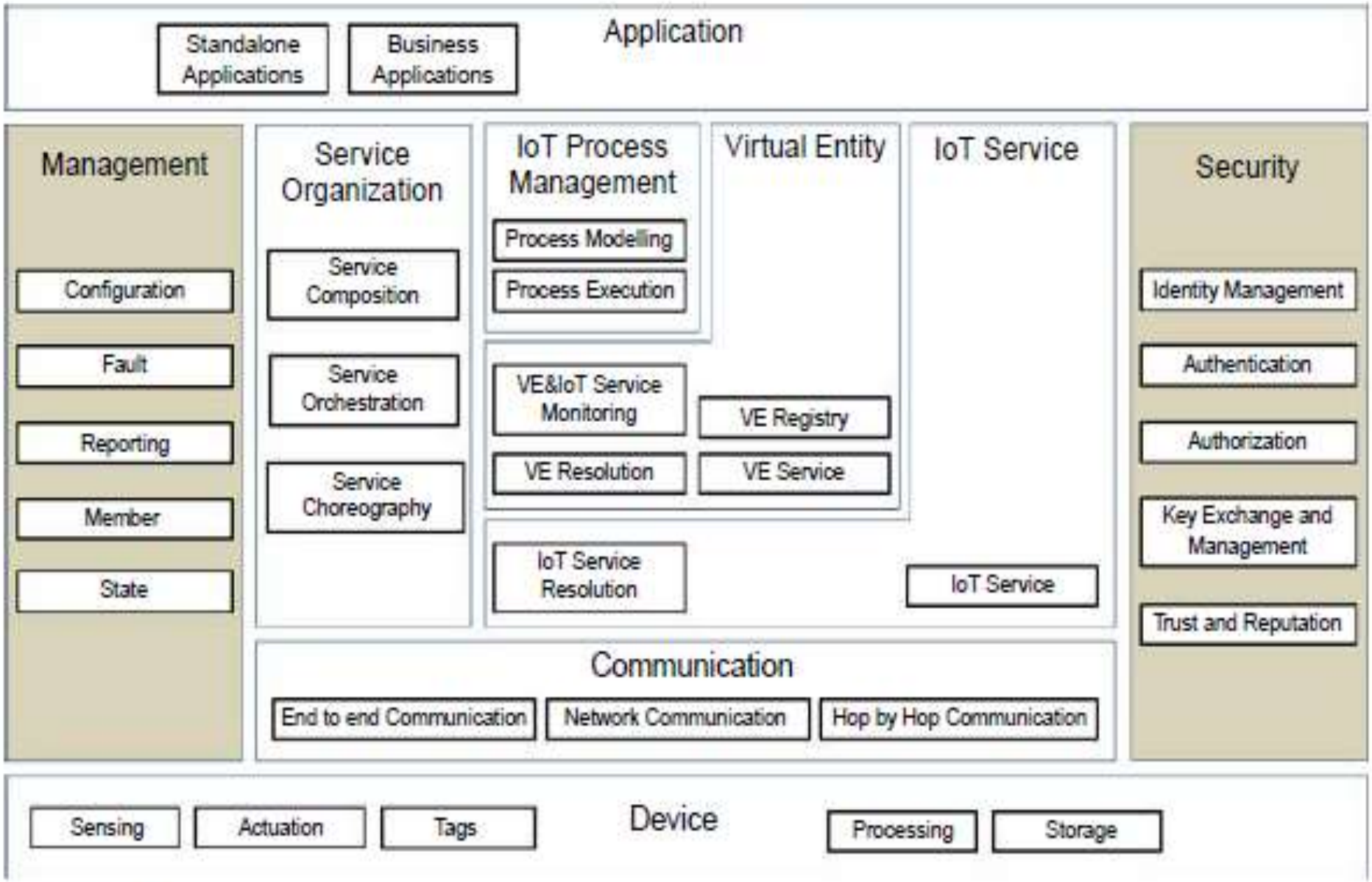

FIGURE 8.1

IoT Functional View.

