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Technical Theme Presentation

IoT based Industrial Safety Care Service

Telefield is a unique telecommunication solution company in that we provide optical transmission systems, wired & wireless solutions, as well as SI/NI and network consulting based on our own development capability.

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Proposal Summary

A national effort to prevent industrial accidents each year despite the continued occurrence of death and disaster casualties.

More effective measures need to consider a variety of factors according to disasters and specific working conditions and industrial property.

Specific actions in the risk space, disaster-specific characteristics and risk factors to prevent or detect the risk of an emergency situation occurs, rapid delivery and emergency response needs.

Required industrial safety management system in the industry

- Risk Detection
- Emergency Situation Alert
- Thatcher emergencies

Task Analysis by each hazard space

Specific risk factors Disaster analysis

Efficiency Analysis of disaster coping
Proposal Summary

GOAL

Build an emergency safety systems for disaster prevention and emergency response in the industrial field

Management center construction for stable operation of the IoT based services Safety Management System

Safety check of disaster risk factors and working environmental monitoring

Building operating environment for rapid response and monitoring equipment in the event of emergencies

“Build advanced industrial disaster emergency response system & Improve management efficiency “

The best equipment and solutions provider for the construction of emergency safety systems for accident prevention within the danger area of the industrial site

Proposer’s project execution capabilities

- Advanced Technology adapted
  - Providing Service using various technologies

- Provides an integrated environment
  - Providing stable integrated service environments from device to system

- Rapid Maintenance
  - Rapid service through the maintenance system established

Economics
System Building

Efficiency
Building Process

Reliability
Maintenance
Building IoT based Industrial Safety Management & Operating system

- When normal, the risk status monitoring space with Smartphone apps or Dedicated equipment
- Emergency, emergency check details from a Smartphone apps or Dedicated equipment (make sense of danger alarms generated space)
- Emergency notification letters sent and automatically calls the operator function

Risks specific environmental sensors mounted on industrial facilities within the workspace

Wireless Communication: 802.15.4, 2.4GHz Zigbee-Pro, WiFi, 3G/GPRS, Bluetooth Low Energy

Special appearance for the environment

The built-in big size internal battery and external power connection for charging large

Various sensor-specific risks in the working space of the industrial facilities

Remote S/W upgrade

Each sensor can be added and replaced by
Proposal Summary

Target System & Service

On-Site Events Detection

- Complex environmental sensor
- Composite Gas detector
- Motion Sensor
- Composite Fire detector
- CCTV Camera
- Portable Emergency Button

Safety Check
- Care Center

Alert notifications
- Safety Manager
- Emergency Center

Emergency Response

Bluetooth /Zigbee/WiFi
RF Communication

3G/W-CDMA
Proposal System Brief

Key Systems & Function

**Composite gas detector** for hazardous gas sensing within the industry
- O2, CO, CO2, CH4, NH3, NO2, Volatile organic compounds (VOC) sensing
- Wireless communication function for sensing data transmission via Bluetooth/Zigbee/WiFi, etc...

**Complex environmental sensor** for Collecting various environmental information in the industry
- Temperature / humidity / atmospheric sensing
- Fire / activity detection and alarm transmission
- Wireless communication function for sensing data transmission via Bluetooth/Zigbee/WiFi, etc...

**3G/W-CDMA Wireless Gateway** for sensing data collection and alarm transfer situation
- Collecting the composite gas concentration sensing and measuring various information
- And upon detection of a fire hazard, an alarm condition transmission
- Information collected periodically sensing the environmental conditions of the area and the risk report
- Provide smart phone apps for on-site operations management and equipment status monitoring
- In case of an emergency, alarm transmission, automatic emergency notification, on-site video transmission function provide
Emergency Center
National Emergency Safety System

On-site Safety Management System

Sensors
- Motion Detection
- Fire Detection
- Environmental
- Composite gas Detection
- CCTV Camera

Gateway
- Wireless Gateway
- Gathering Information
- Transfer Sensor's Data
- Emergency Information Collecting
- Emergency Situation Notification

Emergency Alert (Auto Transfer)

Portable Device

Emergency Center
- Emergency control room case submission

EMERGENCY Command input

National Emergency Safety System

Fire Station

Emergency Situation Command transfer

Emergency response & Relief Efforts

Industrial Accident Safety Management Center

Router
Firewall
Switch
Web Server (Redundancy)
WAS Server (Redundancy)
DB Server (Redundancy)
Storage (Redundancy)
Integrated collection server #1, #2
Video Server
Monitoring Server #1, #2

