How to promote WB’s “Good Will”

by GSIL’s Smart Safety System

02.19.2020 by Victoria Ji
GSIL is an IT company that offers Cloud-based, Real-time solution called **Smart Safety System**.

Our solution provides safety accident prevention, safety inspection and management, and on-site monitoring services for safety in industrial worksites.
About WB

WHO WE ARE

With 189 member countries, staff from more than 170 countries, and offices in over 130 locations, the World Bank Group is a unique global partnership: five institutions working for sustainable solutions that reduce poverty and build shared prosperity in developing countries.

Our Mission

To end extreme poverty:
- By reducing the share of the global population that lives in extreme poverty to 2 percent by 2030.

To promote shared prosperity:
- By increasing the incomes of the poorest 40 percent of people in every country.

The World Bank Group works in every major area of development. We provide a wide array of financial products and technical assistance, and we help countries share and apply innovative knowledge and solutions to the challenges they face.
Rescue people from the poverty

Good Will

However.........
Safety Accidents around the World

“Death toll rises to 78 in China chemical blast…”

“Subway construction site explosion kills 4, injures 10 in Seoul…”

“Plant Explosions in Texas, Louisiana, and across the US…”

“Death toll from Mexico fuel explosion rises to 85”

“Chilean mine collapses… rescues after 69 days”

Too many accidents, Too many deaths around us
World Bank’s Global Road Safety Facility (GRSF) Receives a Royal Award for Innovations in Reducing Traffic Fatalities

“Road fatalities are more than personal tragedies, they undermine a country’s growth and human development. Like other countries, by improving road safety, Bangladesh can further reduce poverty and accelerate economic growth,” said World Bank Vice President for South Asia, Hartwig Schafer during the Award Ceremony.
Cal/OSHA Penalties Increase
System Overview: the Solution

**Smart Construction Safety Management System**

### Real-time Location Monitoring
Locate workers and equipment in real-time using beacon and scanner

### AI-CCTV Visual Anomaly Detection
Using AI system, detect unauthorized persons, check abnormal (fire, smoke, etc.) conditions

### Zero Accidents

### IoT Sensor-based Environment Management
Analyzes air quality (O2, inflammable gases, etc.), fast response if an abnormal condition is detected

### Emergency Management
Using wireless network, first witness can notify disaster/accident via SOS Alarm, saving time to save people

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**Power Plants**

**Tunnels and Underground structure constructions**

**Subway Corporations (Closed Areas)**

**General Construction Sites**

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Smart Construction Safety Management System
Most undigitized industrial area construction site!!!

- Safety monitoring solutions are outdated
- The manager still supervise the site manually with pen and paper
- Communicates via walkie-talkie
- Use limited one-time sensors with only on-off functions for environmental sensing and worker location tracking
• 1st Korean start-up to achieve NeT Certificates
• Intellectual Property protected: 9 Korean Patents, 4 Int’l Patents, 7 Design Patents
• Awards & Certifications from the Korean government and public institutions
• Great potential to expand globally using the already proven effective technology
• Innovative way of integrating self R&D hardware & software to provide overarching safety system in various sites
Clients

Korean Public Sector

- Korea Expressway Corp.
- Korea Electric Power Corp.

Corporations

- SAMSUNG ENGNERING
- SAMSUNG Corp.
- HANYANG
- KEUMHO Construction
- HANSHIN
1. Application to WB’s Project

BLE Mesh Network
Utilizing Bluetooth Mesh Network

Especially Powerful in Confined Areas (tunnels, subway, power plants, etc.)
Smart Safety System in Confined areas

Wireless Network

Location Monitoring
Entry/Exit of Workers
Others

Worker Location Tag

AI-CCTV Analytics

Critical Environment Info.

Server

Integrated Monitoring System
Real-time Environment Monitoring

- Real-time measuring of Air quality of the worksite
  - Temperature, Humidity, Oxygen, Carbon Dioxide
  - Hydrogen Sulfide, and flammable gases, etc.
- Monitor safety environment factors per construction site's characteristics
- Detect environment info. Of abnormal changes in real-time (fire, etc.).

* Work Environ. Mobile Screen

* Environment info screen on Web
Possible Application in World Bank Project

Abstract

The development objective of Municipal Water Supply and Sanitation Project for Bangladesh is to increase access to improved water supply and sanitation services in selected municipalities, and strengthen the municipalities’ institutional capacities for delivering water and sanitation services. This project has five components: 1) The first component, Sector Support and Capacity Strengthening, comprises three subcomponents as follows: (a) Strengthening... Show More

24/7 Water Supply in Beirut: Fantasy or Reality?

February 5, 2017

Infrastructure
Power Plants
Tunnels and Underground constructions
Application to WB’s Project

2. Smart Height Protection
SMART HEIGHT PROTECTION

Sensors:
- Location monitoring
- Detachment detection
- Altitude
- Pressure
Smart Construction Safety Management System

Possible Application in World Bank Project

Operation for Supporting Rural Bridges (SupRB)

Abstract

The development objective of Operation for Supporting Rural Bridges Project for Bangladesh is to improve and preserve rural bridges to support connectivity and climate resiliency, and strengthen institutional management. The PIWII portion of the operation will support capital investments in L20 and UNR bridges, including maintenance, rehabilitation, widening, replacement, and new construction. The IRP portion will support institutional strengthening.  Show More

Second Bridges Improvement and Maintenance Program

Abstract

The development objective of the Second Bridges Improvement and Maintenance Program for Nepal is to provide safe, resilient, and cost-effective bridges on Nepal Strategic Roads Network. The proposed operation is designed as a ‘hybrid’ operation, which includes both Program for Results (PfR) and Investment Project Financing (IPF) components. Developing and/or maintaining bridge infrastructure in the Strategic Roads Network under the Bridge Branch.  Show More
3. Application to WB’s Project

Be it & AI-CCTV
Be it & AI-CCTV

California Officials Put Residents in Danger With LA Metro Expansion

By Lisa Korbatov - 07/10/19 7:00am

Climb inside the massive tunnel 60 feet below downtown L.A.