Information exchange patterns

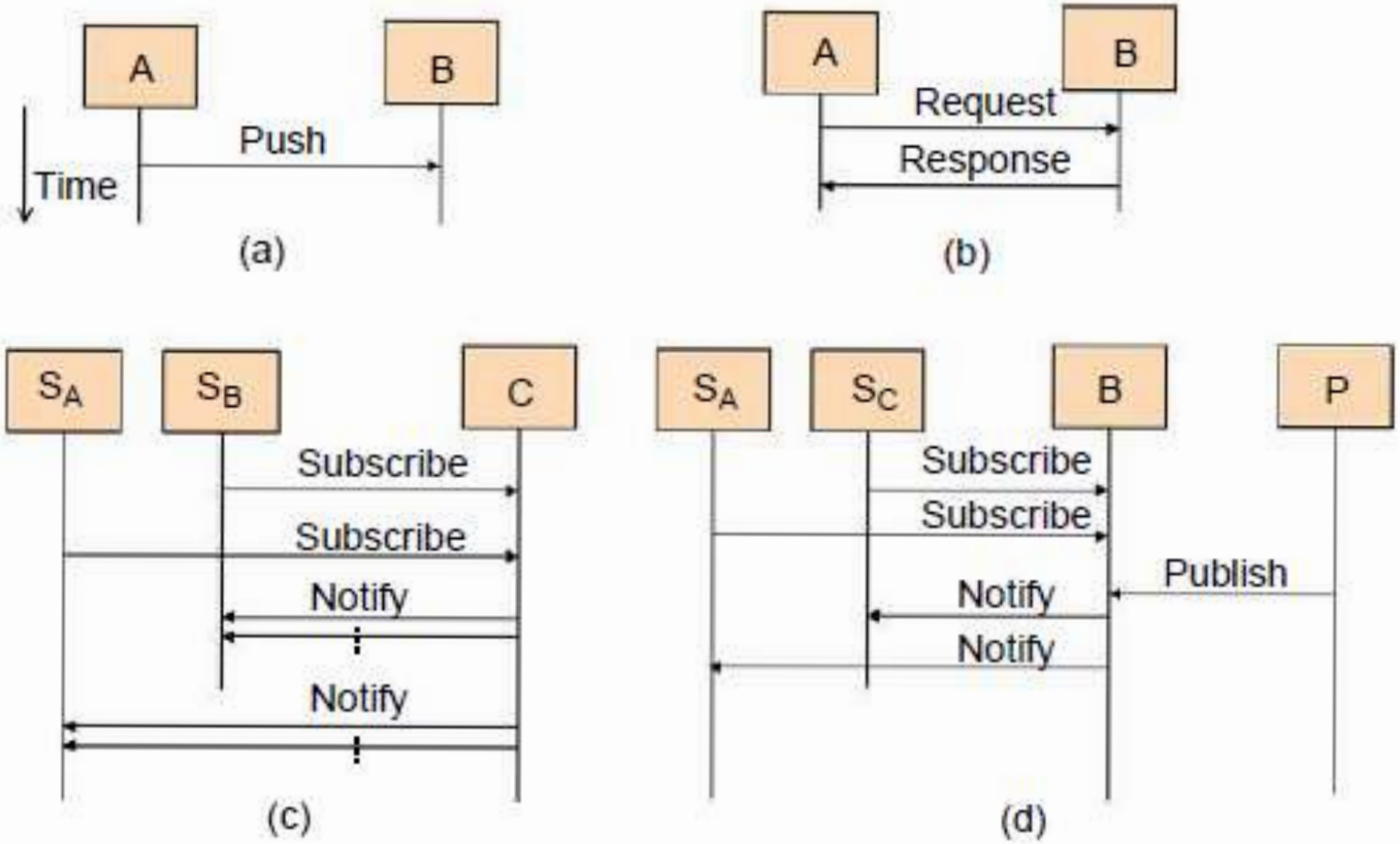

FIGURE 8.3

Information exchange patterns.

