

COMPANY PRESENTATION

2017

CONNECT | MONITOR | PROTECT

VITAL ALERT SPECIALIZES IN VERY LOW FREQUENCY (VLF) TECHNOLOGY AND PRODUCTS

Through-the-Earth and Wireless Communications

Critical and Emergency Communications Critical Infrastructure Protection Covert Field Operations

Intelligent Transportation Systems and Smart Cities

Advanced Driver Assist Autonomous Vehicles Out of Coverage Connectivity (GPS)





CANARY IN A COAL MINE SPECIFICATIONS

Underground communication

Early warning and evacuation system

Delivers real-time tweets (bird chirps)

Portable, highly fragile and nature certified

Works with Line of Sight

Needs replacement after use





Trade Center bomb kills at least 5, wounds hundreds; link to Bosnia airlift feared

How did we get here?



THROUGH-THE-EARTH (TTE) TECHNOLOGY

Vital Alert uses **Low Frequency**, **magnetic Induction** to create waves that are used to carry a proprietary **digital** signal through the earth and other natural and man-made barriers.

Secure, real-time voice, text and low speed data that will integrate with existing communication platforms.





EMERGENCY SETTINGS



Tunnel military operations



Mining rescue teams



Power Plant evacuation/disaster



Multi-level building evacuation



Sensor detection



Subway emergency communications



DAILY OPERATIONS

In everyday settings, TTE radio can significantly simplify communications.

In tunnels or other shielded environments rescuers or city personnel may be equipped with line-of-sight or mesh / MANET type radios, which Vital Alert can integrate with.

Vital Alert integration can provide fixed and portable secure two-way communications allowing teams to easily move as the issues arise.







CRITICAL INFRASTRUCTURE PROTECTION

Vital Alert provides secure, infrastructure free sensor data transmission from RF denied areas.

Applications include maintenance tunnels, sewers, and subway systems **and in industrial settings** such as power plants, nuclear facilities and factories

Units below ground include a sensor package (e.g. motion detection, seismic monitoring, microphones, gas sensors, etc.) connected to a TTE transmitter for passing alarms to the surface.





VLF MODELING CAPABILITIES

By using our modelling graphic simulation capabilities, we were able to extend the signals reach throughout all the floors of the building.

2D Modeling

3D Modeling







Use Case 1: Pedestrian Alerting System for ADAS Vehicles

Japanese government initiative to reduce pedestrian-car accidents at intersections

Pedestrian GPS data (i.e. from smartphone app) is used to alert Advanced Driver Assistance System (ADAS*) vehicles of presence at intersections

VLF system proposed for urban canyons where there is no GPS).

- * ADAS already in luxury cars and moving to mainstream
 - Anti-lock brakes and anti-slip traction control
 - Lane departure warning system
 - Speed assistance and autonomous emergency braking
 - Automatic parking
 - Driver wake-up and attention control
 - Pedestrian and low-speed obstacle avoidance





FUTURE APPLICATIONS -VLF Positioning Technology

Use Case 2: Autonomous Vehicle Parking

Autonomous vehicles are expected to displace personal passenger vehicles reducing urban congestion.

These vehicles will have to park themselves when not in use (and for recharging)

VLF Positioning data can be used to allow vehicles to navigate through the parking garage System design is captured in the Vital Alert patent

Planners are already anticipating new garage designs to accommodate these changes.





SMART CITY APPLICATIONS

Emergency Communication

Autonomous vehicles

Smart traffic lights

Parking availability

Home/office detection

Subterranean (subway) communication





OIL RUPTURE/SPILL

Oil pipeline ruptures

Early warning for pipeline

Wireless secure on and off control

Embedded sensors for ground and water

Environmental sensors





OVERVIEW

TTE WIRELESS SENSOR MONITORING

Creates an early warning network for intrusions of subterranean access points, as well as hazardous environments in critical infrastructure, passing sensor data wirelessly and covertly to the surface. On the surface, a TTE radio receives alarm signals and transmits them to a command center.

It is completely infrastructure-free, allowing for quick deployment and tear down, and can sustain on batteries for an extended period of time.



TTE & MAGNETIC COUPLING

Low frequency TTE signals possess the ability to "flow" along metallic structures, such as train tracks, conveyor belt lines, elevator shafts, and other steel structures. By utilizing magnetic coupling, TTE communications can be significantly extended wherever a metallic structure is present. Vital Alert has achieved communication ranges in excess of 15,000 feet using this technique.

COVERT SIGNAL

Vital Alert technology is highly effective for covert communications as TTE signals are difficult to detect using conventional RF hardware. High frequency radio uses electromagnetic radiation which is detectable at large distances, whereas the TTE magnetic signal decreases much more rapidly with distance, making it detectable only in close proximity to the TTE transmitters.





THANK YOU

sales@vitalalert.com 1-888-998-4825 vitalalert.com

> Find us on Facebook at Vital Alert Communication Inc



@VitalAlertComm







PRODUCTS







Portable unit displayed. Fixed unit available.

CANARYTALK TECHNICAL SPECIFICATIONS

- Through-The-Earth wireless communication
- Communicate through natural and man-made barriers
- Delivers secure, real-time voice, text and low speed data
- Seamlessly integrate with existing communication devices
- Long battery life
- Portable, highly durable and MSHA Certified for Intrinsic Safety (explosion proof).
- FCC approved
- Works without need for Line of Sight
- Completely infrastructure free
- Uses Very Low Frequency (VLF), Magnetic Induction
- May operate as a standalone device



Vital Alert technology enables secure, emergency and day-to-day voice and data communications in some of the most hostile and difficult communications environments in the world such as tunnels, sewers, subways, buildings, mines and military operations.





EMERGENCY OPERATION

- In case of network failure, Canary system directly messages emergency personnel and direct it to the public
- Texts are sent below ground over TTE link
- Voice comms relayed to/from on-site EMS team, Above Grade Command unit
- Link provides emergency notifications to riders



Platform Grade

