

# Your AI Patent Attorney

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write a patent on eSIM for IoT

Creating patent for: write a patent on eSIM for IoT

Invention Title: Electronic SIM Card System for IoT Device Connectivity and Management

Prior Art: In the realm of Internet of Things (IoT), connectivity is paramount. Traditional SIM cards have been used to connect devices to cellular networks, but they pose several limitations in terms of flexibility, scalability, and security. These physical SIM cards require space within devices, are susceptible to physical damage, and complicate the logistics of managing connectivity for large-scale IoT deployments. Additionally, the need to manually swap SIM cards for different network providers or when devices are deployed internationally adds complexity and cost.

Invention Summary: The invention relates to an electronic SIM (eSIM) system designed specifically for IoT devices. This system enables remote SIM provisioning and management, allowing IoT devices to switch operators without the need to replace physical SIM cards. It comprises an eSIM module, a device management module, a network service database, and a user interface for comprehensive control and monitoring.

Drawings and Descriptions:

- **Figure A:** Block diagram of the eSIM system architecture.
- **Figure B:** Detailed schematic of the eSIM module showing its components and their interconnections.
- **Figure C:** Flow chart illustrating the process of remote SIM provisioning and network management.

Detailed Description: The proposed eSIM system for IoT devices includes several components that work together to enhance connectivity and management. The eSIM module is embedded within the IoT device and contains software capable of storing multiple operator profiles. It can be remotely updated to change network providers based on the geographic location of the device or the network quality.

The device management module is responsible for overseeing the operation of the IoT device, including its connectivity status and the active network provider. It communicates with a network

service database that stores information about available network providers and their service quality metrics. This database is updated in real-time to ensure optimal network selection.

A user interface is provided for administrators to manage the eSIM profiles, monitor device status, and manually override automatic network selections if necessary. This interface can be accessed via a web portal or a mobile application, providing flexibility and ease of use.

The system also includes security features such as encryption of the eSIM profiles and secure authentication protocols between the IoT device and the network providers to prevent unauthorized access and ensure data integrity.

#### Claims:

1. An electronic SIM card system for IoT devices, comprising:
  - An eSIM module embedded within the IoT device;
  - A device management module configured to monitor and control the connectivity status;
  - A network service database containing information about network providers;
  - A user interface for managing eSIM profiles and device status.
2. The system of claim 1, wherein the eSIM module is capable of storing multiple operator profiles and can be remotely updated.
3. The system of claim 1, wherein the device management module communicates with the network service database to select an optimal network provider based on real-time data.
4. The system of claim 1, wherein the user interface is accessible via a web portal or a mobile application.
5. The system of claim 1, further comprising security features including encryption of eSIM profiles and secure authentication protocols.

**Abstract:** The invention pertains to an electronic SIM (eSIM) system for IoT devices, facilitating enhanced connectivity and management. It addresses the limitations of traditional SIM cards by allowing remote provisioning and network management without physical SIM swaps. The system includes an eSIM module, device management module, network service database, and a user interface, providing a comprehensive solution for IoT connectivity.