Activity / emergency monitoring
Information Field management
and verification

Local Management Center
Duty Safety Manager

Project Manager
Eureka Officer

Main Management Center
Project Manager

Related Organizations

System Configuration

Proposal System Brief
Network Configuration

On-Site Emergency Safety Management System
- Motion Detection Sensor
- Fire Detection Sensor
- Complex Environment Sensor
- Composite Gas Sensor
- CCTV Camera

Industrial Accident Safety Management System Central Center
- Private Line
- IA_F/W
- Web Server
- Monitoring System
- L4 Switch
- Internet
- Collection Server
- WAS Server
- Control Server U-119
- SAN Switch
- Storage

Related Organization
- Government, Municipalities, Service User, System Manager, Related Depart. Etc...

Local Care Center
- Duty Manager/Staff

Integrated Collection System
- L4 Switch
- Gateway
- CO
- Telco's Network Center M2M Server
- Portable Device
- CDMA 3G
- VPN
The project is based on the IoT and industrial safety management system management center building project for disaster prevention.

Configure Korea and SMEs participating in the European consortium and to develop a target system during the project period of 36 months, to build a Test bed in each, one for the two regions through this.

### Time Schedule

- **(6 Month)**
  - Panning
    - System Architecture, R&D Plan etc.
  - System & equipment development
    - System & Management Center
- **(18 Month)**
  - Installation & Test
    - System & Equipment etc...
- **(3 Month)**
  - Supervision and stability
    - System & Equipment, etc...
- **(6 Month)**
  - Commercialization launched
    - Performance measurement & Business initiation

### Spatial Planning

- Test bed operation
- Pilot operation of a real industrial site
- 2 Sites
  - (EU, KOREA)

### R&D Scope

#### R&D Items
- Fire Detection Sensor
- Motion Detection Sensor
- Composite Gas Sensor
- Complex environmental sensor
- Industrial Wireless Gateway
- M2M Server
- Industrial Safety Care System
- Monitoring & Control System

#### Target Output
- On-site management system development app for smartphones and portable terminals
- On-site management and site management equipment provides environmental monitoring
- In case of an emergency, alarm and automatic propagation conditions & emergency call / Message sending
- Site conditions, the video data transmission
- Periodic reports on the environmental conditions on-site business facilities within the space
By building IoT-based safety management systems within the danger space of the industry it carried out the work and intended to lead to a more secure emergency system and provides equipment to manage them effectively and proactively.

- Provide a safer work environment through early detection and action on occupational accidents
- Systematic management of limited industrial safety personnel & work efficiency improvement
- Operating advanced Emergency Safety Care System
- Ensuring a safe working environment and provide peace of mind through them than through real-time dangerous status monitoring
- Rapid and precise relief measures in case of emergency, through the emergency notification and automatic site monitoring
- Advanced security services to meet the specific workspace environment and risk
- Easy adjustment and scalable service operating range
- Prepared system for occupational accidents and safety management
- Offline efficient management of resources
- Efficiently managing operations by each work place
- Increase management center’s working performance
- Advanced industrial welfare-based deployment

**Project Benefits**

**Target benefit**

**Industrial Side**
- Provide a safer work environment through early detection and action on occupational accidents
- Systematic management of limited industrial safety personnel & work efficiency improvement
- Operating advanced Emergency Safety Care System

**Worker Side**
- Ensuring a safe working environment and provide peace of mind through them than through real-time dangerous status monitoring
- Rapid and precise relief measures in case of emergency, through the emergency notification and automatic site monitoring
- Advanced security services to meet the specific workspace environment and risk

**Social Side**
- Easy adjustment and scalable service operating range
- Prepared system for occupational accidents and safety management
- Offline efficient management of resources
- Efficiently managing operations by each work place
- Increase management center’s working performance
- Advanced industrial welfare-based deployment
By developing a target system through EUREKA projects, it is willing to promote the business of supplying the outcomes intended for large-scale manufacturing sector such as shipbuilding, chemical and heavy industries developed countries in East Asia, Americas and Europe.

**Target Market**

- East Asia: Korea, China, Japan
- Europe: Demark, Norway, Netherland, etc.
- America: United States, Mexico, Brazil, etc...
- Shipbuilding Companies
- Automobile Company, Heavy Industry Company
- Chemical Company
- Propose as Eurostar2 among the EUREKA project
- Join with European SME as a consortium member
- Collaboration with Bigdata and sensing technologies held companies
- Through the project, planning to develop IoT based advanced industrial safety care system and want to contribute a worldwide industrial accident prevention and emergency systems faster.
THANK YOU

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