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write a patent for eSIM in IoT

Creating patent for: write a patent for eSIM in IoT

Invention Title: Electronic SIM Card Integration for Enhanced IoT Device Connectivity

Prior Art: In the realm of Internet of Things (IoT), connectivity is paramount. Traditional IoT devices rely on physical SIM cards for network access, which presents several challenges. Physical SIMs require space within devices, are susceptible to damage, and complicate the manufacturing and provisioning processes. Additionally, they limit the flexibility in switching service providers and managing connectivity across international borders. These limitations are particularly pronounced in applications involving small or highly mobile devices, such as wearables and logistics trackers.

Invention Summary: The invention proposes a system for integrating electronic SIM (eSIM) technology into IoT devices to enhance connectivity and operational efficiency. This system enables IoT devices to remotely manage multiple network operator profiles without the need for a physical SIM card, facilitating easier deployment and better scalability across various industries.

Drawings and Descriptions:

- Figure A: Block diagram of the eSIM integration system for IoT devices.
- Figure B: Detailed schematic of the eSIM management module.
- Figure C: Flow chart of the process for switching network profiles on an IoT device using eSIM technology.

Detailed Description: The proposed invention consists of an eSIM management module embedded within IoT devices. This module includes memory storage for multiple operator profiles and a controller to manage connectivity. The system is designed to comply with the GSMA's Remote SIM Provisioning standards, allowing users to remotely provision and manage their device's network settings.

The eSIM module is capable of storing multiple network profiles simultaneously, which can be updated or switched remotely via a secure connection to a provisioning server. This feature is crucial for devices that operate across different regions or need to switch operators without physical access.