Figure A: Block Diagram

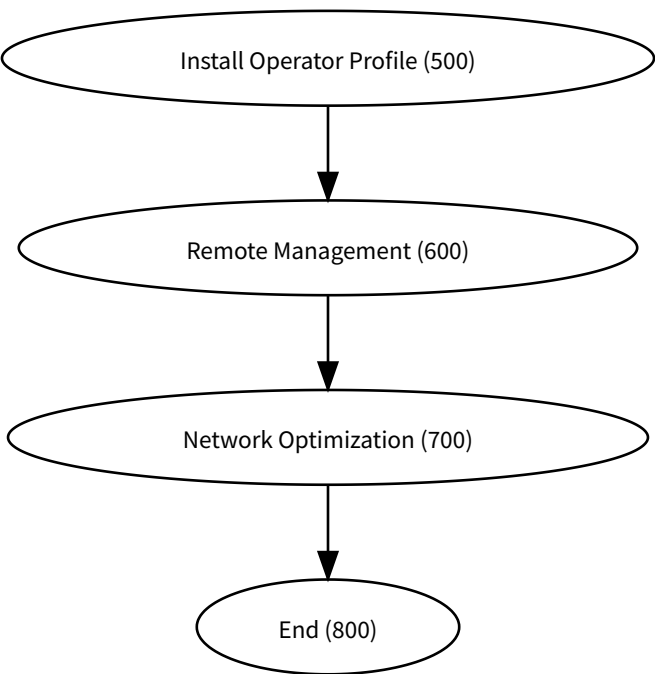
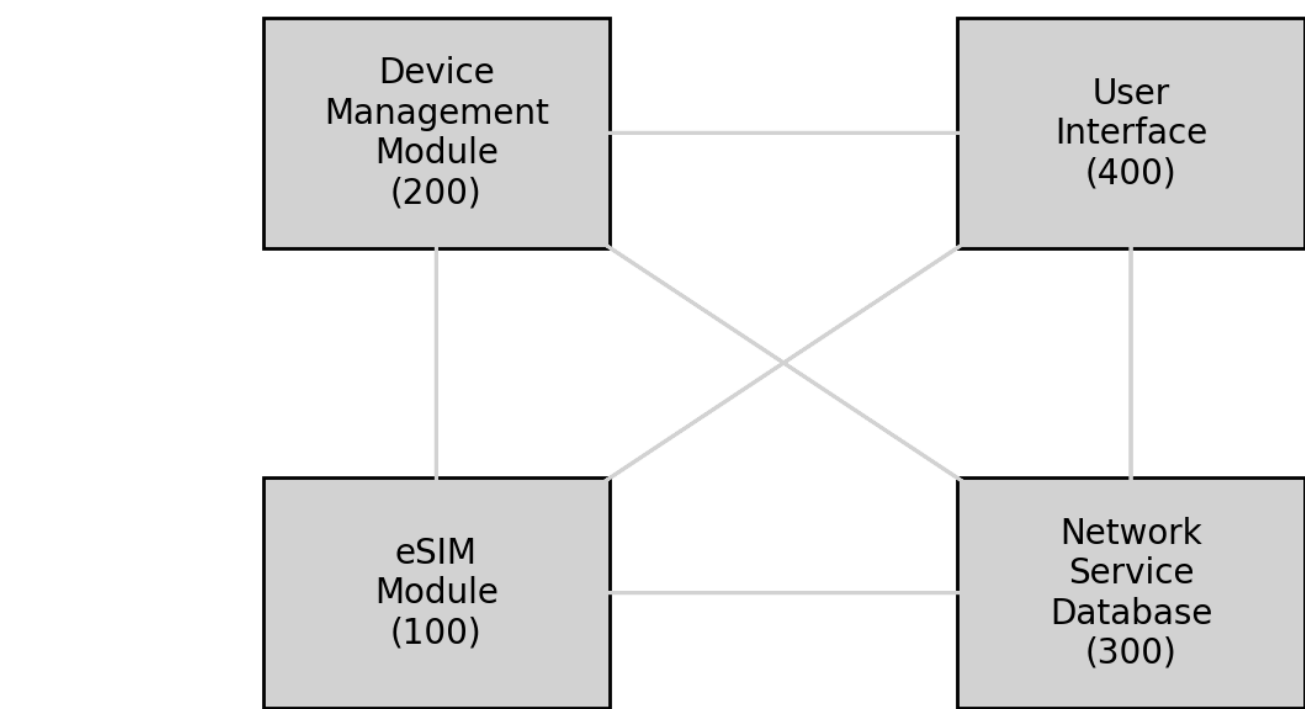


Figure C: Flow chart

The patent application document, block diagram, and flow chart have been successfully generated. Here are the visual diagrams for better understanding:

## Block Diagram

This diagram illustrates the interconnections between the components of the eSIM system:

- **eSIM Module (100)** connects to **Device Management Module (200)** and **User Interface (400)**
- **Device Management Module (200)** connects to **Network Service Database (300)** and **User Interface (400)**
- **Network Service Database (300)** connects back to **eSIM Module (100)**
- **User Interface (400)** connects to **Network Service Database (300)**

## Flow Chart

This chart outlines the process flow for remote SIM provisioning and network management:

- **Install Operator Profile (500)** leads to **Remote Management (600)**
- **Remote Management (600)** leads to **Network Optimization (700)**
- **Network Optimization (700)** concludes the process at **End (800)**

These diagrams provide a clear visual representation of how the eSIM system operates and interacts within IoT devices, enhancing the understanding of the patent application.