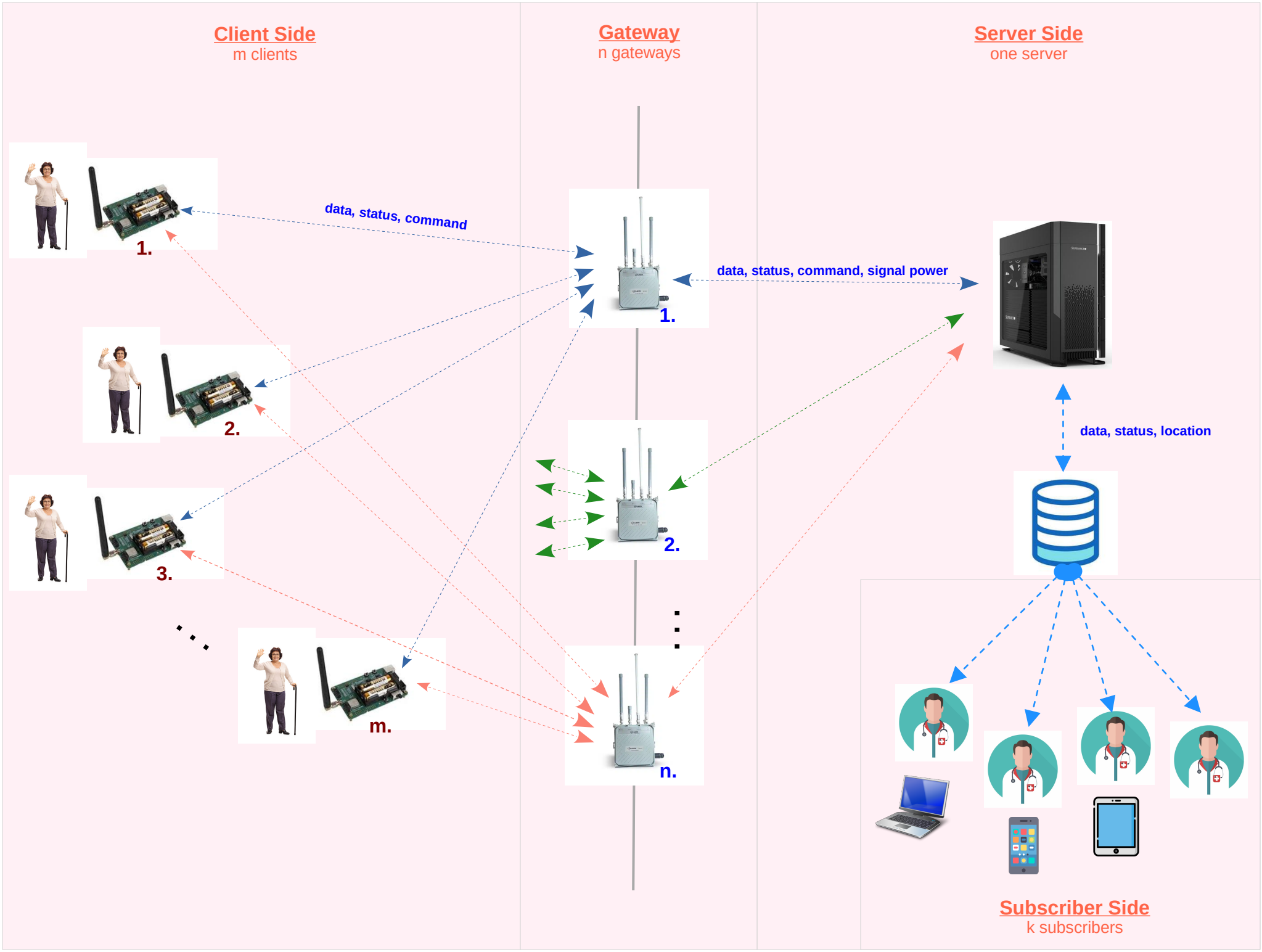
Client Side
m clients
Gateway
n gateways
Server Side
one server
data, status, command
data, status, command, signal power
data, status, location
1.
2.
3.
m.
1.
2.
n.
Subscriber Side
k subscribers

Client Side

m clients

- **IoT board** such as Raspberry PI, STM32, etc.
  - Purchasing
  - Operating System Support
  - Documentation
- **Sensors and Actuators**
  - Heart Rate Sensor
  - Oxygen Level/Breath Pace Sensor
  - Fall Detection Sensor
  - Reminder Actuator
- **LoRaWAN** Module & Antenna
  - Low power consumption
  - Long range communication
- **Power Supply Unit**
- **Operating System** (GPOS or RTOS)
  - Scheduling & Concurrency Infrastructure
  - Comprehensive Driver Support
  - Easy integration
- **C or C++** Programming Language
  - Performance
  - Efficient resource usage
  - 3rd party libraries

Server Side

one server

- **Server**
  - Real-time data transfer
  - Log storage
  - LoRaWAN gateway integration
- **Cloud Database**
  - Secure
  - Long Term Support
- **Publish-Subscribe Approach**
  - Serves patient data to its subscribers
  - Message Broker support (MQTT or similar)
  - Provides pseudonymization (GPDR, KVKK)
- **Positioning Algorithm**
  - Calculate boards' locations using signal data of the gateways
  - Online or offline map for subscribers
- **User Panel**
  - Server application updates
  - Firmware update for the boards
  - Maintenance support