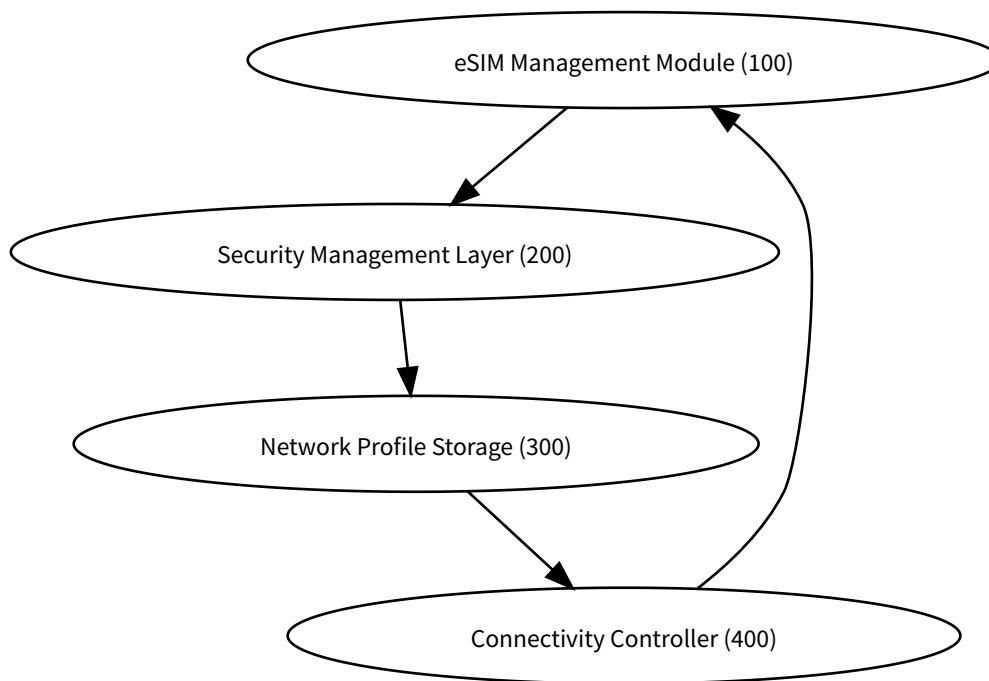
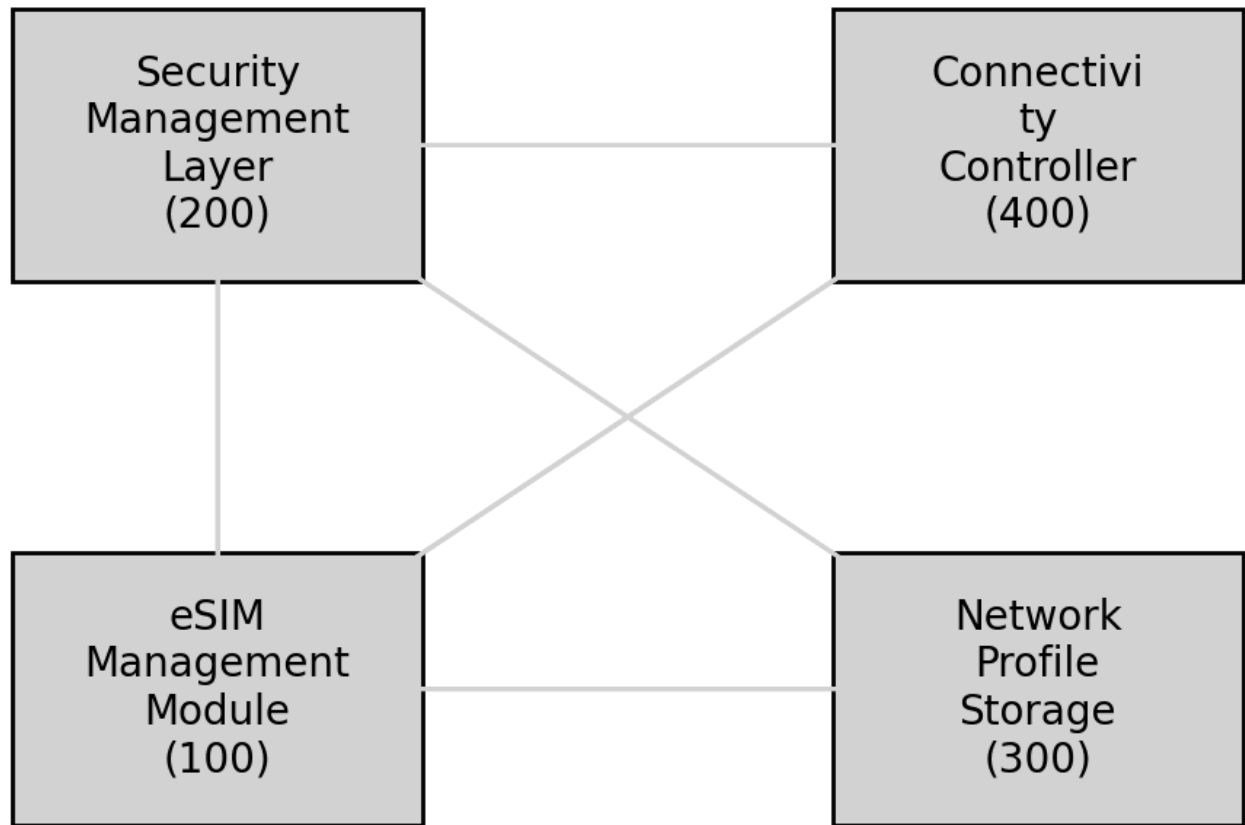
The invention also includes a security management layer that ensures all communications between the IoT device and the network operators' servers are encrypted and authenticated. This layer protects against unauthorized access and ensures the integrity of the transmitted data.

Furthermore, the system is designed to be power-efficient, making it suitable for use in small, battery-operated IoT devices. It supports various network technologies, including LTE, GSM, and future 5G networks, ensuring wide compatibility and future-proofing.

Claims:

1. A system for integrating eSIM technology into IoT devices, comprising: a memory to store multiple network operator profiles; and a controller configured to manage connectivity based on the stored profiles.
2. The system of claim 1, wherein the eSIM management module complies with the GSMA's Remote SIM Provisioning standards.
3. The system of claim 1 or 2, further comprising a security management layer that encrypts and authenticates communications between the IoT device and network operators' servers.
4. The system of any preceding claims, wherein the eSIM management module is power-efficient and supports multiple network technologies including LTE, GSM, and 5G.
5. A method for switching network profiles on an IoT device using the system of any preceding claims, the method comprising remotely updating the network operator profiles stored in the eSIM management module.

Abstract: The invention relates to a system for integrating electronic SIM (eSIM) technology into Internet of Things (IoT) devices. It addresses the limitations of physical SIM cards by allowing IoT devices to manage multiple network operator profiles remotely. This enhances connectivity and operational efficiency, particularly in applications involving small or mobile devices. The system includes a memory for profile storage, a connectivity management controller, and a security layer for secure communications, supporting various network technologies.



The patent application document, block diagram, and flow chart have been successfully generated based on the provided information about the eSIM integration system for IoT devices. These materials collectively outline the innovative aspects, technical details, and operational processes of the invention, providing a comprehensive view suitable for patent examination.

If you need further details or additional diagrams, feel free to ask!

