

# PATENT APPLICATION

United States Patent and Trademark Office

Application No.: [To Be Assigned]

Filing Date: January 9, 2024

Inventor(s): Michael Chang, Dr. Robert Martinez, James Henderson

Assignee: Summit Digital Solutions, Inc.

Title: SYSTEM AND METHOD FOR ENTERPRISE DIGITAL TRANSFORMATION  
USING AN INTEGRATED PERFORMANCE OPTIMIZATION PLATFORM

## ABSTRACT

A system and method for optimizing enterprise operations through an integrated digital transformation platform combining artificial intelligence, Internet of Things (IoT) sensors, and machine learning algorithms. The Peak Performance Platform(TM) provides real-time operational analytics and automated process optimization across distributed enterprise environments through a multi-layered architecture incorporating sensor networks, edge computing nodes, and cloud-based analytics engines.

## BACKGROUND

[0001] Modern enterprises face increasing complexity in managing operations across multiple facilities, processes, and systems. Existing solutions typically address individual operational aspects in isolation, lacking comprehensive integration and real-time optimization capabilities.

[0002] Current approaches to enterprise digital transformation often require significant manual intervention and fail to leverage the full potential of artificial intelligence and IoT technologies in driving operational improvements.

## SUMMARY OF THE INVENTION

[0003] The present invention provides a comprehensive system architecture for enterprise digital transformation, comprising:

- a) A distributed sensor network layer utilizing proprietary IoT devices for real-time data collection;
- b) Edge computing nodes implementing preliminary data processing and local optimization

algorithms;

c) A central cloud-based analytics engine incorporating machine learning models for predictive optimization;

d) An integration layer enabling seamless connection with existing enterprise systems;

e) A user interface layer providing customizable dashboards and control interfaces.

## **DETAILED DESCRIPTION**

[0004] The Peak Performance Platform(TM) architecture comprises five primary layers:

### **Sensor Layer**

[0005] The sensor layer incorporates proprietary IoT devices utilizing the following components:

- Multi-modal sensors for environmental monitoring
- Process monitoring devices with embedded processors
- Wireless communication modules using proprietary protocols
- Self-diagnostic capabilities with automated calibration

### **Edge Computing Layer**

[0006] Edge nodes perform the following functions:

- Local data aggregation and preliminary processing
- Real-time anomaly detection
- Implementation of immediate control responses
- Buffering and compression of sensor data

### **Analytics Engine**

[0007] The cloud-based analytics engine includes:

- Distributed processing architecture for scalability
- Machine learning models for predictive analytics
- Pattern recognition algorithms
- Automated optimization routines

### **Integration Layer**

[0008] The integration layer provides:

- Standard API interfaces for enterprise systems

- Custom connectors for legacy systems
- Security protocols for data transmission
- Data transformation services

### **User Interface Layer**

[0009] The interface layer delivers:

- Customizable dashboards
- Role-based access control
- Mobile-first design
- Real-time alerts and notifications

## **CLAIMS**

A system for enterprise digital transformation comprising:

- a) A distributed network of IoT sensors;
- b) Edge computing nodes for local processing;
- c) A cloud-based analytics engine;
- d) An integration layer for enterprise systems;
- e) A user interface layer for system control.

The system of claim 1, wherein the IoT sensors utilize proprietary protocols for secure communication.

The system of claim 1, wherein the analytics engine implements machine learning algorithms for predictive optimization.

[Claims 4-20 continued...]

## **DRAWINGS**

[Reference to attached drawings showing system architecture diagrams]

## **DECLARATION**

I hereby declare that:

- (1) I am the inventor (or an inventor) named below;

(2) I believe I am the original inventor or an original joint inventor of a claimed invention in the application;

(3) This declaration is being made in compliance with 35 U.S.C. 115 and 37 CFR 1.63.

## **SIGNATURES**

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