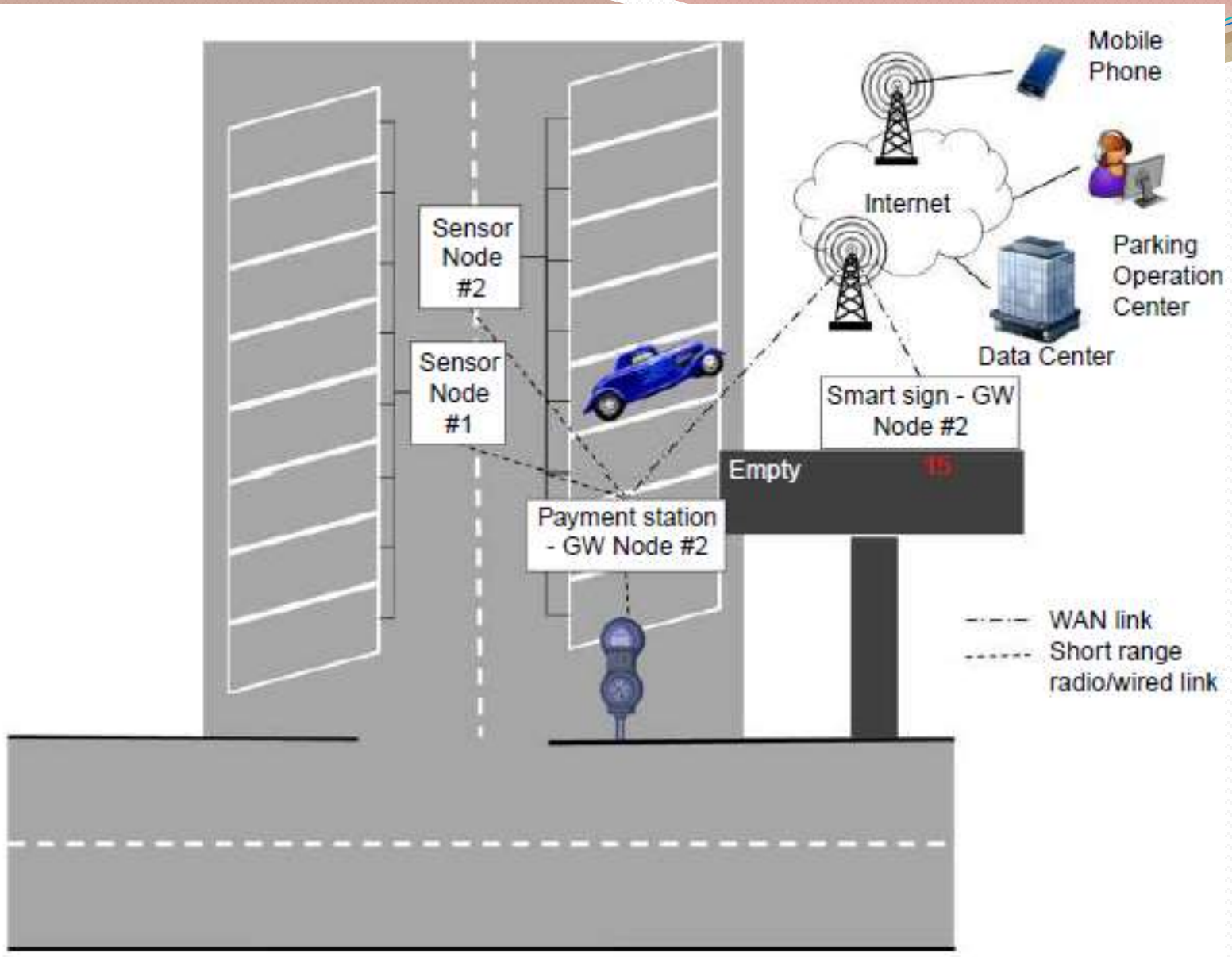

FIGURE 8.8

Parking Lot Deployment and Operational View, Devices.