By Thomas Curwen
Photographs by Bill Helton

Construction crews continue to dig an exploratory shaft 70-feet deep in preparation for the future L.A. Metro Purple Line.
Be it & AI-CCTV

**Be-it**

- Alert Worker Location
  - Detect the real-time worker location
  - Warning alarms, sirens, etc.

- SOS Alarm
  - SOS Emergency button on the location tag
  - Automatic notification on App/Web

- Last known location
  - Recover lost log from the Server

**AI-CCTV**

- In case of Emergency

Smart Construction Safety Management System
Hardware Solution: Worker Location Tag

Worker Location Tag on the safety helmet
Real-time Monitoring

Real-time Worker and Equipment Monitoring

- Identify location per type of worker
- Monitor Mobile & Web whenever and wherever
Good Will for Dignity of Human

By Smart and Safety Technology
Korea during the Korean War in the 1950s
WORLD BANK’s Good Will

For Your Partner
Thank you

Smart Construction Safety Management System

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Appendix

Smart Construction Safety Management System
NeT(New excellent Technology)
Approved by the Korean Ministry of Land, Infrastructure and Transport

• Safety Management System for Tunnel Workers to Identify the Current Location and Obtain Environmental Information and Monitor real-time
• Consists of wearable equipment identifying tunnel workers, Wi-Fi, BLE installed in tunnels, and environmental information monitoring equipment in tunnels
NeT (New excellent Technology)

Approved by the Korean Ministry of the Interior and Safety

- A safety management system that includes real-time localization of occupants in confined space, risk information transmission in confined space disasters, and SOS signal generation technology for workers.
- Technology that enables identification of workers’ final position in case of disruption of communication and power supply in confined spaces after a disaster
- Real-time monitoring of workers’ real-time location on the construction site and real-time monitoring of on-site risk factors (vibration, water level, noxious gas, etc.)
Creating Wireless Network System

- Critical point video control
- Face Detection for exit check
- Worker Location
- Construction Progress
- Environmental monitoring
- Water level monitoring

WEB & MOBILE REAL-TIME MONITORING

**Location Tag**
- Position signaling
- Safety information
- SOS button

**Scanner**
- Receive tag signals
- Server Transmission

**RTLS**
- Location confirmation
- Location expression
- Creating a wireless network

**Integrated safety management system**
- Location based management
- Dashboard presentation
- Web&Mobile real-time monitoring
- Notification on emergency calls

* RTLS : Real Time Location System
* AP : Access Point
System Hardware Map

On-site Information Analysis

- Vibration
- Water Level
- Environ. Info.
- Worker Info.
- Location Monitoring
- CCTV

✓ All worksites monitored via mobile, Web

Cloud DB

- Labor Data
- Location Data
- Environment Data
- Video Data

Network
Smart Construction Safety Management System

Gangwon Province HQ (2017. Q3 Completed)

Appendix

✓ Overall 50+km worksites
Underground water tank

# of Workers 6
Tanks being used 3
Stopped Work 0

Risk Assessment

Appendix
NeT (New Excellent Technology)

- Certification of Excellence of new technologies developed by Korean companies and research institutes

**Construction NeT**

No. 828

Korean Ministry of Land, Infrastructure, and Transport (MOLIT)

"Worker Safety Management System Based on Worker Location and Environmental Information in Tunnel Construction".

**Disaster Prevention NeT**

No. 2019-5

Korean Ministry of the Interior and Safety (MOIS)

"Worker safety management system in confined spaces using IoT technology and RTLS".
United Nations Global Market (UNGM), UNOPS meetings

Various meetings with consulting companies / construction companies based in NYC

Discussing with the Director of Fairfax County Economic Development Authority (FCEDA; Korea office)

Washington DC, Virginia, Maryland: meetings with VCs, State representatives, construction companies
AAA Group, Kuwait, Meeting and signing the Agent Agreement with Mr. Saud A. Alghanim, Amiri Diwan, Kuwait Palace department and F1 stadium construction project PoC consultation.

- Kuwait Chamber of Commerce registration (MOCI Permit)
- Involvements in F1 stadium and South Saad Al Abdullah Smart City projects

AAA : Abdul Aziz Alghanim Group Company
Dubai City Hall, Health and Safety HQ, discussing AI-CCTV fire and smoke detection system (Health and Safety Director, Mr. RAED MOHAMMED)
Gathering various safety data via GSIL’s Smart Safety System

GSIL’s Smart integrated system:

- **Big Data-driven Risk Prediction**
- **Safety Management**
- **Certification & Training Platform**

Location tracking data: 10,000,000 cases
Process management data: 200,000 cases
Task start reports data: 20,000 cases
Safety-related Big data
Equipment management data: 5,000 cases
Video analysis: 50,000 cases
Non-compliance data: 3,000 cases