

# **IoT Device Integration Framework Patent Documentation**

**Patent Application No.: US-2022-0157893**

**Filing Date: March 15, 2022**

**Assignee: Summit Digital Solutions, Inc.**

## **1. Technical Field**

This patent documentation relates to systems and methods for integrating Internet of Things (IoT) devices within enterprise environments, specifically concerning Summit Digital Solutions' proprietary IoT Device Integration Framework ("Framework") as implemented within the Peak Performance Platform(TM).

## **2. Background**

### **2.1 Prior Art Context**

The integration of IoT devices within enterprise environments has historically been fragmented, requiring custom protocols and middleware solutions for each device type and manufacturer. Existing solutions fail to provide a unified framework for device discovery, authentication, data normalization, and secure communications across heterogeneous IoT environments.

### **2.2 Technical Problem Addressed**

This invention addresses the technical challenges of:

- Automated device discovery and registration
- Standardized protocol translation
- Real-time data normalization
- Secure device authentication
- Cross-platform compatibility

## **3. Summary of the Invention**

### **3.1 Framework Architecture**

The Framework comprises:

- (a) A device discovery layer utilizing proprietary mesh networking protocols
- (b) A protocol translation engine supporting IEEE 802.15.4, BLE, Wi-Fi, and cellular interfaces

- (c) A secure authentication module implementing zero-trust architecture
- (d) A data normalization engine for standardized information exchange
- (e) An enterprise integration layer for systems connectivity

### **3.2 Novel Technical Elements**

The Framework introduces novel technical solutions including:

- Adaptive protocol detection and translation
- Self-healing mesh network topology
- AI-driven device classification
- Blockchain-based device authentication
- Real-time data standardization

## **4. Detailed Description**

### **4.1 Core Components**

The Framework's core components include:

#### **4.1.1 Device Discovery Module**

- Automated network scanning
- Device fingerprinting
- Capability assessment
- Configuration mapping

#### **4.1.2 Protocol Translation Engine**

- Dynamic protocol detection
- Real-time protocol conversion
- Buffer management
- Error handling

#### **4.1.3 Authentication System**

- Zero-trust implementation
- Certificate management
- Key rotation
- Access control

## **4.2 Implementation Methods**

The Framework implementation comprises:

### **4.2.1 Network Layer**

- Mesh network establishment
- Route optimization
- Load balancing
- Failover handling

### **4.2.2 Application Layer**

- API management
- Data transformation
- Event handling
- System monitoring

## **5. Claims**

A method for automated IoT device integration comprising:

- a) Dynamic device discovery
- b) Protocol translation
- c) Secure authentication
- d) Data normalization
- e) Enterprise system integration

The method of Claim 1, wherein dynamic device discovery includes:

- a) Network scanning
- b) Device identification
- c) Capability assessment
- d) Configuration mapping

[Claims 3-20 omitted for brevity]

## **6. Intellectual Property Rights**

### **6.1 Ownership**

All intellectual property rights, including but not limited to patents, trade secrets, and associated technical knowledge regarding the Framework are owned exclusively by Summit Digital Solutions, Inc.

## **6.2 Protection Status**

Patent protection is pending under Application No. US-2022-0157893. Additional international patent applications have been filed under the Patent Cooperation Treaty.

## **7. Confidentiality Notice**

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## **8. Document Control**

Version: 2.1

Last Updated: December 15, 2023

Document Owner: Legal Department

Classification: Confidential

## **9. Attestation**

The undersigned hereby certifies that the information contained in this patent documentation is true and accurate to the best of their knowledge.

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